DATE: July 21, 2023

DEPARTMENT OF GENERAL SERVICES
BUREAU OF CAPITAL PROJECT DESIGN MANAGEMENT
1800 HERR STREETS
HARRISBURG, PENNSYLVANIA

ADDENDUM NO. 34

on

PROJECT NO. DGS C-0211-0005 PHASE 005
PROJECT TITLE - PA State Police Academy - Core Bldgs, BESO & Sitework
PROFESSIONAL:
SOM
7 World Trade Center
New York, NY, 10007

If you submitted a bid prior to this Addendum being issued, your bid has been discarded and you must re-submit your bid(s) prior to the bid opening date and time.

GENERAL CHANGES – ALL CONTRACTS

Item 1 - Please note the following:
In response to requests received, the bid deadline was extended by one week, to Tuesday, August 8.
Final questions were to be submitted via e-Builder no later than 5:00 PM ET on Tuesday, July 18.
Final Addendum will be issued via e-Builder no later than Tuesday, July 25th.
Bids are due by Tuesday, August 8, no later than 2:00 PM.

Item 2 - Addendums for this bid begin with Addendum 24. Please note that Addendums 1-23 were issued in the course of the previous bid process and can be disregarded for the purposes of this bid. Items issued in addendums from the previous bid process have been incorporated into the current, re-issued bid documents.

Item 3 - Additional individuals from any bidder wishing to gain access to the bid documents must register through eMarketplace and create an account to access e-Builder. Access cannot be granted in any other fashion.

Item 4 - In response to questions submitted, please note the following:

.1 CONTRACT

- Question 180: Traffic Coating : Traffic coating keynote TM-04 is not defined in the spec. Please advise.
- Response: Drawings FTU-A-611 & FTU-A-660 have been updated to reflect TM-02 keynote. Refer to revised drawings as issued in Addendum 34.
- Question 212: Lockers : The drawings show the cubbies as 15"x19"x72". The spec sheet calls out 12"x18"x72". Please advise.
- Response: Refer to revised 10/GEN-A-722 and spec section 101500 as issued in Addendum 34.
- Question 226: Addendum 31 Response 108.1 Contract : Addendum 31 Response 108 .1 Contract noted that any ACM outside of the quantities provided that is uncovered during construction will be addressed with unit prices. The unit prices requested in the .1 contract are only for ACM at waterproofing. How will any other ACM materials be addressed?

- Response: Unit rates should also be requested for the following assumed items as well. Contractor shall credit the Owner for the removal of assumed ACM that is not performed. The credit shall be based on the unit rates:
    - Fire door core insulation: 50 Doors
    - Blackboard / marker board glue concealed: 450 sf
    - Electrical panel backing boards: 500 sf
    - Boiler rib gaskets:400 lf
    - Concealed boiler breeching insulation within metal jacket: 500 sf
    - Concealed pipe insulation, Transite conduits, waterproofing material that may exist below grade:3,000 lf
    - In addition to assumed ACM identified above, unit rates should also be established for the abatement of additional ACM which may be encountered during abatement (Quantity provided as an allowance):
    - Floor tiles/mastic: 1,000 sf
    - Pipe Insulation (exposed and/or concealed): 1,000 lf
    - Transite Panels: 500 sf Gypsum board/joint compound:1,000 sf
    - Textured Wall/Ceiling Materials:1,000 sf
    - Caulk on perimeter walls: 1,000 lf
- Question 228: CLT at FTUE : 2/FTUE-S-111 calls for a detail through the skylight on drawing MAQ-S-542. Drawing MAQ-S-542 doesn't exist. Please provide.
- Response: The section is a model error and is removed, refer to revised FTUE-S-111 as issued in addendum 34. In addition, an additional note is added for design force for connection between CLT and glulam beam.
- Question 229: Roofing : Should there be a roofing membrane shown on top of the insulation on detail 2/GEN-A-510?
- Response: For RS-02, referenced in detail 2/GEN-A-510, roofing membrane is located below insulation.
- Question 230: Steel : Please confirm the double angle bracing shown on detail 3/MAQ-S-252 occurs only along column line MA. Reference MAQ-S-114.
- Response: Correct, Detail 3 on MAQ-S-252 only applies at grid MA. See key plan on MAQ-S-252.
- Question 231: Steel : Please confirm that the double bracing shown on detail 3/MAQ-S-252 only occurs between the trusses between column lines MA and MC.
- Response: Correct, Detail 3 on MAQ-S-252 only applies at grid MA. See key plan on MAQ-S-252.
- Question 232: Steel : Detail 3/MAQ-S-252 shows 3-tiers of W12x19 however, the additional members shown in the referenced bracing elevation are not called out on the structural framing plan G, MAQ-S-125. Please confirm the additional W12x19 shown on detail 3/MAQ-S-252 only occurs along column MA.
- Response: Correct, the additional horizontal W12X19 on Detail 3 on MAQ-S-252 applies at grid MA only.
- Question 233: Decorative Metal : SILL-01 is listed in the specifications and material list, but is not shown anywhere on the documents. Please advise.
- Response: Refer to revised GEN-A-520 as issued in Addendum 34 clarifying location of SILL-01.
- Question 234: Museum : Please provide the average daily traffic count to the Museum.
- Response: Response will be included in an upcoming addendum.

- Question 235: Geothermal Well Piping : The summary of work states that the .2 contractor is responsible for the geothermal well field. The powerpoint presentation from the Prebid and issued in addendum 30 states that the .2 contractor has the well drilling and pipe installation. Please confirm all of the geothermal well piping, including to the building, is to be supplied and installed by .2 contractor.
- Response: Confirmed, all geothermal well piping is the responsibility of the .2 contractor. Refer to revised spec section 010100 revised to clarify.
- Question 236: STOR-17 Shelves : Per Detail 3/BSO-A-664, there is a note to included the shelves STOR-17. Per the material and equipment lists and specifications, these shelves do not exist. Please provide additional information on the required specification to be provided at this location.
- Response: Keynoted item STOR-17 is part of FFE. It has been removed in the updated sheet BSO-A-664. Refer to revised drawing as issued in Addendum 34.
- Question 237: Interior Concrete Masonry Units Reinforcing Steel & Grout Spacing : Detail 5/GEN-S-315 indicates the reinforcing steel and grout at 1'-4" oc for the interior concrete masonry units. That spacing works good for the standard 16" block but not so good for the 24" units. The 24" units have closed ends and only two openings. They could be reinforced and grouted at 12" on center or grouted solid. Please advise what spacing for reinforcing steel and grout is required.
- Response: Please clarify the referred detail is detail 9 on GEN-S-315. If so, the reinforcement called out is for dowels not for wall reinforcement. Please see architectural drawings for interior masonry wall reinforcement. In addition, it is contractor's option to substitute alternative brick pattern and provide equivalent reinforcement to meet the requirement per document.
- Question 238: Exterior Masonry Wall Reinforcing Steel & Grout Layout : Is there a layout for the reinforcing steel and grout in the exterior masonry walls? We could not find a detail. For the previous bid, we assumed 2'-0" on center.
- Response: Reinforcing steel for back up masonry is delegated design. Refer to 042000 1.4 B.
- Question 239: Missing Specification Section 087113 : Specification Section 087100 references automatic operator Specification Section 087113. This specification has not been provided. Please advise if required.
- Response: Spec section 087113 was issued in bid documents, specifications Volume 1.
- Question 240: Dormitory Entrance Doors DT-01 Fire Rating : Please refer to Drawing MAQ-A710. Dormitory entrance doors DT-01 have a 20 minute fire rating, but the PDVSL vision lite frame is not available as fire-rated. Please advise.
- Response: Refer to revised MAQ-A-710, vision lite revised to 10"x10" as noted in specification section 081400.
- Question 241: Stamped Shop Drawings & Calculations : Typically, stamped shop drawings and formal calculations book is supplied once shop drawings are approved. The verbiage in Specification Section 080350 1.3C may be implying that the first submittal of shop drawings may need to be stamped by the engineer. Please clarify.
- Response: As per spec section 080350, first submittal of shop drawings shall be stamped by an engineer.
- Question 242: Marquee Building Structure for Spray Fireproofing: In regards to spray fireproofing for the Marquee Building, is the structure to be considered restrained or unrestrained?
- Response: Response will be included in an upcoming addendum.

- Question 243: Requested Waiver of Location Requirements for Entrance Systems Installer : Refer to Specification Section 084100, 1.4-B.3. The installer of entrance systems shall maintain offices and repair or service facilities not more than 2 hours travel time from project site. Can this be waived ?
- Response: Requirement can be waived. Refer to revised spec section 084100 as issued in Addendum 34.
- Question 244: TW-D & TW-DD Specifications : Refer to ITV-A-150 Tactical Panel Schedule. Please provide specifications for all the doors, frames and hardware sets for the doors Tagged TW-D & DD. None were provided.
- Response: TW-SD & TW-DD are movable wall types (Single Door/Double Door). Refer to sheet ITV-A-720 for movable wall types and revised ITV-A-702 for door types, frame types and hardware. Refer to PANEL LEGEND on sheet ITV-A-720 for movable wall tag structure. Revised drawings are issued with Addendum 34. Revised specification 087100-B to be updated in upcoming addendum.
- Question 245: ITV-A-150 & ITV-A-700 Window Type Conflict : Refer to ITV-A-150 Tactical Panel Schedule and ITV-A-700: a. Windows are tagged TW-SF on ITV-A150; the same windows are tagged SW on ITV-A-700. Please clarify which is correct. b. If window types are TW-SF, please provide specification.
- Response: Sheet ITV-A-150 don't have windows tags. There are only exterior moveable wall tags on this sheets. Refer to 4/ITV-A-720. TW-SF is a storefront. Windows schedule on sheet ITV-A-700 doesn't include storefronts. Refer to revised Sheets ITV-A-700, ITV-A-702, ITV-A-720, ITV-A-653 as issued in Addendum 34 for clarifications.
- Question 246: Door & Frame Type for Rooms F-139, F-143 and F-144 : Refer to FTU-A-700. The comments column of the door schedule for Rooms F-139, F143 & F144 indicate UL Level 8 bullet resistant door & frames. The door & frame material columns of the door schedule do not reflect bullet resistant doors and frames. Please clarify.
- Response: Refer to revised drawings FTU-A-700 for revised door schedule issued in this addendum.
- Question 247: Slab Waterproofing Details : Please refer to Detail 3/GEN A550: a. Is it the intent to provide WPS-01 sheet waterproofing under the entire slab on grade? b. If so, please provide waterproofing details for the interior column footings.
- Response: Waterproofing is continuous, refer to detail 5 / GEN-A-550.
- Question 248: Foundation Insulation Thickness : What is the thickness of the various types of foundation insulation? Some appear to be thicker than the typical 2".
- Response: Foundation insulation is 2".
- Question 249: Foundation Wall Waterproofing Type : Will 2" Kingspan Type IV 25 psi XPS rigid insulation be acceptable to protect foundation wall waterproofing?
- Response: Acceptable or-equal substitutions will be considered after bid award.
- Question 250: Waterproofing & Air Vapor Barrier Engineering Requirements : Are engineering requirements required for waterproofing or air vapor barrier?
- Response: Bid per project drawings and specifications.
- Question 251: Missing Elevation Detail on ITV-A-606 : Reference Drawing ITV-A-605. There is an elevation detail 10/ITV-A-606 shown between Facade 2 and Building 2. This detail on ITV-A-606 does not exist. Please provide.
- Response: Refer to detail 1/ITV-A-606 for elevation information. Duplicate reference tag 10/ITV-A-605 has been removed from revised ITV-A-605 drawing. Refer to revised drawings as issued in Addendum 34.

- Question 252: Plant Quantity Clarification : There are multiple discrepancies between the Planting Schedule STE-L-510 and the Site Planting Plans STE-L-501 through STE-L-506 (see below). Please clarify if we are to include quantities listed in the planting schedule or the site planting plans.
    - New Harmony Elm Plant Schedule - 13 each Planting Plans - 21 each
    - Princeton Elm Plant Schedule - 56 each Planting Plans - 32 each
    - Karl Foerster Reed Grass Plant Schedule - 6,339 each Planting Plans - 5,096 each
    - Palm Sedge Plant Schedule- 3,656 each Planting Plans- 3,730 each
    - Carex Pensylvanica Sedge Plant Schedule- 58,423 each Planting Plans- 69,085 eac
    - Little Bunny Fountain Grass Planting Schedule - 6,899 each Planting Plans - 5,096 each
    - Shenandoah Switchgrass Planting Schedule - 5,456 each Planting Plans - 5,376 each
    - Northern Red Oak Planting Schedule - 71 each Planting Plans - 74 each
- Response: Please include quantities as shown on the Planting Plans.
- Question 253: Pre-Engineered Metal Buildings Approved Manufacturer : Per the original bid, Bid Addendum #6, Question 90, CECO Building Systems is listed as an accepted manufacturer for the Pre-Engineered Metal Buildings. Referencing Specification Section 133419 METAL BUILDING SYSTEM for the Phase 5 re-bid, CECO Building Systems is not listed in Section 2.1 as an approved manufacturer. Does the prior approval for CECO Building Systems carry over from the original bid to this re-bid? Please advise.
- Response: Refer to revised spec section 133419 as issued in Addendum 34. Ceco Building Systems is an acceptable manufacturer for the Pre-Engineered Metal Buildings.
- Question 254: Rolling Cabinet Manufacturer Product Number Clarification : Reference Specification Section 119020 SPECIALTY EQUIPMENT. SEQ-10 rolling cabinet manufacturer LISTA product number NS0600-0402NA-M does not exist; however, NW0600-0402NA-M does exist. It is assumed the correct product is NW0600-0402NA-M. Please confirm.
- Response: The correct product is NW0600-0402NA-M. Spec 119020 has been updated to reflect this as issued in Addendum 34.
- Question 255: Vault Door Width Requirements for Meeting ADA Door Standard : Vault doors Specification Section 083400, item 2.1.A states that doors must meet ADA standards. Two doors are 3'0" wide and one is 2'11-1/4" wide. Please confirm these door widths meet ADA requirements per specification.
- Response: Refer to revised drawings BSO-A-710 as issued in Addendum 34 for revised Vault door width.
- Question 256: ITV Simulated Trees Design Criteria : Confirm if the following physical design criteria is acceptable for the simulated trees in the ITV.
    - TRN-03A -- 15' tall trees 1. 8'-9' canopy diameter 2. 12"-14" truck base diameter 3. Major limbs starting at 5' above finished floor 4. 7'-8' foliage clearance
    - TRN-03 20' tall tree 1. 10' canopy diameter 2. 18" truck base diameter 3. Major limbs starting at 6' above finished floor 4. 7'-8' foliage clearance
- Response: Refer to revised Specification 119030 as issued in Addendum 34.
- Question 257: 80350 : Spec section 080350 - Please confirm that this specification is NOT requiring the .1 contractor to hire a building envelope consultant to review the current envelope design and/or design any of the exterior envelope materials and details.
- Response: Fabricator, installer and engineer qualifications are per 080350 1.4.

- Question 258: 80350 : Spec 080350 - Please confirm section 1.3C is NOT requiring the .1 contractor to hire a PE for the design/engineering of the building envelope and that the requirement for the PE sealed shop drawings is for the separate trades individual components. For example: The curtainwall contractor will have their own PE sealed shop drawings and the mason will have PE sealed connections/anchorage cut sheets, etc.
- Response: Confirmed, but .1 General Contractor remains responsible for providing fully coordinated exterior building enclosure work.
- Question 260: Masonry : Spec section 042000 2.2A1a calls for normal weight block that is less than 125/cf lbs. A block weighing less than 125 lbs/cf would be a normal weight block. Please clarify.
- Response: A block weighing 125 lbs/cf or more would be a normal weight block. Refer to revised spec section 042000 as issued in Addendum 34.
- Question 261: Transluscent Wall Panels : Exterior wall section 1/BSO-A-511 calls for TWS-01 and references a detail 3/BSO-A-520. The wall section shows z-girts between the translucent wall panels and another wall structure, however, the referenced detail does not clearly indicate the z-girt or the secondary wall structure. Please provide additional details.
- Response: The Z-girts are generally the secondary members. The structure is part of the delegated design items provided by the PEMB Manufacturer and coordinated with the Translucent Wall Panel vendor. BSO - A-520 has been revised to calrify this as issued in Addendum 34.
- Question 262: There are (3) items in the specifications for corner guard, but the only corner guard shown on the plans is CG-02 on detail 4/MAQ-A-123. However, it is not clear on the floor plans where the CG-02 is required. Is corner guard required? If so, please provide locations.
- Response: CG-01A to be used in kitchen/food storage areas unless noted otherwise in QF-Series. CG-02 to be used in loading dock and loading dock corridor. See revised notation on MAQ-A-123.
- Question 263: Privacy Vinyl : GEN-A-806 shows two options for privacy vinyl. This is the only detail in the documents. Is privacy vinyl required on this project?
- Response: Privacy vinyl scope is included at ground floor offices with glass storefronts in MAQ building. Revised MAQ-A-812 and MAQ-A-813 will be issued in upcoming addendum clarifying scope.
- Question 264: DRP-01 : There are details on MAQ-A-740 for DRP-01 green screen and it is listed in spec section 122200, but there are no locations or quantities specified on the drawings. Please advise.
- Response: Refer to 2 / MAQ-A-740 for referenced green screen scope.
- Question 265: Fuel Tanks : Please advise which prime is to pick up the fuel pumps and associated piping for the fuel tanks. Plumbing drawings do not indicate any scope, Electric drawings indicate a Fuel island (MAQ-E-405), and Site Drawing (STE-C-404) indicate tanks, accessory structures and pad is to be by the General Contractor.
- Response: Pad and utility routing to be constructed in Phase 5 to accommodate the fuel tanks, utility connection and tank accessories as shown in Phase 6. Pad design to be submitted under delegated design. Site and utility work is to be completed by .1 General Contractor. Electrical connection is by .4 Electrical Contractor. Refer to revised MAQ-E-405 clarifying electrical scope and removal of fuel island.
- Question 266: Parapet : Parapet wall detail 9/MAQ-S-541 is showing a 4'-0" angle every 3'-0" at the CLT roof deck. This detail is not referenced on any of the roof plans that contain a CLT roof deck. Please advise.
- Response: This detail only applies on the MAQ tower main roof level where CLT deck is used. The detail is not applicable to the roof composited of slab on metal deck.

- Question 267: Addendum 31 spec 020800: Addendum 31 reissued spec 020800 for Asbestos. Page 9 and 10 of that revised spec issued amounts of ACM waterproofing for the different buildings. The amounts listed are significantly different than the amounts called for in the unit prices. Please advise. Also, the revised spec lists a range of 20,000-60,000sf for ACM behind face brick. We need to know an exact value to include in our pricing.
- Response: If the waterproofing is only with Spandrel beams and door/window lintels, then the quantity is estimated to be 20,000 sf. The 60,000 sf estimate assumes all masonry walls coated with ACM waterproofing. The removal of exterior walls will need to be performed controlled demolition procedures, quantity should not affect the overall value. Concrete and masonry structures contaminated with ACM waterproofing which cannot be segregated shall be disposed off-site at landfills permitted to accept such waste. 60,000 sf of ACM waterproofing should be considered for bidding purposes. Refer to revised spec section 010250 as issued in Addendum 34.
- Question 268: Soils : Please confirm the intent is to lose all excess soil on site. This would include spoils, surplus excavated materials that is unsuitable for fill per spec 310000 1.2B12, and any other soils.
- Response: Confirmed.
- Question 269: 310901: Spec 310901 is labeled as monitoring of structures and "utilities", however, "utilities" is not mentioned elsewhere. Please confirm "utilities" don't need to be monitored.
- Response: The contractor is responsible for protection of utilities to remain and should determine if monitoring is necessary to confirm the utilities to remain will not be damaged by the construction means and methods. Section 310901 outlines the minimum monitoring requirements and the contractor may elect to perform additional monitoring to confirm the utilities are protected. Refer to sections 1.4.I, 1.7.A, 1.9.A
- Question 270: Water Line : STE-C-701 calls for 8" water line heading down to new stables, however, drawing STE-C-702 calls this to be a 6" line. Please advise.
- Response: The water line to the stables is to be a combined 8” line. Please refer to the revised STE-C-702 – Utility Plan-2.
- Question 271: Splash Pad : Please confirm how many of the Splash Pads per 4/STE-L-901 apply on this project. There is only 1 shown on STE-L-104D and it says "Typ", but there isn't any information to confirm how many there are.
- Response: The splash pad is to be removed from the STE-L-901 sheet. There is no splash block to be proposed on this project. Refer to revised drawing as issued in Addendum 34.
- Question 272: Splash Pad : Detail 4/STE-L-901 in addendum 30 calls for the splash pads to be connected to the storm drain system. Storm drain piping is not shown on the civil drawings to be connected to the splash pads. Please advise.
- Response: The splash pad is to be removed from the STE-L-901 sheet. There is no splash block to be proposed on this project. Refer to revised drawing as issued in Addendum 34.
- Question 273: Storm drain piping : The plumbing drawings seem to infer that there are storm drain pipes on the north side of the Marquee building for the parts of the building that are only 1 story slabs on grade (mainly the lecture halls), however, the civil drawings don't show any piping for these. Please advise.
- Response: The STE-C-601 drawing shows all underground storm lines that the plumbing drawings show required to connect to the storm pipe network.

- Question 274: MSE Wall : Per page 16 of the geotech report, onsite soils are not suitable as backfill for the MSE walls. Please confirm PennDot 2A stone imported will work.
- Response: PennDOT 2A conforms to the recommendations for MSE wall backfill in the Geotech Report.
- Question 275: Light Pole Bases : Please confirm light pole bases are by electrical prime.
- Response: Confirmed, light pole bases are by electrical prime (.4 contract). Refer to revised spec section 010100 as issued in Addendum 34.
- Question 276: Site : Please confirm items 31 and 32 on drawing STE-C-500 are not applicable since they can't be quantified and priced for the hard bid.
- Response: Information has been provided on proposed utilities and connections to existing utilities. As noted, the contractor is to accept the site as is and should provide a price for inspection of existing field conditions and correlation of conditions to drawings
- Question 277: STE-C-304 : STE-C-304 calls for the water line to the outdoor shooting range to be removed. The new utility plan doesn't show a new water line. Please confirm.
- Response: Existing service line from pump house near range is confirmed to be removed after disconnection of existing site services. Site will be serviced by new pump house.
- Question 278: Museum : What is the current gas service being used for in the Museum?
- Response: Professionals do not have incoming gas service information available for the Museum. Assumption is that current gas service is to remain and stay the same before/after construction.
- Question 279: Gas Piping: Please confirm the gas company will be installing the new piping and relocating the existing piping. The .1 contractor is to only provide the excavation and backfill.
- Response: Confirmed.
- Question 280: STE-C-651 : Drawing STE-C-651BMP Specifications 2.F and 2.G call for a Licensed Professional to oversee these items. Please elaborate on what licensing this person needs to have.
- Response: Licensed professional as defined by Chapter 102. Licensed professional—Professional engineers, landscape architects, geologists and land surveyors licensed to practice in this Commonwealth.
- Question 281: Water meter pit : Please provide details for water meter pit.
- Response: Refer to revised STE-C-751 as issued in Addendum 34 for the Water Meter pit details.
- Question 282: Builders Risk : Due to this project having CLT, the Builders Risk application is highly detailed. The application requires that we provide the CLT experience of the owner and of the architect including listing of projects. Is this something that can be provided?
- Response: Completed CLT Projects by Architect (SOM): San Mateo County Office Building 3 SOM New York Office CLT stair Confidential Organization in Switzerland
- Above list is specifically for CLT projects, completed Mass Timber Projects include: Billie Jean King Main Library Cathedral of Christ the Light High Line – Moynihan Train Hall Connector
- Owner does not have experience using CLT.
- Question 283: CLT : Spec section 061719 - 2.4 - A - 2 indicates the top coats of the CLT are shop-applied however, section 3.2 - F indicates field application. Please confirm both are acceptable.
- Response: Refer to revised spec section 061719 clarifying finish application requirements.
- Question 284: Geotech Report : The geotech report section VII recommends that for strip footings, at the transition from soil to weathered rock or bedrock, the rock surface should be chipped/excavated at least 2 feet

and backfilled with structural fill for a distance of at least 10 feet into the rock section of the footing to provide a cushion layer. Please confirm this is to be followed.

- Response: Confirmed.
- Question 285: Soil Testing : Please confirm the test reports in 329113 1.4B are only for the planting soil mixes.
- Response: 329113 1.4B are for Planting soil mixes and bioretention soil mix.
- Question 286: Soil Testing : Section 329113 1.4A3 notes that the planting mixes should be tested every 200 CY. However, the testing agencies listed in 1.4B6 are from Maine and Massachusetts. Please advise how we are to test each 200 cy.
- Response: GC to propose the means and methods of testing. Please provide one test every 5,000 cubic yards per 1.323. Refer to revised 329113 as issued in Addendum 34.
- Question 287: Grinder Pump : Please provide information on the grinder pump on the force main.
- Response: Grinder pump to be delegated design and can be duplex or simplex as determined by design. Refer to STE-C-752 for DTMA grinder pump details.
- Question 288: As part of the Builders Risk application for a CLT project, there is a need to know the Structural Engineers experience with CLT including list of projects. Can this be provided?
- Response: Completed CLT Projects by Structural Engineer (SOMS): San Mateo County Office Building 3 SOM New York Office CLT stair Confidential Organization in Switzerland
- Above list is specifically for CLT projects, completed Mass Timber Projects include: Billie Jean King Main Library Cathedral of Christ the Light High Line – Moynihan Train Hall Connector
- Question 289: 80350 : 080350 section 1.4B - Please confirm that we DON'T need to hire an overall PE to satisfy this section and that the engineered shop drawings for each trade will suffice.
- Response: Confirmed, but .1 General Contractor remains responsible for providing fully coordinated exterior building enclosure work.
- Question 290: 80350 : Spec 080350 section 1.5A1 calls for a special 10 year warranty for the exterior enclosure. Please confirm this doesn't apply and that the warranties called out for each individual component of the exterior enclosure will suffice.
- Response: .1 General Contractor is responsible for providing warranty described in spec section 080350 section 1.5 A1. Note that this warranty is concurrent with warranty requirements on individual components.
- Question 291: Fuel Tanks : Drawing STE-C-404 calls for tanks, accessories, and pads to be delegated design. In looking at the Phase 6 documents, there are drawings and specs for the tanks and pads. Please advise.
- Response: Pad and utility routing to be constructed in Phase 5 to accommodate the fuel tanks, utility connection and tank accessories as shown in Phase 6. Pad design to be submitted under delegated design.
- Question 292: Wateproofing : Spec section 071600 - 2.1 - B - 1 is calling for independent SEM photographs. Please confirm this performance requirement is per manufacturer provided data and SEM photographs are not required in the field.
- Response: Confirmed.
- Question 293: Specialties: MEQ-07 is listed as "not used" in spec section 117710, but it is shown on (3) drawings, BSO-A-658, 662, and 663. Please advise.
- Response: This Keynote has been removed. Refer to AV drawings for details on Displays. Refer to revised Drawings BSO-A-658, BSO-A-662, and BSO-A-663 as issued with Addendum 34.

- Question 294: Window Treatments : Please provide locations for WTR-03 from spec section 122100. There are details for WTR-03 on BSO-A-521, but no locations are shown.
- Response: The detail depicts typical condition for all windows. For further clarity refer to updated sheets BSO-A-410, BSO-A-411, BSO-A-420, BSO-A-421 for WTR-03 locations as issued in Addendum 34.
- Question 295: Steel : There are various steel columns that do not fall on column grid lines. Please see MAQ-S-110 between column lines RB and RC. The column schedule doesn't have any columns at RB/R0 or RC/R0. The same occurs for the rest of the columns between column lines RB and RC. Please provide updated structural drawings where columns fall on a gridline and all columns are defined in the column schedule.
- Response: Please see the column marks on foundation plans, MAQ-S-100, MAQ-S-101, & MAQ-S-102, and their size on the column schedule as ITV Col., STAIR Col. A, & STAIR Col. B.
- Question 296: Steel : In reference to question/response 160 on addendum 32, the question refers to the structure that the range baffles are suspended from, not the suspension system itself (Q/R162 Add.32). Reference drawing 1 & 2 on FTU-A-701 along elevation 14'-0". Is this a slab on deck? Suspended unistrut grid? Please define this structure.
- Response: Range Baffle supports is to be suspended from primary/secondary roof structure of pre-engineered metal building. Roof system is RS-03 as indicated on FTUE-A-103, refer to 3 / GEN-A-510.
- Question 298: MEQ-07 : Specialties : MEQ-07 is listed as "not used" in spec section 117710, but it is shown on (3) drawings, BSO-A-658, 662, and 663. Please advise.
- Response: Keynote removed. Refer to AV drawings for details on Displays. Refer to revised Drawings BSO-A-658, BSO-A-662, and BSO-A-663 as issued in Addendum 34..
- Question 299: Over Excavation : Addendum 32 response 216 notes to "indicate the assumed quantity" of the overexcavation. Where are we to indicate this amount?
- Response: Contractors should indicate their over-excavation amount as a separate line item and note their assumptions on this quantity or make reference to the geotechnical report recommendation, as necessary.
- Question 300: BESO Storage Containers : Spec section 010100 calls for .1 contractor to relocate Beso storage containers. Please clarify what these are as we are not able to locate on drawings. Also, this same scope is listed in the Phase 6 scope. Please advise.
- Response: Response will be included in an upcoming Addendum.
- Question 301: Temporary Heat Unit Price : A temporary heat unit price was added to the schedule. There are many factors that would go into this unit price that aren't provided. The term "Temporary Heat Day" needs to be defined. At what point in the schedule are we? How many buildings are under construction for this unit price? How much SF needs to be heated? What trades need temp heat at this time?
- Response: Each prime is to include 135 days of temporary heat after building enclosure as part of bid, as per spec section 015000, 1.4 J. Temporary heat day definition is at discretion of bidders under means and methods of construction. Unit price modification was to allow for further adjustment following award and during construction.
- Question 302: Temporary Heat : With the inclusion of the temporary heat day unit price, are each prime still to include the 135 days of temporary heat?

- Response: Yes, each prime is to include 135 days of temporary heat after building enclosure as part of bid, as per spec section 015000, 1.4 J. Unit price modification was to allow for further adjustment following award and during construction.
- Question 303: Temp Heat : Addendum 30 response 10 for .2 contract and Addendum 32 response 225 for .1 contract contradict themselves. It has been clarified that the HVAC contractor is responsible for temporary heat after building enclosure. If this is so, there is no need for other primes to include 135 days of temporary heat for after building enclosure per 015000 1.4J. Please clarify.
- Response: Each prime should still include 135 temporary heat days in bids, specified after building enclosure, in order to complete work that requires temporary heat , as per spec section 015000, 1.4 J. .2 HVAC contractor is responsibile for overall building temporary heat after building exposure.
- Question 304: Site Electric : Site Electric - It is been clarified that the .1 contractor owns the electrical duct bank for the incoming service to within 5' of the building. Since the electric service can't really stop within 5' of building, please confirm if that scope stops at the transformers or the main switchboard
- Response: Regarding electrical service, electrical feeders to generator, building feeds, site lighting, telecommunications and all other electrical duct banks: -The .1 General Contractor is to provide excavation, backfill, concrete, concrete encasement, manholes, vaults and any associated site work -The .4 Electrical Contractor is responsible for laying conduit and pulling cabling. -The utility will provide transformers, cabling from poles to the transformers and laterals to the switchgear or CT cabinet Refer to revised 010100 as issued in Addendum 34.
- Question 305: Site Electric : Since the .1 contractor is to provide the incoming electric service only, please confirm the ductbank for the site electric after main switchboard is by .4 contractor. For example, the .1 contractor has the ductbank and service going to the Auto/B&G building, but the .4 contractor would have any ductbank and feeders going from the Auto/B&G building to the Beso building.
- Response: Regarding electrical service, electrical feeders to generator, building feeds, site lighting, telecommunications and all other electrical duct banks: -The .1 General Contractor is to provide excavation, backfill, concrete, concrete encasement, manholes, vaults and any associated site work -The .4 Electrical Contractor is responsible for laying conduit and pulling cabling. Refer to revised 010100 as issued in Addendum 34.
- Question 306: Site Electric : Please confirm the .4 contractor owns all of ductbank, feeders, manholes/handholes for the generator site distribution.
- Response: Regarding electrical service, electrical feeders to generator, building feeds, site lighting, telecommunications and all other electrical duct banks: -The .1 General Contractor is to provide excavation, backfill, concrete, concrete encasement, manholes, vaults and any associated site work -The .4 Electrical Contractor is responsible for laying conduit and pulling cabling. Refer to revised 010100 as issued in Addendum 34.
- Question 307: Site Electric : Please confirm the .4 contractor owns the ductbank and any structures for the future electric vehicle charging.
- Response: Regarding future vehicle electric charing, responsibilities are similar to that for site lighting and other electrical sitework: -The .1 General Contractor is to provide excavation, backfill, concrete, concrete encasement, manholes, vaults and any associated site work -The .4 Electrical Contractor is responsible for

laying conduit and pulling cabling, and providing any equipment required. Refer to revised 010100 as issued in Addendum 34.

- Question 308: Site Telecommunications : Please confirm the .4 contractor has all of the ductbank, conduit, handholes/manholes/vaults for the site telecoms.
- Response: Regarding electrical service, electrical feeders to generator, building feeds, site lighting, telecommunications and all other electrical duct banks: -The .1 General Contractor is to provide excavation, backfill, concrete, concrete encasement, manholes, vaults and any associated site work -The .4 Electrical Contractor is responsible for laying conduit and pulling cabling. Refer to revised 010100 as issued in Addendum 34.
- Question 309: Steel : Please provide axial forces for the auditorium truss member schedule on MAQ-S-515.
- Response: The design axial forces are documented in the truss elevations in detail 1 and 2 on MAQ-S-515. Refer to revised sheet as issued in addendum 34 for clarification.
- Question 310: Steel : Please provide the axial forces for the web members of the auditorium trusses shown on MAQ-S-515.
- Response: The design axial forces are documented in the truss elevations in detail 1 and 2 on MAQ-S-515. Refer to revised sheet as issued in addendum 34 for clarification.
- Question 311: Steel : Are standard F3125 threaded connection bolts acceptable in lieu of slip critical bolts on steel connections?
- Response: ASTM F3125 bolt is acceptable to be used in slip-critical type connection where is required in documented drawings.
- Question 312: Motorized / Manual Shade Clarification : Per Specification Section 122100, shade types ending in 'A' are indicated as manual shades and shade types 1, 2, and 3 are indicated as motorized. On RCP MAQ-A-412, WTR-01A manual shades are called out in Open Work Area M-0318; however, Electrical Systems Plan MAQ-E-112 shows power for motorized shades at these windows. This same issue occurs in Auditorium A M-0220A, 60 Person FlatM-1002, 60 Person Flat M-1004, PCO Lab M-1006, 60 Person Lecture Hall M-1001, 60 Person Lecture Hall M-1003, Executive Lecture Hall M-1005, 60 Person Flat M-1008, 60 Person Computer Flat M-1010, Cadet Lecture Hall M-1007, 60 Person Lecture Hall M-1009, 60 Person Lecture Hall M-1011, Large Dining Hall on 1st floor between column lines R23 & R30, and Staff Dining Area M-1208. The opposite issue occurs in the Dormitories on Floors 2-4. RCPs show WTR-01 motorized shades; however, no power is shown on the electrical power systems plans in these rooms. Please confirm which shades are to be provided at these locations.
- Response: WTR-0X refers to manual shade; WTR-0XA refers to motorized shade. See specification section 122100 2.3 H as shown in addendum #34. Shades to be motorized in classrooms, the cafeteria, and the auditorium, as shown in E-Series drawings. Shades to be manual at all other locations, including all instances on floors 2-4 and level 0 offices. See revised window shade tags on MAQ-A-412, 413, 423, 669, 675, 676, 677, 678, 684, and 685 as issued in Addendum #34.
- Question 313: Responsibility for Drawing MAQ-QF-113 Table Items : The table on Drawing MAQ-QF-113 lists Operator Furnished Operator Installed (OFOI) items; however, the specification does not reference these items as not in contract. Please advise if these items are to be included with the Food Service package or if they should be excluded.
- Response: All items marked “OFOI” on MAQ-QF-113 are to be excluded from construction package.

- Question 314: Responsibility for Pirahna Hood Fire Suppression Systems #98 & #148 : Per Summary of Work Specification Section 010100-1, 1.5.B.10.u, the hood systems and associated fans, ducts and hood are by the .2 HVAC contractor. Please confirm if the hood systems provided by the .2 HVAC contractor includes the Piranha hood fire suppression systems #98 and #148 as outlined in the 114000 Food Service Equipment specification.
- Response: Refer to revised 010100 spec section as issued in Addendum 34. Kitchen hood systems are provided and installed by KEC under .1 contract and connecting ductwork is by .2 HVAC contractor. Similarly, hood suppression system shall be provided by KEC under .1 General Contractor. Connections from hoods to building fire suppression system to be provided by .3 contractor.
- Question 315: Specification Section 114000, Item #10 Quantity : Specification Section 114000 calls for a quantity of 18 for Item #10; however, the plan drawing MAQ-QF-113 is calling for a quantity of 16. Please confirm the correct quantity.
- Response: Provide 16 units #10 Mobile Dry/Non-Food Storage Shelving Unit. Revised 114000 specification has been provided in Addendum 34.
- Question 316: Specification Section 114000, Item #16 Quantity : Specification Section 114000 calls for a quantity of 9 for item #16; however, the plan drawing MAQ-QF-113 is calling for a quantity of 9, but is showing 10 units drawn/tagged. Please confirm the correct quantity.
- Response: While 10 images of area floor troughs show on two sheets, for this item, only (9) units are tagged and the schedule reflects (9) units. Provide (9) #16 Electric Cord Reels.
- Question 317: Specification Section 114000, Item #26 Quantity : Specification Section 114000 calls for a quantity of 5 for Item #26; however, the plan drawing MAQ-QF-113 is calling for a quantity of 6. Please confirm the correct quantity.
- Response: Provide (6) #26 Hand Sink. Revised 114000 specification has been provided in Addendum 34.
- Question 318: Specification Section 114000, Item #38 Quantity : Specification Section 114000 calls for a quantity of 9 for Item #38; however, the plan drawing MAQ-QF-113 is calling for a quantity of 8. Please confirm the correct quantity.
- Response: Provide (8) #38 Commercial Waste Container model FG263200GRAY and (1) model 1779734 (located under #87 Three Compartment Powerwash Sink. Revised 114000 specification has been provided in Addendum 34.
- Question 319: Responsibility for Specification Section 114000, Item #131 : Specification Section 114000 calls for Item #131 to be by Vendor; however, the plan drawing MAQ-QF-131 is calling for this item to be by Contractor. Please advise if this item should be included in our proposal.
- Response: #131 Juice Dispenser is By Vendor//OFOI. Also #14 Central Water Filter Assembly is CFCI. MAQ-QF-113 Food Service Equipment Schedule has been provided in Addendum 34.
- Question 320: Window Type Clarificiation: Drawing ITV-A-700 Window Schedule, SW-03A to 03E calls out for a fixed window. Specification Section 085602-8, Section 2.1.A.1 calls out a operable window. Please clarify.
- Response: Refer to revised drawings ITV-A-700, ITV-A-110, ITV-A-603, ITV-A-606, ITV-A-652 and specification 085602 as issued in Addendum 34 for clarifications.
- Question 321: BSO-05 ESS Workbench Model & Countertop Material : Reference Specification Section 119020 SPECIALTY EQUIPMENT, Section 2.5 for the BSO-05 ESS workbench. The listed model # for

Tennsco is EB-2-3072S, which is for a workbench with a steel countertop. Model # EB-2-3072P is for a workbench with a plastic laminate countertop. Confirm correct model # and that plastic laminate is the desired top material.

- Response: Refer to revised Specification 119020 Specialty Equipment for clarified top material - stainless steel.
- Question 322: Planting Soil Requirements : After speaking with amended soil vendors, the existing topsoil on this site should be more than sufficient to effectively grow the plantings described in the landscape plans. The required soil mix in Specification Section 329113 will have to be imported at approximate quantities of 20,000 cubic yards. This will be a substantial cost and will have an effect on the schedule. Please confirm this amended planting soil is required and is to be included as part of the base bid.
- Response: If the on-site soil is sufficient, please provide soil test reports to waive the amendment.
- Question 323: Planting Soils Testing Requirements : Addendum 20, Response 856 revised the Specification Section 329113 Planting Soils Section 1.4A.3. from one test every 200 cubic yards to one test every 5,000 cubic yards. Please confirm that this is still acceptable.
- Response: Confirmed. Refer to revised 329113 as issued in Addendum 34.
- Question 324: Planting Soils 1.4.B.6 Type : Addendum 20, Response 857 revised Specification Section 329113 Planting Soils 1.4.B.6. to include Penn State Department of Agriculture to be approved for both A. and B. Please confirm that this is still acceptable.
- Response: Confirmed. Refer to revised 329113 as issued in Addendum 34.
- Question 325: Cantilever Slide Gates : Please confirm that there are no structural cantilever slide gates to be included in the project.
- Response: Confirmed. Disregard spec section.
- Question 326: Ultrasonic Cleaner Specification : Provide a specification for the ultrasonic cleaner required in the SEQ-06 SS Vented Ultrasonic Workstation per drawing details 5 & 6 on BSO-A-770.
- Response: Refer to Keynote SEQ-01 on revised Sheet BSO-A-770 as issued in Addendum 34. Refer to specification 119020-5 for Ultrasonic Cleaner specification.
- Question 327: Work Station Dimensions : Reference Specification Section 119020 SPECIALTY EQUIPMENT, Sections 2.8, 2.9, and 2.10 and drawings BSO-A-770 and FTU-A-770. The width and depth dimensions for the various workstations are different in most cases between the drawings and specification noted above. Which dimensions are correct?
- Response: See revised specification 119020 SPECIALTY EQUIPMENT as issued in Addendum 34 that conforms to the drawing sizes.
- Question 328: Excavation & Backfill within 5' of Building Footprints : Addendum 29, Response 92 says 0.1 Contractor is responsible for all excavation and backfill for all site utilities 5' outside building footprints. Please confirm 0.2, 0.3, and 0.4 contractors are to have all excavation and backfill within 5' of building footprints, as the response does not address work within 5' of the building.
- Response: .2 HVAC, .3 Plumbing and .4 Electrical subcontractors are responsible for excavation and backfill within 5' of building footprints as required for each of their respective scopes.
- Question 329: Request for a Water Meter Pit Detail : Can a water meter pit detail be provided?
- Response: Refer to revised STE-C-751 as issued in Addendum 34 for the Water Meter pit details.

- Question 330: Utility Plan Water Line Main Size : Please confirm water line shown on utility plan Page 92 continuing to Page 93 is 8" main. On Page 92 it shows 8" main, and on Page 93 it shows 6" main. Please advise.
- Response: The water line to the stables is to be a combined 8” line. Please refer to the revised STE-C-702 – Utility Plan-2 as issued in Addendum 34.
- Question 331: STE-C-706 DIP Water Line Size : Utility Plan STE-C-702 shows a combined 6" DIP water line. Utility Plan STE-C-701 shows the continuation of the water line as combined 8" DIP water line. Please confirm which is correct.
- Response: The water line to the stables is to be a combined 8” line. Please refer to the revised STE-C-702 – Utility Plan-2.
- Question 332: Request for Sanitary Grinder Pump Detail : Can a detail be provided for the sanitary grinder pump?
- Response: Refer to detail 6 / GEN-P-504 for sanitary grinder pump detail.
- Question 333: Topsoil Stockpiling : Due to the large quantity of imported planting soils, there will be an excess of topsoil. Please confirm this topsoil can be stockpiled on site.
- Response: Topsoil should be re-used wherever possible, including in planting soil. Any additional topsoil shall be distributed/stockpiled on site.
- Question 334: Prime Contractor Qualification Statement for Joint Ventures : Refer to the RFP, Page 10, Item 1.11.D. Please clarify how the DGS would like to see the Prime Contractor Qualification Statement submitted for a joint venture and not as separate entities, specifically, as it relates to the following:
    - Appendix F - Section 2 Experience and Performance
    - a. 2.1.a. Annual construction volume
    - b. 2.1.b Percentage of work typically performed with its own workforce
    - c. 2.2.a Project experience and references (is the JV limited to three reference projects, or should there be three projects for each member of the JV
    - d. 2.3.a EMR for the past three years
    - e. 2.3.b LWDIR for past three years
    - f. 2.3.c RIR for past three years
- Response: Part 1.11.D is clarified as follows:
    - D. The Prime Contractor Qualification Statement (Appendix to this RFP) shall be submitted as follows:
    - 1. If this is first time the Joint Venture is working together, file a separate Qualifications Statement for each entity; or
    - 2. If the Joint Venture has previous experience, file the Qualifications Statement as a “firm.”
- Question 335: Simulated Tree Crown (Canopy) Shape : Please confirm the desired shape of the crown (canopy) for the five (5) TRN-03 & TRN-03A Simulated Trees (i.e. full round, irregular).
- Response: See updated specification 119030 TRAINING EQUIPMENT for updated requirement for Simulated Trees.
- Question 336: Simulated Trees Approved Manufacturer : Please confirm if Plantscape Inc. Commercial Silk International is an approved manufacturer for the TRN-03 & TRN-03A Simulated Trees.

- Response: See updated specification 119030 TRAINING EQUIPMENT for updated requirement for Simulated Trees.
- Question 337: Engineering of Simulated Trees : Please confirm if the Simulated Trees need to be structurally engineered.
- Response: See updated specification 119030 TRAINING EQUIPMENT for updated requirement for Simulated Trees.
- Question 338: Request for Aluminum Plate Wall Panel Manufacturer : Please provide a manufacturer for the 1/4" aluminum plate wall panels shown on GEN-A560 and GEN-A562.
- Response: Referenced 1/4" aluminum plate is a custom fabrication, not a manufactured product. Refer to spec section 057000.
- Question 339: Clarifications for Specification Section 020800, Note #2 : Please refer to asbestos abatement Specification Section 020800, Page 9: 1. Note #2: Are these the quantities we are to include in the base bid. 2. Note #2 includes a range of 20,000-60,000 sf for waterproofing of structural and masonry components behind face brick. For bidding purposes, can a specific quantity be provided so that bids are apples to apples? We recommend using 20,000 sf.
- Response: If the waterproofing is only with Spandrel beams and door/window lintels, then the quantity is estimated to be 20,000 sf. The 60,000 sf estimate assumes all masonry walls coated with ACM waterproofing. The removal of exterior walls will need to be performed controlled demolition procedures, quantity should not affect the overall value. Concrete and masonry structures contaminated with ACM waterproofing which cannot be segregated shall be disposed off-site at landfills permitted to accept such waste. 60,000 sf of ACM waterproofing should be considered for bidding purposes.
- Question 340: Proposed Substitute for 8" Slate on STE-A701 & STE-A702 : Please refer to Addendum 31, Question 136. Subcontractors cannot provide slate in the thicknesses shown on STE-A701 and STE-A702; therefore, we will not be able to get pricing for 8" slate. We recommend changing the material to ST-02, absolute black granite. Please advise if this is acceptable.
- Response: Substitutions will not be considered prior to award.
- Question 341: Pre-engineered Metal Building Manufacturer : Is Nucor Building Systems an acceptable pre-engineered metal building manufacturer?
- Response: Refer to revised spec section 133419 as issued in Addendum 34. Nucor Building Systems is an acceptable manufacturer for the Pre-Engineered Metal Buildings.
- Question 342: Insulated Metal Roof & Wall Panel Manufacturer : Is Kingspan Insulated Metal Panels System an acceptable insulated metal roof and wall panel manufacturer?
- Response: Acceptable or-equal substitutions will be considered after bid award.

.2 CONTRACT

- Question 36: HVAC-19: Drawing GYM-M-800 : HVAC-19: Drawing GYM-M-800: This drawing was to be issued in Addendum 29/30 but was not; regarding SOO for G-DHU-1.
- Response: GYM-M-800 was issued with Addendum 32.
- Question 37: HVAC-20: Constant Airflow Regulator General Note A. : Constant Airflow Regulator General Note A. Provide Constant Airflow Regulator for every supply and exhaust connection is not consistent as Drawings MAQ-M 140,141,143,150, 151,152,153 state: the Constant Airflow Regulator is to be installed in

every supply. Verify this is the intent. ASLO can the Constant Airflow regulator eliminate the need for balancing dampers?

- Response: Constant airflow regulators shall be provided on every supply and exhaust rconnection as indicated on the plans and air riser diagrams MAQ-M-400/401/403. Plan sheet notes amended for clarity and issued in Addendum 34. Manual balance dampers are not required where a constant airflow regulator is installed.
- Question 38: HVAC-21: Fire Damper Illustration : Are all Fire Damper locations shown on the Contract Documents?
- Response: Fire dampers shall be provided as shown on plans and to comply with spec section 233130.3.1.B.14 Fire- and Smoke-Rated Partition Penetrations: Where ducts pass through interior partitions and exterior walls, install appropriately rated fire, smoke or combination fire and smoke dampers as governed by Building Code and AHJ, including sleeves, and firestopping sealant.
- Question 39: HVAC-22: Ceiling Access Doors : The ceiling access doors shown on the RCP appear coordinated with mechanical equipment above inaccessible ceilings which the .1 Contractor is responsible for providing. If additional ceiling access doors are required and denoted through the MEP/FP coordination drawing process who shall provide the additional access doors?
- Response: Additional access doors required due to MEP/FP coordination would be provided by the .1 Contractor.
- Question 40: HVAC-23 Specification 010100 Summary of Work : Specification 010100 Summary of Work, Section 1.5 B. General Construction (.1) Contract: para. 10. U. Kitchen and cafeteria equipment, excluding hood systems and associated fans, ducts and hood by the .2 HVAC contractor. Section C. HVAC Construction (.2) Contract: para 11. Kitchen hood systems including hood, ductwork, exhaust fans and controls. These specialized kitchen system hoods and controls are specified within 11 40 00 Foodservice Equipment with notation that the Mechanical Contractor shall duct and connect to. Confirm the Kitchen hood systems (#81 Dishwasher Pant-Leg Vent & #97 Exhaust Hood) are being provided and installed by KEC and connecting ductwork is by .2 HVAC Contractor.
- Response: Confirmed, kitchen hood systems are provided and installed by KEC under .1 contract and connecting ductwork is by .2 HVAC contractor. Refer to revised 010100 spec section as issued in Addendum 34.
- Question 41: Temporary Heat : TEMPORARY HEAT - We request that the Professional wholly reconsider the temporary heating specification. There is no way an HVAC contractor can remotely begin to estimate the costs for temporary heat for this project. For example, Specification 015000,1.4, D "After the building, buildings or portions thereof are enclosed." How are we supposed to quantify that when there are several different buildings? There are no discrete milestone dates at all, let alone for "portions thereof" for all/any buildings, so how could we possibly quantify how much area of a building and at what time of year we would need to provide heat? This could be a monumental cost depending on what areas of what buildings get completed on what date. We don't know this at bid time, nor do we have any control over this once the project starts. To bid temporary heat, we will need the following information: 1. Enclosure date of every building and/or portions of a building that we will be expected to heat. 2. Total square feet of every building and/or portions of a building that we will be expected to heat. 3. Thermal loss/gain information for every building and/or portions of a building that we will be expected to heat. Alternatively, since the .1 GC produces the

project schedule and has direct control over building enclosure dates and enclosure quality, make temporary heat their responsibility. Any experienced General Contractor knows where to rent heating equipment.

- Response: Temporary heat provision should be bid at discretion of bidders as described in spec section 015000.
- Question 42: TEMPORARY HEAT - Specification 015000, 1.4, J - directs us to ".include 135 calendar days of temporary heat after building enclosure." Since prior portions of the specifications state ".building, buildings or portions of buildings".what is this 135 calendar days supposed to represent? Is it the entire Marquee building? Is it portions of the Marquee building and all of the Firearms building? Clearly state what this 135 days is to cover, or make it 135 days for each building, or clearly define what "portions of buildings" this 135 days is to cover. There is too much ambiguity in stating 135 days. One day of heating the entire Marquee building is radically different than one day of heating a portion of the building. One day heating several building is radically different than one day of a single building. We need to be given something quantifiable to accurately bid this effort.
- Response: 135 temporary heat days are meant to be included for work occurring following building enclosure for work requiring temporary heat as described in spec section 015000. Temporary heat day definition is at discretion of bidders under means and methods of construction.
- Question 43: Ventilation, Dehumidification and Cooling : VENTILATION, DEHUMIDIFICATION and COOLING - Please reconsider a recent response to question 224 (addendum 32) Up until now, this was correctly the responsibility of the .1 contractor. Question 224 is written in a way that implies that the permanent system will be available. The full permanent system is typically only available near the end, and if it is ready early the building is typically too dirty to run the permanent system. We cannot run the permanent system while drywall is being sanded and rooms are being painted. Temporary conditioning is required to be maintained throughout the duration of the job, so whether or not the permanent system is available is irrelevant. The response to question 224 (addendum 32) now makes the .2 contractor responsible for ventilation, dehumidification and cooling. There are no products that the .2 contractor uses that require significant ventilation, dehumidification and cooling. Addressing them each.1. Ventilation - There are no products that the .2 contractor uses that require ventilation. Ventilation might be needed if the .1 contractor is using something that produces an objectionable or harmful odor, but the .2 HVAC contractor does not know what/when/where/how much that will be. To bid ventilation, we need to know the following: MSDS sheets of the product requiring the ventilation, cubic feet of area in which the product will be used, duration in hours the product will be used, air exchange rates and/or CFM requirements for the ventilation equipment for that specific area for a specific substance. 2. Dehumidification - There are no products that the .2 contractor uses that require specific humidity controls or conditions. The .1 contractor might need dehumidification for application and/or final protection of certain finishes such as drywall mud, paint, epoxy, terrazzo, wood flooring, wood cabinets, etc, but we have no idea what environmental conditions will be required for each of these finishes, nor do we know where in a certain building or when in a certain building each of these finishes will happen. To bid dehumidification, we need to know the following: A list of products, by room, showing product name, environmental requirements for application, environmental requirements for long term protection, and the amount of water vapor given off by the curing of the specific product. 3. Cooling - There are no products that the .2 contractor uses that require cooling. The .1 contractor might need cooling to facilitate application/protection of something, but we have no clue what/when/where/how much that will be.

To bid cooling, we need to know the following: A list of products, by room, showing product name, maximum temperature for application, maximum temperature for long-term protection, application date and heat loss/gain information. Please refrain from RFI responses containing ".coordinate during construction." as this does not provide quantifiable direction. We are to provide a lump sum bid price on bid day, and therefore we need to be able to quantify everything.

- Response: .1 General Contractor is responsible for temporary heating, cooling and dehumidification as per 015000 1.4 K. This response supersides response to question 224 as issued in Addendum 32.
- Question 44: Unit Pricing HVAC: UNIT PRICING - If the Professional insists on making Ventilation, Dehumidification and Cooling the responsibility of the .2 contractor, and if all of the specific requested information is provided to make bidding these items possible, then individual unit prices need to be added to the HVAC Unit Price schedule for Ventilation, Dehumidification and Cooling as these are in very limited way the same thing and typically never occur from the same piece of temporary equipment.
- Response: Per response to question 43 for .2 contractor above, responsibility for temporary ventilation, cooling and dehumidifcation are that of .1 contractor as per specification section section 015000 1.4 K.
- Question 45: Construction Power : CONSTRUCTION POWER - Clearly state that Specification 015000, 1.5 covers power requirements for temporary conditioning units, such as Ventilation, Dehumidification and Cooling units. The requirement of 015000, 1.5, B ".The service shall be sized to satisfy project requirements, but shall not be less than 200 amp." is far too vague. For example: Fuel powered temporary heat units typically do not require significant electrical service. On the other hand, temporary units needed for dehumidification and/or cooling of a "building, buildings or portions of buildings" for this large job will be very large and will require substantial electrical power. They do not run on anything else. Clearly state who is responsible for this substantial power. Please refrain from RFI responses containing ".coordinate during construction." as this does not provide quantifiable direction. We are to provide a lump sum bid price on bid day, and therefore we need to be able to quantify everything.
- Response: Per response to question 43 for .2 contractor above, responsibility for temporary ventilation, cooling and dehumidifcation are that of .1 contractor as per specification section section 015000 1.4 K.
- Question 46: RFI-1 Allstates Mechanical: Is a bid bond required with the submission of this RFP Package?
- Response: No.
- Question 47: RFI 2-Allstates Mechanical : Reference: Appendix O, Scoring Matrix for Technical Submission RFP Section T-1C Designated Critical Work: Qualification, Experience, and Past Performance (Only .2 HVAC) lists Geothermal and HVAC Controls for 30pts each with a total of 60 pts. Reference: Appendix G, Designated Critical Work Qualifications Statement, Cover Sheet instructs to check ONE work item for which this qualification statement is being submitted. Please clarify what "work item" refers to in this situation.
- Response: Multiple qualification statements can be submitted separately with only one Work Item per statement.
- Question 48: RFI 3-Allstates Mechanical : The Geothermal Well fields are not developed in the contract documents. Without parameters to bid bye, i.e. The number of wells and depth of wells, the geothermal contactors are not capable of accurately pricing the geothermal well fields without expending an exorbitant amount of money for up front engineering costs. Can the design professionals establish parameters to bid by for the Geothermal Well fields?

- Response: The initial wellfield was estimated based on a 350 deep borehole. However, final designs of depths and number of boreholes will be per the discretion of the contractor and delegated design engineer per the specifications to meet the performance capacities and area designated for the wellfield. Test well information is provided with Addendum 34 to aid the contractor.
- Question 49: Responses to Addendums 1 thru 23, Valid or Not? : Addendum 24, General changes - All Contracts, Item 2. Numerous BAS RFIs were addressed in addendums 1 thru 23 that were not updated in the re-issued bid documents. Are the responses which were published prior to addendum 24 valid for this re-bid? If not, the BAS proposal price will be significantly higher. Please advise.
- Response: All responses for addendums 1 through 23 have been incorporated into the current bid package.

.3 CONTRACT

- Question 3: Specification Section 220719 Plumbing Insulation : Reissued Plumbing Insulation Spec. 220719, Page 26, Paragraph 3.18C calls for the application of PVC Jacketing on concealed piping. Please clarify if that is the true intent of the specs or a misprint.
- Response: Contractor to follow the specification, there is no misprint. PVC jackating is required on concealed piping. This new facility is required to function with least possible amount of failures in system and maintenance.
- Question 4: Response from addendum #32 question 2 for .3 contract : The response asked how unit pricing and allowances affect the bid price, an example of this is page 3 of plumbing unit price is requiring 100' of 8" hub & spigot cast iron pipe with hangers and according to Means plumbing data 2022 the price should be $141.00 per foot. So for the allowance we would have to include $14,100.00 in our bid and there is not any of this piping required on the project. This same thing happens with many other unit price items on the project, please review and delete the unit prices that do not apply to the bill of materials specified for this project.
- Response: Some of the items listed under list of items for allowance currently are not being specified or proposed in the project. However, these items may be required due to some possible changes during construction phase.
- Question 5: Plumbing pipe covering : Addendum #31 reissued the plumbing pipe covering specifications and on page 220719-26 now indicates that concealed piping will need a pvc jacket-this is not typical for any project. Please clarify if concealed pipe will be required to have a pvc jacket since none of the exposed will be required to have it.
- Response: Jackets are required for all piping requiring insulation. PVC to be used for all insulated concealed (regardless of elevations) as well as insulated exposed piping above 8 AFF. S.S. 304 to be used for all insulated exposed piping upto 8 AFF. See revised specs.
- Question 6: Drawing GEN-P-502 : Drawing GEN-P-502 for the rebid deleted the house trap detail that was added by addendum #11 of the first bid, does this mean the house trap will not be required for this bid? The floor plans still have a note 2 requiring them-if house traps are required please provide a detail.
- Response: House Traps are prohibited as per IPC PA 2015. Note #2 has been revised where applicable.
- Question 7 : Gym building level 1 B : Drawings GYM-P-114 and GYM-P-112 are the same area of the building however the fixture tags for over half the fixtures indicated are not the same on each drawing. Please

clarify if the fixture tags on the water drawings are correct or the fixture tags on the drainage drawing are correct.

- Response: Tags have been revised on sheets with incorrect tags. Refer to revised drawings as issued in Addendum 34.
- Question 8: Fixture tag contradictions BSO building : Drawing BSO-P-112 indicates different fixture types than drawing BSO-P-114 at the same locations. Please clarify which drawing will have the correct fixture types.
- Response: Tags have been revised on sheets with incorrect tags. Refer to revised drawings as issued in Addendum 34.

.4 CONTRACT

- Question 18: Data Symbols : Dwgs. MAQ-TC-120, MAQ-TC-130, MAQ-TC-131, MAQ-TC-140 & MAQ-TC-141 show random data symbols outside the footprint of the building. We assume these are in error and should be disregarded. Please confirm.
- Response: Drawings erroneously had additional symbols not required. Reprinting with only the required scope and reissuing mentioned drawings in Addendum 34.
- Question 19: Dwg. MAQ-E-501 : Addendum 31.4 RFI responses to questions 15 & 17 state that Dwg. MAQ-E-501 (one-line) was issued in this addendum. IT WAS NOT. Please issue this revised drawing.
- Response: Refer to revised MAQ-E-501 as issued in Addendum 34.
- Question 20: Pump House : Is there an electrical drawing for the Pump House?
- Response: Refer to MAQ-E-404.
- Question 21: Panel Schedules : The panel schedule for DP-MGH on MAQ-E-610 has significant differences from the single-line on MAQ-E-501- both breaker sizes and wire sizes. Please indicate which one to go by and if there are other panel schedules that do not match the one line.
- Response: Refer to revised MAQ-E-601 and MAQ-E-610 as issued in Addendum 34.
- Question 22: Addendum 31 : Addendum 31 .4 contract question 15 indicated that an updated drawing MAQ-E-501 was included in the addendum, but the drawing was not included.
- Response: Refer to revised MAQ-E-501 as issued in Addendum 34.
- Question 23: Power Distribution : Drawing STE-E-100 indicates a single 5000A service for the Marquee building. The single-line indicates both a 3000A and a 4000A service. Drawing MAQ-E-401shows two services, but the note indicates that the equipment may CHANGE to two services if PPL dictates. Is this decision still pending, or has the decision been made? What does it mean for our bid that we are to "consider a second service" as the drawings indicate?
- Response: Refer to revised MAQ-E-101 and STE-E-100 as issued in Addendum 34.
- Question 24: Arc fault circuits : Drawing GEN-E-001 has 24 General Notes. The first 23 concern Lightning Protection. Note 24 says to provide Arc-Fault circuit interrupters for all circuits serving dormitory areas. Is this a design-build project? This is a design note, not a general note to be added to the end of a list of unrelated notes. The panel schedules say nothing about this, neither do the specifications. Please indicate which breakers need to be arc-fault breakers so that the panel manufacturers know how to quote.
- Response: Refer to revised GEN-E-001 as issued in Addendum 34.

- Question 25: Bid Process : Is the project going to be awarded this time? The drawings do not seem to be complete, especially for a rebid. There are notes on the electrical drawings stating that Fire Alarm shop drawings need to be sealed by a New Jersey PE, there are several drawings that say that metering sections need to be approved by ConEd etc. The scope of work between the prime contractors is not well defined and is confusing even after the questions that have been answered. The drawings do not appear to 100% yet. Is the intent to award contracts or is this just for budget purposes?
- Response: Yes, intent is to award contracts. Refer to revised GEN-E-001 as issued in Addendum 34.
- Question 26: Generator Specification : Addendum #28 was supposed to have an attachment of a new Generator Specification 263213 but it was not attached, please provide an updated spec that makes sense since the current one does not.
- Response: Refer to revised spec section 263213 as issued in Addendum 34. Spec was mistakenly not attached to Addendum 28.
- Question 27: Site excevation : Please spend the time to issue an addendum that MODIFIES THE SPEC SECTIONS that conflict with your answers to questions. Specifically when an answer to a question conflicts with 10 different specs does that question's answer automatically overrule all contrary specification statements, and when addendum 59 answer conflicts with addendum 32's answer but neither of the addendums bothered to modify the spec section they are referring to does the answer in addendum 59 supersede all?
- Response: New responses supersede previous responses where indicated in response text.
- Question 28: Scope of Work : Who is responsible for the conduit and wire for site lights? The answers to questions seem to imply that the .1 GC is responsible for all site excavation, is this the case and if so does that mean the .1 digs for all the various site lights and the EC installs conduit? If so who provides the concrete encasement, who backfills. It makes no sense to have the .1 do this scope of work, the GC's will have to scour the electrical contract documents to see the thousands of feet of excavation they are responsible for.
- Response: Regarding site lighting: -The .1 General Contractor is to provide excavation, backfill, concrete, concrete encasement, manholes, vaults and any associated site work -The .4 Electrical Contractor is responsible for laying conduit and pulling cabling, light pole bases, foundations and fixture installation Refer to revised spec section 010100 as issued in Addendum 34.
- Question 29: Site Light Details : Are the site light concrete foundations meant to be delegated design? There is absolutely no detail of what is required. Also who is responsible for the bases the GC or EC
- Response: Site light concrete foundations are delegated design per manufacturer requirements. Light pole bases and foundations are by electrical prime (.4 contract). Refer to revised spec section 010100 as issued in Addendum 34.
- Question 30: Spec 010100 para 1.9 has a requirement for project photographs is this the responsibility of the .1 GC or do all prime contractors need to include project photos?
- Response: Requirement is responsibility of the .1 General Contractor only.
- Question 32: services or construction : hi we are an engineering only firm. can we participate under electrical construction? is the prebid meeting required or optional?
- Response: Prebid meeting was optional and sign-in sheet was circulated in Addendum 28. Contact any contractor who attended to advise on participation.

- Question 33: Rescue Assistance System : Specification 27 51 30 refers to a Rescue Assistance System. Drawing GEN-E-001 under Fire Alarm symbols denotes Rescue Assistance devices. We have not found any symbols on the floor plans. Is there a Rescue Assistance System in the project? Please advise.
- Response: There is not. System with related notes and symbols removed from drawing GEN-E-001 as issued in Addendum 34.
- Question 34: Lightning Protection : Various Electrical Drawings reference Lightning Protection. No Specification for Lightning Protection has been provided. Please provide.
- Response: Refer to specification 264113 as issued in Addendum 34.
- Question 35: Light Fixture Schedules: There are multiple instances where light fixtures are shown on the electrical lighting drawings, but the types depicted do not exist. or they may match a fixture type that is shown on a fixture schedule in a different building, but not the one in question. Can a comprehensive fixture schedule that is properly coordinated be provides? For example type V3 in the BSO building, there is no type V3 listed on drawing BSO-E-604.
- Response: Refer to revised BSO-E-604 as issued in Addendum 34, including type V3. Revised light fixture schedules BSO-E-604, GYM-E-602, MAQ-E-615 are included in Addendum 34 clarifying fixture discrepancies.
- Question 36: Scope of Work: Please clarify which supersedes which. Addendum 32 question 170 -that is listed under the .1 GC section - says that a note buried on drawing ACD-MX-101 somehow is the responsibility of the .2 and .4 contractors. Can you please identify what other drawings that, per the table of contents and scope of work, APPLY ONLY TO THE .1 CONTRACTOR now magically are the responsibility of the .2 or .4 contractor? Note that drawing GEN-G-002.1 clearly indicates that ACD-MX-101 applies only to the .1 contractor, however your addendum 32 question contradicts this. Are there other hidden scopes of work for the .2, .3. or .4 contracts on drawings that are not a part of their contract? Similarly are there drawings in the .2, .3, or .4 scope of work that the .1 is responsible for?
- Response: As noted in 010100 Summary of Work, drawings are not divided by prime contract and contractors are responsible for work shown on full set of drawings and specifications pertaining to their scope of work.
- Question 37: addendum supersedance order of operations : Please clarify. If an addendum's answers are meant to supersede the spec/drawing that it conflicts with (even if the EOR doesn't bother to change the original spec/drawing the answer contradicts) please clarify does a later answer within an addendum supersede an answer earlier in the same addendum, or are they equal? Addendum 32 question 221's answer is in direct contraction with the question/answer above it, which one governs. Per Q/A 220 (add 32) the GC has to do ALL EXCAVATION 5' outside the building, the following answer (Q/A #222) is 180 degrees different, which one should we use?
- Response: New responses supersede previous responses where indicated in response text. Question 220 response refers specifically to utility work. Geothermal well excavation is not included in utility work.
- Question 38: Addendum 32 .4 Contract Question 11 : The answer to .4 Contract question 11 in addendum 32 says that the A/V package will be a part of a separate procurement package, does this mean that all of the A/V drawings and division 27 specifications are not a part of the .4 scope of work?
- Response: AV scope is included in package as noted in drawings and specifications. Previous response referred to additional scope not shown in contract drawings.

- Question 39: Spec 010100 .4 Scope of Work : Spec 010100 para 1.5 E, 3 says that the .4 contractor is responsible for "Transformer Stations, complete including fences". What does this mean, if its pad mount transformers they will be utility supplied and are located on the site which per Add 32 question 220's answer is by the .1 contractor. Further there are no fences shown or detailed on any of the .4 contract drawings
- Response: No fences are required. Refer to revised spec section 010100 as issued in Addendum 34.
- Question 40: Scope of Work : 010100 para 1.5 E 17 issued by addendum 32 says that the .4 contractor provided the conduits and service vaults for site network pathways, since addendum 32 question 220 says that the .1 does all excavation is the intent really for the .4 to provide the manholes for the .1 to dig, set, and backfill?
- Response: Regarding electrical service, electrical feeders to generator, building feeds, site lighting, telecommunications and all other electrical duct banks: -The .1 General Contractor is to provide excavation, backfill, concrete, concrete encasement, manholes, vaults and any associated site work -The .4 Electrical Contractor is responsible for laying conduit and pulling cabling. Refer to revised 010100 as issued in Addendum 34.
- Question 41: Scope of Work : Question 220 and its answer in add 32 says that the .1 does all site excavation and backfill for the .4 contractor. What about concrete encasement, or stone/grit backfill material is that by the .1 or .4?
- Response: Regarding electrical service, electrical feeders to generator, building feeds, site lighting, telecommunications and all other electrical duct banks: -The .1 General Contractor is to provide excavation, backfill, concrete, concrete encasement, manholes, vaults and any associated site work -The .4 Electrical Contractor is responsible for laying conduit and pulling cabling. -The utility will provide transformers, cabling from poles to the transformers and laterals to the switchgear or CT cabinet Refer to revised 010100 as issued in Addendum 34.
- Question 44: Maxcell Innerduct : Spec 270528 calls for every 4" communication duct to contain 2- Maxcell 3 cell ducts. Since the .1 contractor is to install the ductbanks that are 5' outside of the building, are these to be provided and installed by the .1? Are these really needed/required becasue other then being mentioned one place in the spec they are not shown or detailed anywhere.
- Response: Maxcell is required from building through in ground conduit to vault. Maxcell must be continuous without breaks or splices. Maxcell should be installed after the successful proofing of conduits installed by electrical contractor.
- Question 45: Telcom ductbanks : Please confirm that the various addendum questions that have said that the .1 contractor is responsible for excavation, conduit, concrete encasement, manholes and backfill of electrical ductbanks applies to all of the telcom ductbanks shown on STE-TC drawings.
- Response: Regarding electrical service, electrical feeders to generator, building feeds, site lighting, telecommunications and all other electrical duct banks: -The .1 General Contractor is to provide excavation, backfill, concrete, concrete encasement, manholes, vaults and any associated site work -The .4 Electrical Contractor is responsible for laying conduit and pulling cabling. Refer to revised 010100 as issued in Addendum 34.
- Question 46: Audio Visual Equipment : Addendum 33, .4 question 11 response is that Audio Visual Equipment will be under a separate contract. Specification 01 01 00 Summary of Work 1.5E, Item 18, states that Audio Visual equipment is part of this .4 Electrical Contract. Which is it? Please advise.

- Response: AV scope is included in package as noted in drawings and specifications. Previous response referred to additional scope not shown in contract drawings.
- Question 47: Controls Conduits : Addendum 30, .2 question 7 response indicates that the .4 Electrical Contractor is responsible for all controls conduits except the range ventilation. No conduits are shown on the Electrical Drawings. Since the .4 Electrical contract is not providing the ATC/BAS system, how do we know what conduit to provide? Will there be drawings issued? We believe the logical approach would be for the contractor supplying the system to provide their respective conduits. Please advise.
- Response: Conduits and cabling for BAS system is the responsibility of the .2 contractor. This response supersedes previous response for .2 contractor question 7. .4 contractor is responsible for providing data connection, as indicated in response to question 31 for .2 contractor in Addendum 31.
- Question 48: AV Drawings : Drawing GEN-AV-700 has details for mounting of multiple items that are not part of the AV or electrical scope- Projector, Projector Screen, TV monitors. Please verify that the mounting of these items is not part of the .1 electrical scope
- Response: Per spec section 010100, installation of all Audio-Visual equipment is responsibility of the .4 contractor.

SPECIFICATION CHANGES – ALL CONTRACTS

Item 1 - Please refer to the attached documents for updated specifications as described in responses to questions and listed below.

NUMBER / NAME / ACTION

010100 / SUMMARY OF WORK - PACKAGE 01 / revised
010250 / UNIT PRICES IN LUMP SUM CONTRACTS - PACKAGE 01 / revised
024110 / SELECTIVE DEMOLITION / issued
042000 / UNIT MASONRY / revised
061719 / CROSS LAMINATED TIMBER / revised
084100 / ENTRANCES AND STOREFRONTS / revised
105100 / LOCKERS / revised
114000 / FOOD SERVICE EQUIPMENT / revised
119020 / SPECIALTY EQUIPMENT / revised
119030 / TRAINING EQUIPMENT / revised
122100 / WINDOW SHADES / revised
133419 / METAL BUILDING SYSTEMS / revised
220719 / PLUMBING PIPING INSULATION / revised
263213 / ENGINE GENERATORS / revised
264113 / LIGHTING PROTECTIONS FOR STRUCTURES / issued
329113 / PLANTING SOILS / revised

DRAWING CHANGES – ALL CONTRACTS

Item 1 - Please refer to the attached documents for updated drawings as described in responses to questions and listed below.
NUMBER / NAME / ACTION

BSO-A-410 / RCP PART PLAN A - LEVEL 1 / Revised (window shade clarification)
BSO-A-411 / RCP PART PLAN B - LEVEL 1 / Revised (window shade clarification)
BSO-A-420 / RCP PART PLAN A - LEVEL 2 / Revised (window shade clarification)
BSO-A-421 / RCP PART PLAN B - LEVEL 2 / Revised (window shade clarification)
BSO-A-520 / EXTERIOR SECTION DETAILS / Revised (MBS-02 clarification)
BSO-A-658 / INTERIOR ELEVATIONS - SERT & HDES ENTRY _ BESO AREA _ SERT BRIEFING ROOM / Revised (AV scope clarification)
BSO-A-662 / INTERIOR ELEVATION - BESO ADMIN _ CONF ROOM / Revised (AV scope clarification)
BSO-A-663 / INTERIOR PLANS _ RCP AND ELEVATIONS - CLASSROOM / Revised (AV scope clarification)
BSO-A-664 / INTERIOR PLAN_RCP AND ELEVATIONS - LAUNDRY AREA & INTERIOR ELEVATIONS / Revised (equipment clarification)
BSO-A-710 / DOOR SCHEDULE / Revised (door width clarification)
BSO-A-770 / MILLWORK DETAILS / Revised (SEQ-01 clarificatin)
BSO-E-402 / SINGLE LINE DIAGRAM / Revised (low voltage single line clarification)
BSO-E-602 / LOW VOLTAGE PANEL SCHEDULES / Revised (schedule clarification)
BSO-E-604 / SCHEDULES / Revised (fixture model clarification)
BSO-P-111 / BESO -FLOOR PART PLAN A -SAN & VENT -LEVEL 1 -PLUMBING / Revised (fixture clarification)
BSO-P-112 / BESO -FLOOR PART PLAN B -SAN & VENT -LEVEL 1 -PLUMBING / Revised (fixture clarification)
BSO-P-113 / BESO -FLOOR PART PLAN A -DOMESTIC WATER SUPPLY -LEVEL 1 -PLUMBING / Revised (fixture clarification)
BSO-P-114 / BESO -FLOOR PART PLAN B -DOMESTIC WATER SUPPLY -LEVEL 1 -PLUMBING / Revised (fixture clarification)
BSO-P-121 / BESO -FLOOR PART PLAN A -SAN & VENT -LEVEL 2 -PLUMBING / Revised (fixture clarification)
BSO-P-122 / BESO -FLOOR PART PLAN B -SAN & VENT -LEVEL 2 -PLUMBING / Revised (fixture clarification)
BSO-P-123 / BESO -FLOOR PART PLAN B -DOMESTIC WATER SUPPLY -LEVEL 2 -PLUMBING / Revised (fixture clarification)
BSO-P-401 / BESO -SCHEDULES -PLUMBING / Revised (shower clarification)
FTU-A-611 / POWER_COMMUNICATION & FINISH PART PLAN B - LEVEL 1 / Revised (marking clarification)
FTU-A-660 / INTERIOR PLAN _ SECTION - INDOOR RANGE / Revised (marking clarification)
FTU-A-700 / ROOM, FINISH AND DOOR SCHEDULE / Revised (framing detail clarification)
FTU-E-603 / SCHEDULES / Revised (light model clarification)
FTUE-S-11 / FRAMING PART PLAN E -LEVEL 2 / Revised (linear load clarification)
FTU-P-111 / FIREARMS UNITS -FLOOR PART PLAN A -SAN & VENT -LEVEL 1 -PLUMBING / Revised (site scope clarification)
FTU-P-112 / FIREARMS UNITS -FLOOR PART PLAN B -SAN & VENT -LEVEL 1 -PLUMBING / Revised (site scope clarification)
GEN-A-520 / TYPICAL CMU DETAILS / Revised (SILL-01 located)
GEN-A-772 / LOCKER TYPES / Revised (cubby dimension clarification)
GEN-E-001 / ELECTRICAL SYMBOLS ABBREVATIONS AND NOTES / Revised (symbol clarification)
GRG-E-100 / MUSEUM GARAGE - ELECTRICAL SYSTEMS / Revised (schedule clarification)
GYM-E-212 / LEVEL 1 - PART B - LIGHTING SYSTEMS / Revised (tank lighting systems clarification)
GYM-E-222 / LEVEL 2 - PART B - LIGHTING SYSTEMS / Revised (tank lighting systems clarification)
GYM-E-601 / SCHEDULES / Revised (light model clarification)
GYM-E-602 / LIGHTING SCHEDULES / Revised (schedule clarification)
GYM-P-111 / GYMNASIUM -FLOOR PART PLAN A -SAN & VENT-LEVEL 1 -PLUMBING / Revised (site scope clarification)
GYM-P-112 / GYMNASIUM -FLOOR PART PLAN B -SAN & VENT -LEVEL 1 -PLUMBING / Revised (fixture clarification)
GYM-P-114 / GYMNASIUM -FLOOR PART PLAN B -DOMESTIC WATER SUPPLY -LEVEL 1 -PLUMBING / Revised (fixture clarification)
ITV-A-603 / BUILDING 4 - PLANS_ELEVATIONS / Revised (window type clarification)

ITV-A-605 / ELEVATION LOCATION PLAN / Revised (elevation clarification)
ITV-A-606 / FACADES - ELEVATIONS / Revised (window type clarification)
ITV-A-652 / WALL SECTIONS / Revised (window type clarification)
ITV-A-653 / WALL SECTIONS / Revised (window detail clarification)
ITV-A-700 / WINDOW TYPES & DETAILS / Revised (window detail clarification)
ITV-A-702 / DOOR TYPES & DETAILS / Revised (door type and detailing)
ITV-A-720 / EXTERIOR MOVEABLE WALL TYPES / Revised (detail clarification)
MAQ-A-121 / FLOOR PART PLAN B - LEVEL 1 / Revised (wall/pipe clash resolution)
MAQ-A-122 / FLOOR PART PLAN C - LEVEL 1 / Revised (wall/pipe clash resolution)
MAQ-A-123 / FLOOR PART PLAN D - LEVEL 1 / Revised (corner guard clarification)
MAQ-A-412 / RCP PART PLAN C - LEVEL 0 / Revised (window shade clarification)
MAQ-A-413 / RCP PART PLAN D - LEVEL 0 / Revised (window shade clarification)
MAQ-A-423 / RCP PART PLAN D - LEVEL 1 / Revised (window shade clarification)
MAQ-A-669 / ENLARGED PLANS RCP AND ELEVATIONS - CAFETERIA / Revised (window shade clarification)
MAQ-A-675 / ENLARGED PLANS RCPS AND ELEVATIONS - CONFERENCE ROOMS / Revised (window shade clarification)
MAQ-A-676 / ENLARGED PLANS RCPS AND ELEVATIONS - DIRECTOR'S OFFICE / Revised (window shade clarification)
MAQ-A-677 / ENLARGED PLAN RCP AND ELEVATIONS - CAPTAIN'S OFFICE A / Revised (window shade clarification)
MAQ-A-678 / ENLARGED PLAN RCP AND ELEVATIONS - CAPTAIN'S OFFICE B / Revised (window shade clarification)
MAQ-A-684 / ENLARGED PLANS RCP AND ELEVATIONS - DAY ROOM TYP. / Revised (window shade clarification)
MAQ-A-685 / ENLARGED PLANS RCP AND ELEVATIONS - LAUNDRY AT LEVEL 2-3 TYP / Revised (window shade clarification)
MAQ-A-710 / DOOR SCHEDULE / Revised (door lite clarification)
MAQ-E-101 / OVERALL FLOOR PLAN - LEVEL 0 - ELECTRICAL SYSTEMS / Revised (sheet note clarification)
MAQ-E-213 / FLOOR PART PLAN D - LEVEL 0 - LIGHTING SYSTEMS / Revised (large conference light clarification)
MAQ-E-231 / FLOOR PART PLAN B - LEVEL 2 - LIGHTING SYSTEMS / Revised (dorm light clarification)
MAQ-E-232 / FLOOR PART PLAN C - LEVEL 2 - LIGHTING SYSTEMS / Revised (BOH, dorm light clarification)
MAQ-E-233 / FLOOR PART PLAN D - LEVEL 2 - LIGHTING SYSTEMS / Revised (dorm light clarification)
MAQ-E-405 / ENLARGED PART PLAN - FUEL PUMPING STATION / Revised (panel clarification)
MAQ-E-501 / ELECTRICAL SINGLE LINE / Revised (feeder F350A clarification)
MAQ-E-601 / MECHANCIAL PANEL SCHEDULE 1 OF 3 / Revised (panel M1HA clarification)
MAQ-E-605 / OPTIONAL STANDBY PANEL SCHEDULES 2 OF 5 / Revised (circuit clarification note)
MAQ-E-606 / OPTIONAL STANDBY PANEL SCHEDULES 3 OF 5 / Revised (circuit clarification note)
MAQ-E-607 / OPTIONAL STANDBY PANEL SCHEDULES 4 OF 5 / Revised (circuit clarification note)
MAQ-E-610 / DISTRIBUTION PANEL SCHEDULES / Revised (schedule clarificaiton)
MAQ-E-615 / LIGHTING FIXTURE SCHEDULE / Revised (light model clarification)
MAQ-F-101 / MARQUEE -FLOOR PART PLAN A -LEVEL 0 -FIRE PROTECTION / Revised (stair fire protection clarification)
MAQ-F-102 / MARQUEE -FLOOR PART PLAN B -LEVEL 0 -FIRE PROTECTION / Revised (stair fire protection clarificatin)
MAQ-F-104 / MARQUEE -FLOOR PART PLAN D -LEVEL 0 -FIRE PROTECTION / Revised (stair fire protection clarificatin)
MAQ-F-111 / MARQUEE -FLOOR PART PLAN A -LEVEL 1 -FIRE PROTECTION / Revised (corridor, ITV fire protection clarification)
MAQ-F-112 / MARQUEE -FLOOR PART PLAN B -LEVEL 1 -FIRE PROTECTION / Revised (stair, corridor fire protection clarification)
MAQ-F-114 / MARQUEE -FLOOR PART PLAN D -LEVEL 1 -FIRE PROTECTION / Revised (stair fire protection clarification)
MAQ-F-116 / MARQUEE -FLOOR PART PLAN F -LEVEL 1 -FIRE PROTECTION / Revised (central plan fire protection clarification)
MAQ-F-121 / MARQUEE -FLOOR PART PLAN A -LEVEL 2 -FIRE PROTECTION / Revised (stair fire protection clarification)
MAQ-F-122 / MARQUEE -FLOOR PART PLAN B -LEVEL 2 -FIRE PROTECTION / Revised (stair fire protection

clarification)
MAQ-F-124 / MARQUEE -FLOOR PART PLAN D -LEVEL 2 -FIRE PROTECTION / Revised (stair fire protection clarification)
MAQ-F-131 / MARQUEE -FLOOR PART PLAN A -LEVEL 3 -FIRE PROTECTION / Revised (stair fire protection clarification)
MAQ-F-132 / MARQUEE -FLOOR PART PLAN B -LEVEL 3 -FIRE PROTECTION / Revised (stair fire protection clarification)
MAQ-F-134 / MARQUEE -FLOOR PART PLAN D -LEVEL 3 -FIRE PROTECTION / Revised (stair fire protection clarification)
MAQ-F-141 / MARQUEE -FLOOR PART PLAN A -LEVEL 4 -FIRE PROTECTION / Revised (stair fire protection clarification)
MAQ-F-142 / MARQUEE -FLOOR PART PLAN B -LEVEL 4 -FIRE PROTECTION / Revised (stair fire protection clarification)
MAQ-F-144 / MARQUEE -FLOOR PART PLAN D -LEVEL 4 -FIRE PROTECTION / Revised (stair fire protection clarification)
MAQ-F-301 / MARQUEE -SPRINKLER AND STANDPIPE RISE -FIRE PROTECTION / Revised (single line clarification)
MAQ-M-110 / FLOOR PART PLAN A - LEVEL 0 – MECHANICAL / Revised (duct ej clarification)
MAQ-M-140 / FLOOR PART PLAN A - LEVEL 3 - MECHANICAL / Revised (airflow regulator clarification)
MAQ-M-141 / FLOOR PART PLAN B - LEVEL 3 - MECHANICAL / Revised (airflow regulator clarification)
MAQ-M-143 / FLOOR PART PLAN D - LEVEL 3 - MECHANICAL / Revised (airflow regulator clarification)
MAQ-M-150 / FLOOR PART PLAN A - LEVEL 4 - MECHANICAL / Revised (airflow regulator clarification)
MAQ-M-151 / FLOOR PART PLAN B - LEVEL 4 - MECHANICAL / Revised (airflow regulator clarification)
MAQ-M-152 / FLOOR PART PLAN C - LEVEL 4 - MECHANICAL / Revised (airflow regulator clarification)
MAQ-M-153 / FLOOR PART PLAN D - LEVEL 4 - MECHANICAL / Revised (airflow regulator clarification)
MAQ-M-300 / ENLARGED PLANS - MECHANICAL / Revised (equipment tag clarification)
MAQ-M-301 / ENLARGED PLANS - MECHANICAL / Revised (equipment tag clarification)
MAQ-M-403 / WATER RISER - MECHANICAL / Revised (hydronic riser clarification)
MAQ-M-500 / SCHEDULES- MECHANICAL / Revised (equipment tag clarification)
MAQ-P-101.2 / MARQUEE -BELOWSLAB FLOOR PART PLAN A -SAN & VENT -LEVEL 0 -PLUMBING / Revised (site scope clarification)
MAQ-P-102.1 / MARQUEE -OVERHEAD FLOOR PART PLAN B -SAN & VENT -LEVEL 0 -PLUMBING / Revised (site scope clarification)
MAQ-P-102.2 / MARQUEE -BELOWSLAB FLOOR PART PLAN B -SAN & VENT -LEVEL 0 -PLUMBING / Revised (site scope clarification)
MAQ-P-103.2 / MARQUEE -BELOWSLAB FLOOR PART PLAN C -SAN & VENT -LEVEL 0 -PLUMBING / Revised (site scope clarification)
MAQ-P-104.2 / MARQUEE -BELOWSLAB FLOOR PART PLAN D -SAN & VENT -LEVEL 0 -PLUMBING / Revised (site scope clarification)
MAQ-P-104.4 / MARQUEE -BELOW SLAB FLOOR PART PLAN G -SAN & VENT -LEVEL 0 -PLUMBING / Revised (site scope clarification)
MAQ-P-112.1 / MARQUEE -OVERHEAD FLOOR PART PLAN B -SAN & VENT -LEVEL 1 -PLUMBING / Revised (drain clarification)
MAQ-P-113.1 / MARQUEE -OVERHEAD FLOOR PART PLAN C -SAN & VENT -LEVEL 1 -PLUMBING / Revised (drain clarification)
MAQ-P-114.2 / MARQUEE -BELOWSLAB FLOOR PART PLAN D -SAN & VENT -LEVEL 1 -PLUMBING / Revised (drain clarification)
MAQ-P-135 / MARQUEE -FLOOR PART PLAN E -SAN & VENT -LEVEL 3 -PLUMBING / Revised (scupper clarification)
MAQ-QF-113 / FOOD SERVICE EQUIPMENT SCHEDULE / Revised (water filter scope clarification)
MAQ-S-100 / FOUNDATION -PART PLAN A / Revised (elevation clarification)
MAQ-S-101 / FOUNDATION -PART PLAN B / Revised (edge beam clarification)
MAQ-S-102 / FOUNDATION -PART PLAN C / Revised (edge beam clarification)
MAQ-S-103 / FOUNDATION -PART PLAN D / Revised (edge beam clarification)
MAQ-S-111 / FRAMING PART PLAN B -LEVEL 0 / Revised (slab on grade clarification)
MAQ-S-125 / FRAMING PART PLAN G -LEVEL 1 / Revised (stair support clarification)
MAQ-S-131 / FRAMING PART PLAN B -LEVEL 2 / Revised (slab opening clarification)
MAQ-S-133 / FRAMING PART PLAN D -LEVEL 2 / Revised (slab opening clarification)
MAQ-S-134 / FRAMING PART PLAN F -LEVEL 2 / Revised (slab opening clarification)

MAQ-S-322 / TYPICAL SLAB-ON-GRADE DETAILS / Revised (slab on grade clarification)
MAQ-S-501 / STRUCTURAL STEEL COLUMN SCHEDULE / Revised (base plate clarification)
MAQ-S-515 / TYPICAL STRUCTURAL STEEL TRUSS ELEVATION, SCHEDULE AND DETAILS / Revised (truss
clarification)
MAQ-TC-120 / FLOOR PART PLAN A -LEVEL 1 -TELECOMMUNICATIONS / Revised (erroneous symbols removed)
MAQ-TC-130 / FLOOR PART PLAN A -LEVEL 2 -TELECOMMUNICATIONS / Revised (erroneous symbols removed)
MAQ-TC-131 / FLOOR PART PLAN B -LEVEL 2 -TELECOMMUNICATIONS / Revised (erroneous symbols removed)
MAQ-TC-140 / FLOOR PART PLAN A -LEVEL 3 -TELECOMMUNICATIONS / Revised (erroneous symbols removed)
MAQ-TC-141 / FLOOR PART PLAN B -LEVEL 3 -TELECOMMUNICATIONS / Revised (erroneous symbols removed)
STE-C-303 / SITE DEMOLITION PLAN 3 / Revised (water main note clarification)
STE-C-702 / UTILITY PLAN 2 / Revised (dimension clarifcation)
STE-C-751 / UTILITY DETAILS - 1 / Revised (meter vault clarification)
STE-E-100 / SITE PLAN - ELECTRICAL SYSTEMS / Revised (sheet note clarification)
STE-L-104 / MATERIALS PLAN / Revised (entrance clarification)
STE-L-901 / HARDSCAPE DETAILS / Revised (splash pad removed)

SECTION 010100

SUMMARY OF WORK

PART 1 – GENERAL

1.1 STIPULATIONS

A. The specifications sections "General Conditions of the Construction Contract", "Special Conditions", and "Division 1 - General Requirements" form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 LOCATION

A. 175 Hershey Park Drive, Hershey PA 17033

1.3 PROJECT DESCRIPTION

A.

1.4 CONTRACT DURATION

A. The Construction Contract duration shall be **1642** calendar days commencing on the date of the Initial Job Conference.

B. The Project will consist of Work on an existing, operating and occupied Pennsylvania State Police Academy & Headquarters Facility located on an approximately 160 acre campus

C. 1. The site includes multiple support functions operating from multiple facilities

D. 2. The Work of this Project should be executed in such a manor so as to minimize all interference with the ongoing operations and activities of the Pennsylvania State Police Academy. Proposed phasing and sequencing drawings are included in the Contract Drawings to illustrate the Agency's Continuity of Operations priorities. All means and methods, and final sequencing and schedule are the sole responsibility of the Contractor.

1.5 WORK INCLUDED

A. The Work of this Project consists of, but is not necessarily limited to, the following. Detailed requirements of the Work are described in the pertinent specification Sections and/or shown on the Drawings.

B. General Construction (.1) Contract:

1. All responsibilities for the lead contractor as established by the Department's General Conditions, Division 1 and technical specifications
2. All work pertaining to the 0.1 contractor shown in the contract drawings and specifications
3. Salvage, cleaning and storage of 2,500 bricks from the existing academy building.
4. **Salvage of (6) duct smoke detectors in demolished buildings for retention by PSP**
5. Partial demolition of the Administrative wing of the main academy building to the extents indicated on the drawings.
6. Total demolition of existing buildings and structures as shown to be demolished on the drawings:
    a. Academy "shoot house"
    b. Water tower
    c. Stables
    d. Maintenance building
    e. BESO Headquarters and covered parking/ garage and miscellaneous structures
    f. BESO Stables

g. The Main Academy building

7. Demolition of existing Site utilities, and the temporary relocation and maintenance of existing utilities as required to maintain operations including:
    a. storm water management system and drainage networks
    b. Domestic and Fire Projection water
    c. Sanitary Sewer
    d. Natural gas service
    e. Electrical service
8. Site work including but not limited to:
    a. Site utilities from 5'-0" outside of the building line:
        i. Storm water system
        ii. Domestic and Fire Projection water
        iii. Sanitary Sewer
        iv. Natural gas service from the connection to the main to the meter
        v. Incoming Electrical service**, including excavation, backfill, concrete, concrete encasement, manholes, and vaults**
        vi. Site utility tunnels and ducts
        vii. Telecom service, including excavation, backfill, concrete, concrete encasement, manholes and vaults
    b. Site improvements including but not limited to:
        i. Relocation, and regrading of eastern run of Police Academy Drive
        ii. New service road from Keiffer road connecting to Police Academy Drive
        iii. Relocation, regrading and repaving of Police Academy Drive West
        iv. Amphitheater
        v. Parking areas, including all paving, curbs and islands.
        vi. New walks, curbs, pavers
        vii. Fences
        viii. Site access control gates
        ix. Site security and anti-ram bollards
        x. Tree removal as shown on the drawings
        xi. Seeding and plantings
        xii. Site stairs and ramps
        xiii. Site Signage
        xiv. Site Furniture
        xv. All other misc. site accessories.
9. Major site infrastructure including but not limited to:
    a. Foundations for Diesel generators
    b. Structure and envelope of the main campus pump house, including all utilities outside of 5'-0" of the building line
    c. Fuel tanks for vehicle refueling
10. Relocation of existing BESO storage containers as shown on the drawings
11. Construction of all buildings, outbuildings and secondary structures
    a. All buildings on the campus are described in the drawings, and include, but are not limited to:
        i. The "Marquee" or main academy buildings
        ii. Physical Education building, including pool and all pool systems and equipment
        iii. Fire Arms Building
        iv. BESO Headquarters
        v. Museum Garage
    b. All concrete work including but not limited to
        i. Foundations, grade beams, and slab on grade
        ii. Building walls and slabs
        iii. Topping slabs
        iv. Curbs at walls, doors, or openings
    c. All subgrade waterproofing
    d. Installation of foundation sleeves furnished by other prime contractors.

e. All primary structural work including but not limited to:
    i. Structural steel
    ii. Metal decking and pour stops
    iii. CLT Timber floor slabs
    iv. Glulam Timber beams
f. All structural masonry work including, but not limited to:
    i. Load bearing CMU, walls and lintels
    ii. CMU pilasters
g. Exterior enclosure:
    i. Exterior CMU Masonry cavity wall inclusive of air/ water barrier, and all accessories
    ii. Roofing and all roofing accessories as shown in the drawings and specifications
        1. SBS modified bitumen roofing
        2. Protected membrane roofs with paver over burden
        3. Standing seam metal panel roofs
    iii. Installation of roof drains furnished by the .3 Plumbing contractor
    iv. Exterior at grade waterproofing systems
        1. Protected membrane with lawn and soil overburden
    v. Exterior aluminum and glass curtain wall
    vi. Exterior custom fabricated vestibules as shown in the drawings and specifications
    vii. Exterior aluminum entrances and storefronts
    viii. Aluminum Windows
    ix. Skylights
        1. Aluminum and glass skylights
        2. Aluminum and plexiglass skylights
    x. Powered coiling doors
    xi. Bi-fold garage doors
    xii. Glazing
    xiii. Pre-engineered metal building structure and enclosure
    xiv. Louvers and similar items that affect the building appearance. (Some items may be furnished to the GC by other Prime contractors).
h. Miscellaneous metal framing as shown on the drawings or required by the specifications including but not limited to:
    i. Misc. metal supports for vanities and countertops
    ii. Mechanical platforms and grating
    iii. Catwalks
    iv. Exterior platforms and grating
    v. Mechanical room access stairs and landings
    vi. Angle Lintels, sills and brick shelfs
    vii. Loose lintels
    viii. Indoor Range Baffling Supports
i. Cold formed metal framing as shown on the drawings or required by the specifications
    i. Exterior back-up wall assemblies
    ii. Interior partitions where required by the drawings and specifications
j. Stone work,
    i. Natural stone as shown on the drawings and in the specifications
    ii. Solid surface countertops as shown in the drawings and specifications
k. Interior partitions
    i. Metal stud and GWB partitions
    ii. Interior CMU Masonry partitions consisting of
        1. Standard concrete masonry units
        2. Ground faced concrete masonry units
    iii. Blocking either interior to the partition, or applied to the partition to support the work of this and other prime contractors.

l. Ceilings
    i. Suspended Gypsum Ceiling Board Ceilings
    ii. Suspended Acoustic tile ceilings
    iii. Suspended Washable Acoustic tile ceilings
    iv. Suspended wood baffling systems
m. Interior and exterior doors
    i. Hollow metal doors and frames
    ii. Wood doors
n. Interior vision panels and storefronts
    i. Aluminum and glass demountable partitions
    ii. Hollow metal and glass acoustical rated assemblies
    iii. Aluminum and glass interior store front
o. Interior finishes including but not limited to:
    i. Ceramic tile
    ii. Floor tile
    iii. Quarry tile
    iv. Carpet tile
    v. Resilient flooring
    vi. Athletic flooring
    vii. Cork bulletin board
    viii. Felt acoustic panels
p. Exterior and interior painting and finishing
q. Specialties including:
    i. Metal lockers
    ii. Toilet, bath and shower accessories
    iii. Toilet and shower partitions
    iv. Fire extinguisher cabinets and Fire extinguishers
    v. Magnetic glass whiteboards
r. Millwork and casework including but not limited to:
    i. Main Reception desk
    ii. Mock-courtroom
    iii. Bathroom vanities
    iv. Base cabinets
    v. PLAM storage shelving on standards
    vi. Closet rods and hat shelves
    vii. Wood veneer wall panels
    viii. Perforated wood veneer wall panels
    ix. Solid wood baseboard
s. Specialty wall and partition construction for interior tactical mazing walls and facades
t. Laundry equipment
u. Kitchen and cafeteria equipment**, including** hood systems and associated fans, **excluding** ducts by the .2 HVAC contractor
v. Vertical transportation systems
    i. Machine room-less traction passenger elevators
    ii. Machine room-less traction hydraulic elevators
    iii. Hole-less, machine room-less hydraulic elevators
w. Stairs, guardrails and handrails
    i. Egress stairs: Steel pan stairs with concrete fill, and painted steel guardrails and handrails
    ii. Monumental stair: composed of steel pan stair with precast concrete treads and risers with decorative wood guardrail and powder coated steel handrail
    iii. Ornamental metal steel pan stairs with concrete infill, decorative painted steel guardrail and wood handrail
x. Hazardous Materials abatement including asbestos, lead, PCB, Radon and other materials as applicable
y. Foundations and/ or supports for all heavy equipment

z. Firing range equipment
aa. Firing range baffling

12. Temporary construction as required to maintain existing operations and facilities and protect occupants and visitors to the site.

C. HVAC Construction (.2) Contract:

1. The usual heating, ventilation and air-conditioning work, including controls, piping, ductwork AHU's, fan coil, exhaust fans, heat exchangers and pumps
2. All work included in the contract drawings, plans and specifications
3. Site distribution of, hot water and chilled water (buried underground between Marquee and FTU
4. Light weight equipment supports and housekeeping pads
5. Central plant and HVAC equipment controls
6. All associated water treatment systems for hydronic systems under the 0.2 contract
7. Furnishing of Intake and exhaust louvers to be installed by the .1 General Contractor
8. All fuel tanks and fuel lines excluding vehicle refueling tanks and other isolated specialty tanks under a .1 contract
9. Cathodic protection for steel tanks
10. HVAC connections for kitchen equipment, laundry equipment and any equipment provided by others that requires HVAC connections
11. **Ductwork connections to kitchen hoods by .1 Contractor**
12. Electric resistance heating
13. In slab heating
14. Below slab duct work
15. Hazmat work associated with the HVAC contractor's work
16. System start-up
17. Commissioning and balancing and training
18. BMS and controls systems **including associated connections**
19. Geothermal well field **including associated excavation, backfill and piping**

D. Plumbing Construction (.3) Contract:

1. The usual plumbing work for buildings including water, sanitary and rain water conductors for building system, within 5'-0" of the exterior building line
2. All work pertaining to the 0.3 contractor shown in the contract drawings and specifications
3. All gas piping and connections for building systems and from the gas meter to the service point.
4. Insulation of all piping and equipment as shown in the drawings and specifications
5. Water treatment equipment
6. Plumbing connections to pool equipment, pumps and associated piping and pumping
7. Plumbing connections to chlorinated water treatment systems associated with the pool equipment.
8. Domestic water and fire water pumps
9. Central pump house equipment
10. Painting of sprinkler pipe and gas pipe as shown on the contract drawings and specifications
11. Air-conditioning drainage systems
12. Grease, oil and lint trap systems within buildings and grease/oil traps and piping exterior to buildings.
13. Furnishing of roof drains to be installed by the .1 General Contractor
14. Rain water conductors from roof drains
15. Fire suppression system
16. equipment supports and housekeeping pads
17. Hazardous materials work associated with the plumbing contractors work

18. Testing, disinfection of water system, adjusting and placing in operation all systems installed

E. Electrical Construction (.4) Contract:

1. The usual electrical work for buildings including power, lighting, communications, security and fire alarm
2. Electrical service points of entry
3. **Conduit and cabling associated with** Transformer stations
4. Load side Electrical distribution cabling and conduit between buildings and site elements, not inclusive of line side incoming electrical services
5. Site lighting**, including poles, foundations, conduit and cabling**
6. Electrical power generators and transfer switches, including sub-base tanks, mufflers, exhaust piping and outdoor enclosures. Day tank and muffler to be furnished to .2 HVAC Contractor
7. Electrical power, starters, overload protection and disconnecting means for all HVAC and Plumbing equipment where not furnished integral to the equipment.
8. Telecommunications structured cabling pathways, provide cabling, outlets and terminal unless otherwise directed
9. Fire alarm systems including connections for elevators, air handling equipment and door hardware
10. Security including access control, video surveillance systems and intrusion/ various alarms
11. Public address systems
12. Central clock system
13. Electrical connections for kitchen equipment, laundry equipment and other equipment furnished by others that requires electrical connections
14. equipment supports and housekeeping pads
15. Hazardous materials work associated with the electrical equipment removal or installation
16. Lightning protection
17. Installation of all site network pathways, including conduits and **cabling**
18. Installation, testing and completion of all Information Technology Audio-Visual and Physical Security equipment cabling, devices and systems

1.6 SPECIFICATION FORMAT

A. The Specifications for the work of the separate prime Contracts are bound in one volume. Technical provisions which apply to each prime Contract are included in the Divisions listed below:

B. General Construction (.1) Contract: Divisions 01 through 14 and Divisions 31, 32 and applicable Sections of Division 33

C. HVAC Construction (.2) Contract: Divisions 01, 23 and applicable Sections of Divisions 02, 03, 05, 07, 09, 25, 31, 32 and 33.

D. Plumbing Construction (.3) Contract: Divisions 01, 21, 22 and applicable Sections of Divisions 02, 03, 05, 07, 09, 25, 31, 32 and 33.

E. Electrical Construction (.4) Contract: Divisions 01, 25, 26 and applicable Sections of 02, 03, 07, 08, 31, 32, and 33.

Note: The term Professional refers to the Architectural or Engineering firm retained by the Department to design and document the work of the Project, or the Professional's authorized representative. The term Professional may also refer to the Client Agency if the Project design was

delegated to the Client Agency. Throughout the Specifications and Drawings wherever the terms 'A/E', 'Architect' or 'Engineer' are used it shall mean Professional.

1.7 WORK BY OTHERS

A.

1.8 E-BUILDER CONSTRUCTION MANAGEMENT SOFTWARE

A. The electronic document repository to improve productivity and efficiency, and to streamline the process of construction management during all phases of design, procurement, award and contract administration. The Department and all Prime Contractors will utilize the e-Builder Enterprise Software Program (e-Builder) for all Work and administrative duties provided under this Contract. Any and all notifications, request, submittals, approvals, etc. between the Department, The Prime Contractors, the Professional, and/or the Construction Manager (if a CM is assigned to the Project) shall be through the e-Builder system.

1.9 QUESTIONS DURING BIDDING PERIOD

A. Direct all questions pertaining to the Project to the Project Professional utilizing the e-Builder Enterprise Software Program (e-Builder) as described in the Instructions To Bidders.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 010250

UNIT PRICES IN LUMP SUM CONTRACTS

PART 1 – GENERAL

1.1 STIPULATIONS

A. The specifications sections "General Conditions of the Construction Contract", "Special Conditions", and "Division 1 - General Requirements" form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 DEFINITIONS

A. Unit Price: An amount bid by the Contractor for a unit quantity of a work item listed in the Schedule of Unit Prices.

B. Schedule of Unit Prices: The schedule of work items in the Contract for which the Contractor is to provide a price for adjusting the Contract amount for changes in quantity of work required.

1.3 PROCEDURES

A. Unit Prices will be used as the basis for computing "additions to" or "deductions from" the Lump Sum Contract amount for extra work and for reductions in quantities of work called for by the Contract Documents. The unit price applied for “Adds” to the bid quantity will be equal to the unit price applied for “Deducts” to the bid quantity for each item listed. Unit Prices shall remain binding and irrevocable for the entire period of the Contract.

B. Unit Prices shall include all costs by the Contractor, his suppliers and subcontractors for the work, including labor, material, tools, equipment, insurance, taxes, field overhead, general overhead and profit and bond. The work shall include all incidental items required to complete the work.

C. The Department will not be bound by the Unit Prices unless it accepts the same by indication on the Construction Contract. The Department may award the contract without accepting the bidder's Unit Prices. If the Department and the Contractor are unable to agree upon a new Unit Price, the Department may at its discretion, direct the Contractor to perform such work on a force account basis.

D. Work added to the Contract will be of the same general character as that required by the Contract Documents. Contractors are to assume that changes will be made in a timely manner, not requiring the Contractor to incur additional mobilization or other disproportional expenses in connection with the adjustment in contract quantities.

E. Each bidder shall carefully check the drawings and specifications for the Bid Package quantities required to be included under the Contract.

F. Contractors are to comply with requirements of the Instructions to Bidders and instructions for completion of the Bid Form.

1.4 SCHEDULE OF UNIT PRICES

A. The following Schedules of Unit Prices apply to the Contracts indicated on the Schedules. The Contractor is to provide Unit Prices for all items.

GENERAL CONSTRUCTION (.1) CONTRACT – SCHEDULE OF UNIT PRICES			
ITEM NO.	DESCRIPTION	UNIT OF MEASUREMENT	QUANTITY
	MARQUEE Building		
1	Foundation concrete	Cu. Yds	100
2	Foundation reinforcement	Tons	2
3	Anchor rods – 1 1/2” x 30” ASTM F1554 Grade 55	Each	4
4	Rock anchors – Type 1	Each	2
5	Foundation wall penetrations – 12” dia.	Each	4
6	Foundation wall penetrations – 6” dia.	Each	6
7	Grade beam penetrations – 6” dia.	Each	5
8	Floor slab concrete	Cu. Yds	50
9	Slab reinforcement	Tons	0.5
10	Steel deck – 3” 18 GA	SF	250
11	CLT – 5 ply 6 7/8”	SF	250
12	Metal Deck Closure	LF	500
13	Structural steel framing (identified prior to fabrication)	Tons	30
14	Structural steel framing (identified after erection complete)	Tons	2
15	Shop installed circular beam penetrations -6” dia.	Each	75
16	Shop installed rectangular beam penetrations - 10”x20” reinforced	Each	10
17	Field installed circular beam penetrations – 6” dia.	Each	10
18	Headed shear studs – ¾” x 6” long	Each	500
	PEMB Foundation		
19	Concrete	Cu.Yds	100
20	Reinforcement	Tons	2
	Other buildings (not including PEMB)		
21	Foundation concrete	Cu. Yds	50
22	Foundation reinforcement	Tons	1
23	Structural steel framing	Tons	2
24	8” Structural CMU wall	SF	250
25	Glulam 6 ¾” x 18”	LF	50

	ACM Waterproofing Material Work referenced in Section 02 08 00	UNIT	QUANTITY
	Main Building (Buildings A, B, C, D, E and H)		
26	Building Foundations	SF	**30000**

27	Structural and masonry components behind face brick	SF	**40000**
Pool Area in Main Building			
28	Waterproofing associated with the Pool and its surroundings	SF	**6000**
Maintenance Building			
29	Buildings Foundations	SF	2000
30	Structural and masonry components behind face brick	SF	**5000**
Miscellaneous Concealed Spaces			
31	Allowance for ACM waterproofing discovered during demolition/site activities	SF	**5000**

	Excavation Work		
32	Over-Excavated Materials	Cu. Yd	1
	Temporary Heat Days		
33	Temporary Heat Days	Day	1

Structural unit price quantities are in addition to structural material quantities directly indicated and/or implied on the structural drawings, including related notes and specifications. They relate specifically to primary structural system components and do not include miscellaneous elements required by other trades for such items as support of secondary bracing steel for the exterior façade, MEP support elements, connection materials, secondary support for building maintenance equipment, stairs, interior partitions, housekeeping pads, concrete fills and curbs, or any other elements included on the architectural equipment drawings.

HVAC CONSTRUCTION (.2) CONTRACT – SCHEDULE OF UNIT PRICES			
ITEM NO.	DESCRIPTION	UNIT OF MEASUREMENT	QUANTITY
1	Insulated Chilled Water Pipe ½”	Per foot	100
2	Insulated Chilled Water Pipe ¾”	Per foot	100
3	Insulated Chilled Water Pipe 1”	Per foot	100
4	Insulated Chilled Water Pipe 1 ¼”	Per foot	100
5	Insulated Chilled Water Pipe 1 ½”	Per foot	100
6	Insulated Chilled Water Pipe 2”	Per foot	100
7	Insulated Chilled Water Pipe 2 ½”	Per foot	100
8	Insulated Chilled Water Pipe 3”	Per foot	100
9	Insulated Chilled Water Pipe 4”	Per foot	100
10	Insulated Chilled Water Pipe 5”	Per foot	100
11	Insulated Chilled Water Pipe 6”	Per foot	100
12	Insulated Chilled Water Pipe 8”	Per foot	100
13	Insulated Chilled Water Pipe 10”	Per foot	100
14	Insulated Hot Water Pipe ½”	Per foot	100
15	Insulated Hot Water Pipe ¾”	Per foot	100
16	Insulated Hot Water Pipe 1”	Per foot	100

17	Insulated Hot Water Pipe 1 ¼”	Per foot	100
18	Insulated Hot Water Pipe 1 ½”	Per foot	100
19	Insulated Hot Water Pipe 2”	Per foot	100
20	Insulated Hot Water Pipe 2 ½”	Per foot	100
21	Insulated Hot Water Pipe 3”	Per foot	100
22	Insulated Hot Water Pipe 4”	Per foot	100
23	Insulated Hot Water Pipe 5”	Per foot	100
24	Insulated Hot Water Pipe 6”	Per foot	100
25	Insulated Hot Water Pipe 8”	Per foot	100
26	Insulated Hot Water Pipe 10”	Per foot	100
27	Condenser Water Pipe 2”	Per foot	100
28	Condenser Water Pipe 2 ½”	Per foot	100
29	Condenser Water Pipe 3”	Per foot	100
30	Condenser Water Pipe 4”	Per foot	100
31	Condenser Water Pipe 5”	Per foot	100
32	Condenser Water Pipe 6”	Per foot	100
33	Condenser Water Pipe 8”	Per foot	100
34	Condenser Water Pipe 10”	Per foot	100
35	Condenser Water Pipe 12”	Per foot	100
36	Galvanized sheet metal all gauges	Per Lb	250
37	Specified Duct Insulation	Per Square	50
38	Chilled Water Fan Coil Units	Per Unit	5
39	Fan Powered VAV Boxes	Per Unit	5
40	Shut Off VAV boxes	Per Unit	5
41	DOAS Terminal Boxes	Per Item	5
42	Lay-in 24”x24” Ceiling Diffuser	Per Item	5
43	Lay-in 12”x12” Ceiling Diffuser	Per Item	5
44	Sidewall Grille – 0-10 Square Inches	Per Item	5
45	Sidewall Grille – 10-50 Square Inches	Per Item	5
46	Sidewall Grille – 50-100 Square Inches	Per Item	5
47	Sidewall Grille – 100-200 Square Inches	Per Item	5
48	Sidewall Grille – 200-500 Square Inches	Per Item	5
49	Sidewall Grille – 500-1000 Square Inches	Per Item	5
50	Linear Slot Diffuser – 4’	Per Item	5
51	Analog Control Points	Per Item	10
52	Digital Control Points	Per Item	10
53	Fire Damper – 0-50 Square Inches	Per Item	1
54	Fire Damper – 50-200 Square Inches	Per Item	1
55	Fire Damper – 200-500 Square Inches	Per Item	1
56	Fire Damper – 500-1000 Square Inches	Per Item	1
57	Fire Damper – 1000-1500 Square Inches	Per Item	1
58	Fire Damper – 1500-2000 Square Inches	Per Item	1
59	Smoke Damper – 0-50 Square Inches	Per Item	1
60	Smoke Damper – 50-200 Square Inches	Per Item	1
61	Smoke Damper – 200-500 Square Inches	Per Item	1
62	Smoke Damper – 500-1000 Square Inches	Per Item	1
63	Smoke Damper – 1000-1500 Square Inches	Per Item	1
64	Smoke Damper – 1500-2000 Square Inches	Per Item	1

65	Volume Control Damper – 0-50 Square Inches	Per Item	5
66	Volume Control Damper – 50-200 Square Inches	Per Item	5
67	Volume Control Damper – 200-500 Square Inches	Per Item	5
68	Volume Control Damper – 500-1000 Square Inches	Per Item	5
69	Volume Control Damper – 1000-1500 Square Inches	Per Item	5
70	Volume Control Damper – 1500-2000 Square Inches	Per Item	5
71	Specified Valves – ½”	Per Item	5
72	Specified Valves – ¾”	Per Item	5
73	Specified Valves – 1”	Per Item	5
74	Specified Valves – 1 ¼”	Per Item	5
75	Specified Valves – 1 ½”	Per Item	5
76	Specified Valves – 2”	Per Item	5
77	Specified Valves – 2 ½”	Per Item	5
78	Specified Valves – 3”	Per Item	5
79	Specified Valves – 4”	Per Item	5
80	Specified Valves – 5”	Per Item	5
81	Specified Valves – 6”	Per Item	5
82	Specified Valves – 8”	Per Item	5
83	Specified Valves – 10”	Per Item	5
84	Specified Valves – 12”	Per Item	5
Temporary Heat Days			
85	Temporary Heat Days	Day	1

HVAC unit price quantities are in addition to material quantities directly indicated and/or implied on the mechanical drawings, including related notes and specifications. They relate specifically to system components and do not include miscellaneous elements required by this or other trades to accomplish the work shown or implied in the contract document

PLUMBING (.3) CONTRACT – SCHEDULE OF UNIT PRICES			
Item No.	Description	Unit	QUANTITY
22 05 23	**GENERAL DUTY VALVES FOR PLUMBING**		
1	Ball Valves, Soldered or Threaded		
	1/2" Ball Valve	EA	1
	3/4" Ball Valve	EA	1
	1" Ball Valve	EA	1
	1-1/2" Ball Valve	EA	1
	2" Ball Valve	EA	1
2	Gate Valve, Soldered or Threaded		
	1" Gate Valve	EA	1
	1-1/2" Gate Valve	EA	1
	2" Gate Valve	EA	1
	2-1/2" Gate Valve	EA	1
	3" Gate Valve	EA	1

3	Check Valve, Soldered or Threaded		
	1/2" Check Valve	EA	1
	1" Check Valve	EA	1
	1-1/2" Check Valve	EA	1
	2" Check Valve	EA	1
4	Butterfly Valve, Soldered or Threaded		1
	1" Butterfly Valve	EA	1
	2" Butterfly Valve	EA	1
5	Globe Valve, Soldered or Threaded		
	1/2" Globe Valve	EA	1
	1" Globe Valve	EA	1
	2" Globe Valve	EA	1
	3" Globe Valve	EA	1
22 07 19	**PLUMBING PIPING INSULATION**		
1	1" Mineral Wool insulation		
	1/2" diameter pipe	LF	100
	3/4" diameter pipe	LF	100
	1-1/2" diameter pipe	LF	100
	4" diameter pipe	LF	100
	6" diameter pipe	LF	100
2	2" Mineral Wool insulation		
	1/2" diameter pipe	LF	100
	3/4" diameter pipe	LF	100
	1-1/2" diameter pipe	LF	100
	2" diameter pipe	LF	100
	4" diameter pipe	LF	100
	6" diameter pipe	LF	100
3	1" Fiber Glass with service jacket		
	1/2" diameter pipe	LF	100
	3/4" diameter pipe	LF	100
	1-1/2" diameter pipe	LF	100
	2" diameter pipe	LF	100
	4" diameter pipe	LF	100
	6" diameter pipe	LF	100
4	2" Fiber Glass with service jacket		
	1/2" diameter pipe	LF	100
	3/4" diameter pipe	LF	100
	1-1/2" diameter pipe	LF	100
	2" diameter pipe	LF	100
	4" diameter pipe	LF	100
	6" diameter pipe	LF	100

5	30 mil thick PVC jacket		
	1-1/2" diameter insulation	LF	100
	2" diameter insulation	LF	100
	5" diameter insulation	LF	100
	6" diameter insulation	LF	100
22 11 13	**FACILITY WATER DISTRIBUTION PIPING**		
1	Type 'K' including fittings, couplings and hanger assemblies		
	1/2" Pipe	LF	100
	3/4" Pipe	LF	100
	1-1/2" Pipe	LF	100
	2" Pipe	LF	100
	4" Pipe	LF	100
	6" Pipe	LF	100
2	Type 'L' including fittings, couplings and hanger assemblies		
	1/2" Pipe	LF	100
	3/4" Pipe	LF	100
	1-1/2" Pipe	LF	100
	2" Pipe	LF	100
	4" Pipe	LF	100
	6" Pipe	LF	100
3	Ductile Iron Pipe including Couplings and Hangers		
	3" Pipe	LF	100
	4" Pipe	LF	100
	6" Pipe	LF	100
	8" Pipe	LF	100
22 13 16	**SANITARY WASTE AND VENT PIPING**		
1	Hubless Cast-Iron Soil Pipe including Coupling and hangers		
	2" Hubless Cast Iron	LF	100
	3" Hubless Cast Iron	LF	100
	4" Hubless Cast Iron	LF	100
	6" Hubless Cast Iron	LF	100
2	Hub and Spigot Cast-Iron Soil Pipe including Coupling and hangers		
	2" Hub and spigot Cast Iron	LF	100
	3" Hub and spigot Cast Iron	LF	100
	4" Hub and spigot Cast Iron	LF	100

	6" Hub and spigot Cast Iron	LF	100
	8” Hub and spigot Cast Iron	LF	100
	10” Hub and spigot Cast Iron	LF	100
	12” Hub and spigot Cast Iron	LF	100
	15” Hub and spigot Cast Iron	LF	100
	Plumbing Fixtures		
	Dorm Water Closet + Seat	EA	1
	Dorm Lavatory	EA	1
	Commercial Water Closet + Seat	EA	1
	Commercial Lavatory	EA	1
	Commercial Urinal	EA	1
	Commercial Showers	EA	1
	Water Closet Flushometers	EA	1
	Urinal Flushometer	EA	1
	Lavatory Accessories	EA	1
	Shower Accessories	EA	1
Temporary Heat Days			
1	Temporary Heat Days	Day	1

FIRE PROTECTION (.3) CONTRACT – SCHEDULE OF UNIT PRICES			
Specification No.	Item	Unit	QUANTITY
21 13 13	**WET SPRINKLER PIPE**		
1	SCH 40 Ductile Iron Pipe, Grooved joint, Couplings and Hangers		
	3" Pipe	LF	100
	4" Pipe	LF	100
	6" Pipe	LF	100
	8" Pipe	LF	100
	5.6 K Factor sprinklers	EA	10
	25.2 K Factor sprinklers	EA	10
	5" Storz type FDC	EA	1
	4" FCVA	EA	1
	6" FCVA	EA	1

Plumbing unit price quantities are in addition to material quantities directly indicated and/or implied on the mechanical drawings, including related notes and specifications. They relate specifically to system components and do not include miscellaneous elements required by this or other trades to accomplish the work shown or implied in the contract document

ELECTRICAL (.4) CONTRACT – SCHEDULE OF UNIT PRICES			
ITEM NO.	DESCRIPTION	UNIT OF MEASUREMENT	QUANTITY
1	Junction boxes for mechanical equipment for control wiring	Per Unit	1
2	¾" Conduit for control wiring per mechanical equipment.	LF	50
3	20A duplex receptacle for mechanical controls	Each	1
4	Brach circuit wiring for control equipment (2#10+1#10G in ¾" conduit)	LF	100
5	Junction boxes and supports for each control equipment	Per Unit	1
6	208 volts, 2 pole NEMA-4X, 30 amp Disconnect switch-	Each	1
7	208 volts, 2 pole NEMA-4X, 30 amp Disconnect switch-	Each	1
8	Weather proof 20A duplex receptacle for outdoor area	Each	1
9	20A Duplex receptacle, GFCI	Each	1
10	20A Duplex receptacle	Each	1
11	20A Quadruplex receptacle	Each	1
12	NEMA L6-20R Receptacle	Each	1
13	NEMA L6-30R Receptacle	Each	1
14	NEMA L5-20R Receptacle	Each	1
15	Floor Boxes	Each	1
16	Poke thrus	Each	1
17	¾" EMT conduit	LF	100
18	1" EMT conduit	LF	100
19	¾" RGC conduit	LF	100
20	Type THHN/THWN-2, 12 AWG	LF	100
21	Type THHN/THWN-2, 10 AWG	LF	100
22	Type THHN/THWN-2, 8 AWG	LF	100
23	Temporary Heat Days	Day	1

Electrical unit price quantities are in addition to material quantities directly indicated and/or implied on the mechanical drawings, including related notes and specifications. They relate specifically to system components and do not include miscellaneous elements required by this or other trades to accomplish the work shown or implied in the contract document

1.5 CHANGES

A. All changes in the quantity of work for which there is a Unit Price will be authorized using change order procedures provided in the General Conditions. Change Orders shall be written prior to performing the work where possible but may be written after the work is authorized, completed and measured when quantities are not able to be determined in advance.

1.6 MEASUREMENT

A. Measurement of the work quantities where the work is performed prior to issuance of a Change Order shall be net quantities and not include cutting waste, or other adjustments to the unit of measure of the Unit Price. The Department and Contractor shall arrive at a rational procedure for measurement prior to performing the work. The Contractor shall be responsible for measurement and will submit the calculations and worksheets to the Department for approval.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 024110

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Stipulations:

1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Division 01 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

B. General: Perform demolition in accordance with requirements of the Contract Documents.

1.2 REFERENCES

A. General: Comply with the applicable provisions of the referenced standards except as modified by governing codes and the Contract Documents. Where a recommendation or suggestion occurs in the referenced standards, such recommendation or suggestion shall be considered mandatory. In the event of conflict between referenced standards, this specification or within themselves, the more stringent standard or requirement shall govern.

1.3 DEFINITIONS

A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Department's property.

B. Remove and Salvage: Items indicated to be removed and salvaged remain the Department's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to Department's designated storage area.

C. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in locations indicated.

D. Existing to Remain: Protect construction indicated to remain against damage and soiling during demolition. When permitted by the Professional, items may be removed to a suitable, protected storage location during demolition and then cleaned and reinstalled in their original locations.

1.4 SUBMITTALS

A. Structural Calculations and Temporary Support Systems Drawings: Submit for Professional’s and Structural Engineer’s information:

1. Temporary Support Systems: Submit drawings and calculations for the temporary support systems designed by the Contractor’s Professional Engineer as part of the Contractor’s Quality Control Program.

B. Detailed Demolition Schedule: Submit for Professional’s and Structural Engineer’s information. Before commencing work, submit for review, a detailed demolition schedule showing the commencement, the order and the completion dates for the various parts of this work. Include the following:

1. Detailed sequence of demolition and removal work, with starting and ending dates for each activity.

2. Detailed drawn survey indicating which services are to remain and which are to be removed and capped including locations, elevations and type.

3. Dates for shutoff, capping, and continuation of utility services.

4. Proposed dust-control measures.

5. Proposed noise-control measures.

C. Notification to Department: Submit for Department's documentation. Before starting work relating to existing utilities (electrical, sewer, water, heat, gas, fire lines) that will temporarily discontinue or disrupt service to the existing building, submit a notification to the Department 72 hours in advance and obtain the Department's approval in writing before proceeding with this phase of the work.

D. Photographs: Submit for Department's documentation. Submit photographs of existing adjacent structures and site improvements for record purposes. Locations of photographs shall as directed by Department.

1.5 **QUALITY ASSURANCE**

A. Asbestos Consultant: Prior to commencement of demolition work, and in accordance with the Federal Clean Air Act, the Contractor shall engage a Certified Asbestos Consultant to conduct an inspection and survey to determine the presence of asbestos on the project. As required by Federal Regulations, provide notification to the Federal Environmental Protection Agency, utilizing EPA approved forms, not less than 10 days prior to the commencement of alteration, demolition or renovation work. Provide a copy of notification sent to the EPA both to the Department and Professional. The compliance with this procedure does not supersede local requirements concerning asbestos regulations and certifications.

B. Professional Engineering Services: The Contractor shall retain the services of a Professional Engineer registered in the Commonwealth of Pennsylvania to provide design of temporary bracing and shoring, which may be required as part of alteration and demolition Work.

1. It shall be the responsibility of the Contractor's Engineer to prepare detail drawings and associated calculations representing shoring, bracing or other temporary construction which may be required to maintain the structural stability and integrity of the existing construction during the course of the Work represented in these documents, and provide supervision during execution of the work.

2. Drawings and calculations prepared by the Contractor's Engineer shall bear an original signature and seal indicating the inspector's Engineer's Commonwealth of Pennsylvania Registration. Duplicate copies of drawings and calculations shall be forwarded to the Department prior to commencing temporary Work represented in those documents. The Department will, in turn, transmit those documents to the Structural Engineer of Record for review.

3. The Structural Engineer of Record will review the documents only for how the shoring, bracing and other temporary construction interacts and affects the existing structure. The Structural Engineer of Record's review shall not be construed as complete check, nor relieve the Contractor's Engineer from responsibility for errors nor from the necessity of furnishing additional details or calculations which may have been omitted or required by the Department of Buildings.

4. The Contractor's Engineer shall provide full-time supervision and inspection of the demolition work and report as required to the Building Official.

C. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of Federal, State and Municipal authorities, and in accordance with the requirements of Public Utility Corporations having jurisdiction over the work. Obtain approvals and pay for necessary permits, licenses and certificates and give notices as required during the performance of the demolition work.

1. Clean Air Act: Prior to commencement of site demolition work, and in accordance with the Federal Clean Air Act, the Contractor shall engage a Certified Asbestos Consultant to conduct an inspection and survey to determine the presence of asbestos on the project. As required by Federal Regulations, provide notification to the Federal Environmental Protection Agency, utilizing EPA approved forms, not less than 10 days prior to the commencement of site demolition work. Provide a copy of notification sent to the EPA both to the Department and Professional. The compliance with this procedure does not supersede local requirements concerning asbestos regulations and certifications.

2. Fire Protection: Provide adequate fire protection in accordance with local Fire Department requirements. Do not close or obstruct walkways, passageways or stairways. Do not store or place materials in passageways, stairs or other means of egress. Conduct operations with minimum traffic interference.

1.6 PROJECT/SITE CONDITIONS

A. Occupancy: Structures to be demolished will be vacated and use discontinued prior to start of work.

B. Condition of Existing Structures: Department assumes no responsibility for actual condition of structures to be demolished or to remain. Conditions existing at time of inspection for bidding purpose will be maintained by Department insofar as practicable. However, variations within structure may occur by Department's removal and salvage operations prior to start of demolition work. Contractor shall maintain records as necessary of condition of existing structures and improvements to remain that could be impacted by demolition work within and adjacent to Project limits.

C. Salvaged Materials: Items of salvable value to Contractor except those indicated to be reinstalled, salvaged, or to remain the Department's property may be removed from structure as work progresses. Transport salvaged items from site as they are removed. Storage or sale of removed items will not be permitted on site.

D. Explosives: Use of explosives will not be permitted.

E. Maintenance

1. Traffic: Conduct demolition operations and removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

2. Fencing: The Contractor shall erect fences as required and as agreed upon with the Department. Fences shall be adequately braced and shall be complete with access gates and doors shown and necessary hardware as approved by the Department.

Outside face of fencing shall be given two (2) coats of paint in color selected by the Department. Do not remove fence until completion of Work.

3. Watchman Service: The Contractor shall employ a sufficient number of watchmen to guard the Work during non-working hours, until the Department accepts responsibility for the premises.

F. Noise and Vibration Control: Noise and vibration from demolition operations, including voice communications, shall not exceed levels permitted by local authorities and levels agreed with neighborhood representatives and Department.

1. Sound Control Devices: Motorized equipment on the site, including hauling trucks, shall be equipped with sound control devices. The sound level measured at a distance of 15 ft. (4.5m) from equipment shall not exceed 60 decibels.

2. Chutes: Materials shall be lowered in fully enclosed chutes, acoustically lined to maintain the sound level within the limits prescribed above.

3. Voice Communication: Workmen's voice communication shall be kept under control.

G. Dust Control

1. Prevention of Dust and Dirt: Take necessary precautions to prevent dust and dirt from rising by wetting demolished masonry, concrete, plaster and similar debris or by erected temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air. Comply with governing regulations pertaining to environmental protection.

2. Do not use water when it may create hazardous or objectionable conditions including ice, flooding, and pollution.

3. Locate dustproof protection as directed by the Department and as necessary to separate construction areas from existing operation areas and facilities. Coordinate construction schedule and construction work with the Department. Maintain clearances for existing means of exiting.

H. Cleaning of Structures and Improvements: Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing prior to start of work. Protect construction to remain and affected by the operations under this Section by dustproof partitions or other adequate means.

I. Pest Control

1. Licensed Exterminating Company: Furnish the services of a licensed exterminating company from the time the Work is started until the completion and acceptance of work for the purpose of completely exterminating rats, mice, roaches water-beetles and other pests from the existing structures and surrounding ground areas. The exterminating company shall provide labor, materials and equipment necessary for complete exterminating service within the boundary lines of the site, which shall include shanties, temporary toilets, and field offices.

2. Exterminating Company Evidence of Experience: The exterminating company shall submit satisfactory evidence of at least ten (10) years of experience in this class of work, including the names and addresses of at least five (5) business concerns for whom similar services have been performed by the company within the past five (5) years.

3. Exterminating Materials and Equipment: Materials and equipment used for exterminating purposes shall comply with the rules and regulations of the Department of Health, and the laws, ordinances and regulations of State and Federal Agencies pertaining to chemicals or materials. The exterminating company shall post, in prominent locations, adequate warning signs for the protection of the public in accordance with requirements of agencies having jurisdiction.

4. Inspections and Treatments of Exterminating Company: Inspections and treatments by service operators of the exterminating company shall be made on a set day once each week during the regular work day hours (Monday through Friday).

5. Emergency Service: Emergency service during the regular work day hours (Monday through Friday) shall be rendered within 24 hours, if requested by the Department.

PART 2 - PRODUCTS
(NOT APPLICABLE)

PART 3 - EXECUTION

3.1 **EXAMINATION**

A. Verification of Conditions: Examine the areas to receive the Work and the conditions under which the Work would be performed. Remedy conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected

B. Verify existing conditions in the field prior to the start of Work to determine extent of demolition required. If unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Carefully examine existing as-built and existing building documents so as to become familiar with the existing structure as originally designed or later modified.

3.2 **PREPARATION**

A. Shoring and Bracing: Provide shoring, bracing, or support to prevent movement, settlement, or collapse of areas to be removed and adjacent facilities to remain. If safety of structure appears to be endangered, cease operations and notify Professional immediately. Take precautions to support endangered work until determination is made for continuing operations.

B. Inventory and Record of Items: Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

C. Coordination: Coordinate Work with work of other trades and verify locations to coordinate with work of other trades and field measurements.

D. Notification to Public Utility Corporations and Municipal Departments: Existing service piping, including sewer, water and gas lines shall be cut and capped and electric, telephone and other wires shall be cut in compliance with the requirements of the local Public Utility Corporations and of Municipal Departments having jurisdiction. Before cutting in on the above services notify the proper officials, persons or corporations owning same, obtain instructions for carrying out the Work and take precautionary measures they may deem necessary. Evidence of the discontinuation of these services shall be furnished in the form of proper releases from the appropriate agencies. Individual water taps and electrical lines used for

demolition purposes shall be shut off as soon as demolition work is completed and similar evidence of the discontinuation of temporary services shall be furnished to the Department.

3.3 PROTECTION

A. Precautions: Take precautions to guard against movement, settlement or collapse of surrounding construction designated to remain and be liable for movement, settlement or collapse.

B. Items for Proper Protection of Workers: Provide, erect and maintain catch platforms, lights, barriers, weather protection, warning signs, and other items as required for the proper protection of the workmen engaged in demolition operations, public, adjacent construction and occupants of the building.

C. Fire Protection: Provide adequate fire protection in accordance with local Fire Department requirements.

D. Permit for Streets or Sidewalks: Do not close or obstruct streets or sidewalks without the proper permit. Conduct operations with minimum traffic interference.

E. Protection of Property: Protect public and private property adjacent to and on the job site and including buildings, platforms, vents, utility lines, streets, sidewalks, light standards, hydrants, street signs, mail boxes and fire alarm boxes. Make repairs necessitated by reason of, or in the course of, operations under this Contract to the complete satisfaction of the Department of the damaged property.

F. Explorations and Probes Prior to Demolition and Removal Work: Make explorations and probes as are necessary to ascertain required protective measures before proceeding with demolition and removal work. Give particular attention to shoring and bracing requirements so as to prevent damage to construction to remain.

G. Temporary Protection of Existing Structure: Provide and maintain temporary protection of the existing structure designated to remain where demolition and removal work is being done, connections made, materials handled, or equipment moved.

H. Responsibility for Construction or Building Contents: Be responsible for construction or building contents to remain to prevent damage resulting from insufficient protection.

I. Prevention of Impact Noise or Vibration: Provide suitable measures necessary to prevent transmission of impact noise or vibration into occupied areas of Department’s existing facilities or neighboring buildings.

J. Do not overload existing building structure. Maintain and protect the structural integrity of the existing building structure, neighboring buildings and parts.

3.4 DEMOLITION OPERATIONS

A. Demolition and Removal Work: Demolition and removal work shall be as shown on the Drawings. Do work required in connection with this Project with due care, including shoring, bracing, . Be responsible for damage which may be caused by work to part or parts of existing structures to remain.

B. Materials of Items of Department: Materials or items designated to remain the property of the Department shall be removed with care and stored in a location on the site to be designated by the Department.

C. Materials of Items Not Designated to Department: Materials or items demolished and not designated to become the property of the Department shall become the property of the Contractor and shall be removed from the Department's property.

D. Execution of Demolition Work: Execute the work in a careful and orderly manner, with the least possible disturbance to the public. Proceed with demolition in systematic manner. From top of structure to ground. Complete site demolition work above each floor or tier before disturbing supporting members on lower levels.

E. Temporary Shores, Struts, Bracing Supplemental or Alternate Support: Where necessary to prevent collapse of construction, install temporary shores, struts, bracing supplemental or alternate support for items not demolished or removed. Do not commence demolition work until temporary construction is complete.

F. Below-Grade Construction: Demolish foundation walls and other below-grade construction, including concrete slabs, to a depth of not less than 12 in. (300mm) below lowest foundation level.

G. Paved Areas: Paved areas including walks, parking areas and roads designated for demolition shall be broken up and removed to the top of the subgrade.

H. Handling and Disposal of Materials: Individual materials shall be handled and disposed of in the following manner unless otherwise required by Federal, State of local authorities having jurisdiction:

1. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.

2. Masonry: In general, demolish masonry and concrete in small sections. Remove metal reinforcement, anchors, and ties from masonry and sort with other metals. Clean and stack undamaged, whole masonry units on wood pallets.

    a. Wood Materials: Sort and stack members according to size, type, and length. Separate dimensional and engineered lumber, panel products, and treated wood materials.

3. Metals: Separate metals by type.

    a. Structural Steel: Stack members according to size, type of member, and length. Remove steel framing members individually and lower to ground by hoists, derricks, or other suitable methods.

    b. Remove and dispose of bolts, nuts, washers, and other rough hardware

4. Roofing: Separate organic and glass-fiber shingles and felts. Remove nails, staples, and accessories.

5. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

6. Carpet: Carpet shall be recycled through the new carpet manufacturer’s recycling program (fiber into fiber and backing into backing).

7. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs.

8. Piping: Reduce piping to straight lengths and store by type and size. Separate

supports, hangers, valves, sprinkler heads, and other components by type and size.

9. Lighting Fixtures: Separate lamps by type and protect from breakage.

10. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

11. Conduit: Reduce conduit to straight lengths and store by type and size.

I. Existing service piping, including sewer, water and gas lines shall be cut and capped and electric, telephone and other wires shall be cut in compliance with the requirements of the local Public Utility Corporations and of Municipal Departments having jurisdiction. Before cutting in on the above services notify the proper officials, persons or corporations owning same, obtain instructions for carrying out the Work and take precautionary measures they may deem necessary. Evidence of the discontinuation of these services shall be furnished in the form of proper releases from the appropriate agencies. Individual water taps and electrical lines used for demolition purposes shall be shut off as soon as demolition work is completed and similar evidence of the discontinuation of temporary services shall be furnished to the Department.

J. Pumping Equipment, Suction and Discharge Lines: During the erection of the Work, provide, operate and maintain pumping equipment, suction and discharge lines in a number and capacity as required to keep the cellar and pits free of water. Existing floor drains, as indicated, shall remain and be kept free of debris. The basement floor slabs shall be broken up to prevent the collection of water.

K. Filling Of Areas Below Grade: Filling of areas below grade with masonry, concrete, plaster and other inorganic material will not be permitted. Provide shoring and bracing as required to prevent collapse of remaining construction.

3.5 CUTTING EXISTING CONCRETE

A. When existing concrete is cut and no new concrete will be placed against cut surface, cuts shall not damage concrete to remain and shall leave a neat, clean surface.

B. Concrete removal methods will be determined by Contractor as long as they comply with the requirements of these documents.

C. At edges of openings where new concrete will be placed against cut surface:

1. Score surface of existing concrete so as not to produce feathered edges.

2. Use care not to cut existing reinforcing that will be incorporated into the new concrete pour. Identify the depth of existing reinforcing along the length of cut with non-destructive testing devices. Verify depth of reinforcing by exposing existing reinforcing at not further than 48 inches apart.

3. Depth of cut shall be no greater than one-half of concrete cover.

D. When cutting existing concrete use care not to over-cut at end of opening.

E. When existing reinforcing bars are to be incorporated in new concrete use care not to cut, nick, bend or damage them. Any necessary repairs to reinforcing shall be at no cost to Department.

F. Where it is intended that existing reinforcing be incorporated in new concrete, existing

reinforcing can be either maintained for full specified length or it can be cut short and extended to specified length using specified mechanical couplers.

G. If reinforcing bars that are partially exposed are disturbed then the bar shall be fully exposed with at least 3/4-inch minimum clearance provided all around the bar.

3.6 CUTTING HOLES FOR PIPE AND CONDUIT

A. When holes are located so that the clear distance between holes is greater than 12 inches and no reinforcing is cut then no reinforcing of the holes will be needed. If this criterion cannot be satisfied by relocating the holes please notify the Professional.

B. Prior to cutting or coring holes, scan to locate the reinforcing on both faces of the concrete member.

C. If reinforcing is found, relocate the hole as necessary so as not to cut reinforcing.

D. When coring or drilling, use equipment that will turn off on encountering concrete reinforcing.

3.7 DAMAGED REINFORCING STEEL OR CONCRETE

A. When existing reinforcing bars are inadvertently cut or damaged notify Professional, who will define necessary repair procedures.

B. When damage occurs to existing concrete that is to remain notify Professional, who will define necessary repair procedures.

3.8 REPARATION OF FINISHED SURFACE

A. Where new concrete will be placed against existing concrete or cut concrete surfaces:

1. Sandblast or water-blast all surfaces to clean and roughen the entire surface of the joint, exposing coarse aggregate solidly embedded in mortar matrix.

2. Do not leave loosened particles of aggregate or damaged concrete at surface.

3. Remove any bruised concrete surfaces.

B. Where no concrete will be placed against cut surface of concrete:

1. Surface shall be smooth.

2. Surface left by a good-quality concrete saw cut will be acceptable.

3. Where as-cut surface is not smooth, patch surface with structural repair mortar.

3.9 APPLICATION OF STRUCTURAL REPAIR MORTAR

A. Install structural repair mortar in accordance with manufacturer’s instructions.

B. Manufacturer’s representative to visit site to monitor first application of structural repair mortar.

3.10 FIELD QUALITY CONTROL

A. Contractor’s Quality Control Responsibilities: Contractor is solely responsible for quality

control of the Work.

B. Field inspection of the noise and dust control measures are to be performed by an independent testing agency employed by the Contractor.

1. Furnish reports for the noise and dust control measures for review by the Department.

3.11 ADJUSTING

A. Repair: Promptly repair damage to adjacent construction caused by building demolition operations.

B. Restoration: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials. Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

3.12 CLEANING

A. Salvaged Materials: Remove carefully to avoid damages. Materials for reuse on this project (if any) are to be incorporated into new work as shown. Except for items indicated to be retained as Department's property, other removed and salvaged materials not indicated for reuse shall become Contractor's property and removed from site with further disposition at Contractor's option.

B. Disposal of Demolished Materials: Remove daily from site accumulated debris, rubbish, and other materials resulting from demolition operations in a manner to prevent spilling of debris. Do not allow removed materials to accumulate in the existing building or Department’s facilities. Burning of combustible materials from demolished structures will not be permitted on site.

C. Removal: Transport materials removed from demolished structures and legally dispose off-site.

D. Removal after Completion of Work: Upon completion of work under this Section, remove tools, materials, plant, apparatus and rubbish. The premises shall be left clean.

END OF SECTION

SECTION 042000

UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Stipulations:

1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Division 01 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

B. General: Provide unit masonry in accordance with requirements of the Contract Documents.

C. Section Includes, but not limited to, the following:

1. **CMU-01 and 1A**: Concrete Masonry Unit, Split Face.
2. **CMU-02**: Concrete Masonry Unit, Ground Face
3. **CMU-03**: Concrete Masonry Unit, Ground Face.
4. **CMU-04**: Concrete Masonry Unit.
5. **CMU-04A**: Concrete Masonry Unit, Split Face.
6. **CMU-06**: Concrete Masonry Unit.
7. **CMU-06A**: Concrete Masonry Unit, Ground Face.
8. **CMU-06C**: Glazed Concrete Masonry Unit.
9. **CMU-08**: Concrete Masonry Unit.
10. **CMU-08A**: Concrete Masonry Unit, Ground Face.
11. **CMU-08B**: Concrete Masonry Unit, Bond Beam.
12. **CMU-08C**: Glazed Concrete Masonry Unit.
13. **CMU-10**: Concrete Masonry Unit.
14. **CMU-12**: Concrete Masonry Unit.
15. **CMU-12A**: Concrete Masonry Unit.
16. **PCCM-01**: Precast Concrete Masonry Trim.
17. **MA-xx:** Miscellaneous Masonry Accessories, as indicated on the drawings and as described within these specifications. Specific keynote code/tags may not be

noted in these specifications, but material descriptions are covered within. Refer to the keynote legend on the drawings.

D. Related Requirements:

1. Section 033000 Cast-In-Place Concrete for accessories embedded in concrete and furnished under this Section.

2. Section 080350 "Exterior Enclosure, General".

3. Section 081113 Hollow Metal Doors and Frames and installed under this Section.

4. Section 099100 Painting for CMU surface sealing.

1.2 REFERENCES

A. Reference Standards:

1. General: Comply with the applicable provisions and recommendations of the referenced standards except as modified by governing codes and by the Contract Documents. Where a recommendation or suggestion occurs in the referenced standards, such recommendation or suggestion shall be considered mandatory. In the event of conflict between referenced standards, this specification or within themselves, the more stringent standard or requirement shall govern.

2. American Concrete Institute (ACI):

a. ACI 530.1/ASCE 6/TMS602 "Specifications for Masonry Structures".

b. ACI 216.1/TMS-0216 "Code Requirements for Determining Fire Resistance of Concrete and Masonry Construction Assemblies".

3. National Concrete Masonry Association (NCMA): "TEK" Information Series".

4. American Society for Testing and Materials (ASTM):

a. ASTM C33 "Standard Specification for Concrete Aggregates"

b. ASTM C90 "Standard Specification for Loadbearing Concrete Masonry Units"

c. ASTM C91/C91M "Standard Specification for Masonry Cement"

d. ASTM C140 / C140M "Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units"

e. ASTM C150 "Standard Specification for Portland Cement"

f. ASTM C331 "Standard Specification for Lightweight Aggregates for Concrete Masonry Units"

g. ASTM C780 "Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry"

h. ASTM C1232 “Standard Terminology for Masonry”

i. ASTM C1586 “Standard Guide for Quality Assurance of Mortars”

5. South Coast Air Quality Management District (SCAQMD)

a. Rule 1168 “Adhesive and Sealant Applications”

1.3 ADMINISTRATIVE REQUIREMENTS

A. Pre-installation Meetings: Prior to the start of the Work, meet at the Project site to review methods and sequence of masonry construction, special masonry details and conditions, standard of work, testing and quality control requirements, job organization and other pertinent topics related to the Work.

1.4 SUBMITTALS

A. Product Data: Submit for Professional’s action. Manufacturer’s literature, specifications and installation instructions describing the general properties of each material and accessory to be used in the Work. Include the following:

1. Environmental Product Declaration (EPD): For each product (where available).

2. Sourcing of Raw Materials: Corporate sustainability report for each Manufacturer.

3. Adhesives and Sealants: For installation adhesives and coatings, indicate VOC compliance with SCAQMD, Rule 1168.

4. Recycled Content: For pre-consumer and post-consumer recycled content of materials used.

5. Global Warming Potential (GWP): Provide document noting GWP value(s). Value(s) listed shall be converted from scientific notation to useable numbers before submitting.

6. Reference Service Life Certificates: Manufacturer’s estimated reference service life for each system reported in embodied carbon per year.

B. Shop Drawings: Submit for Professional’s action. Manufacturer approved shop drawings for the fabrication and installation of the Work. Prepare details at appropriate scale to show the Work. Provide the following.

1. Submit block shape drawings, from the manufacturer, for face block units.

2. Submit shop drawings for fabrication, bending and placement of reinforcement bars and details for reinforced masonry. Comply with ACI 315 "Details and Detailing of Concrete Reinforcing". Submit bar schedules, stirrup spacing, bending diagrams for bars and arrangement of masonry reinforcement. Shop drawings shall bear the seal of a Professional Structural or Civil Engineer registered in the Commonwealth of Pennsylvania.

C. Samples: Submit for Professional’s action. Label samples to indicate product, characteristics, and location in the Work. Samples will be reviewed for color and appearance only. Furnish sufficient samples to establish the full range of colors and

textures for materials exposed in the finished work. Compliance with other requirements is the responsibility of the Contractor.

D. Provide samples of the following:

1. Samples for each face block shape: one of each.

2. Reinforcement and accessories embedded in the masonry: one of each.

3. Precast concrete sills and copings: 12 in. x full width.

4. Special shapes of unit masonry: one of each.

5. Colored masonry mortar samples, showing full extent of colors available: 2 of each color, 8 in. long.

E. Delegated Design Submittals: Comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer, registered in the Commonwealth of Pennsylvania, responsible for their preparation.

F. Quality Control Submittals: Submit for Professional's information.

1. Quality Control Testing and Inspection Reports:

a. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE 6.

b. Preconstruction and field test reports for mortar indicating conformance of mortar materials to property specifications of ASTM C270.

c. Test reports, per ASTM C780, for mortar mixes required to comply with property specification.

d. Preconstruction and field test reports of grout in conformance with ASTM C1019.

e. Independent laboratory test reports for seismic reinforcement accessories.

2. Certifications:

a. Document Review: Before commencing work, submit a written statement signed by the Contractor and the Applicator certifying that the Contract Documents, shop drawings and product data have been reviewed with material manufacturers' qualified technical representatives and that they agree the selected materials are proper, compatible with contiguous materials and adequate for the application shown.

b. Producer's Certificates:

1) Submit certificates stating cements are from production facilities that are members of the Portland Cement Association.

2) Submit concrete masonry unit(s) producer's certificates, from an independent testing laboratory, stating concrete unit masonry comply with UL 618 or NCMA TEK 7-1C for two (2) hour or better (as required) referencing full scale fire test reports in conformance with ASTM E119.

3) Submit producer's certification that the concrete unit masonry oven dry density is less than 105 lbs/ ft^3 and that the type aggregate utilized in the production of the concrete unit masonry are 100% lightweight aggregate.

4) Health Product Declaration (HPD): For each product (where available).

c. Mill Certificates: Submit steel producer's certificates of mill analysis, tensile and bend tests for reinforcement steel.

3. Procedures: Submit, for Professional's information, hot and cold-weather construction procedures evidencing compliance with requirements specified in referenced unit masonry standard ACI 530.1/ASCE 6 "Specifications for Masonry Structures".

4. Manufacturer's Qualifications: Submit evidence that the specified materials have been manufactured by the same source and successfully utilized for a minimum of 5 years on projects of a similar scope to that shown and specified for this Project.

G. List of Materials Used in Constructing Mockups: Submit, for Professional's information, a list of generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates. Submittal is for information only. Neither receipt of list nor approval of mockup constitutes approval of deviations from the Contract Documents, unless deviations are specifically brought to the attention of the Professional and approved in writing.

H. Closeout Submittals: Submit for Department's documentation.

1. Warranties: Special warranties as specified.

2. Maintenance Manuals: Furnish complete manuals describing the materials, devices and procedures to be followed in cleaning and maintaining the Work. Include manufacturers' brochures and parts lists describing the actual materials used in the Work, including metal alloys, finishes, sealants, gaskets and other major components. Assemble manuals for component parts into single binders identified for each system.

1.5 QUALITY CONTROL

A. Contractor's Quality Control Responsibilities: Contractor is solely responsible for quality control of the Work.

1. Contractor's Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C1093 to conduct the testing indicated.

B. Sole Source Responsibility:

1. Obtain exposed unit masonry units from one source of a single manufacturer. Obtain accessory products used in conjunction with masonry from the unit masonry manufacturer or from sources acceptable to the manufacturer. The manufacturer shall furnish evidence that the specified materials have been manufactured by the same source and successfully utilized on a yearly basis for a minimum of 5 years on projects of a similar scope to that shown and specified for this Project.

C. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of authorities having jurisdiction. Obtain necessary approvals from all such authorities.

1. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

2. Requirements for fire–rated or lateral support conditions are not necessarily fully defined on the Drawings or specified; comply with applicable regulations.

3. Inspections of the unit masonry work shall comply with IBC "Special Inspections" statutory requirements for "Unit Masonry" and for the requirements of the component materials, their fabrication and installation.

D. Qualified Installer: Installer shall provide evidence of successful completion of work of similar scope to that shown and specified for this Project.

E. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation. Provide personnel to install unit masonry in exterior or specialty wall mock-up who will be the same personnel who will be performing the actual Work.

1. Build mockup of exterior CMU wall as indicated on Drawings, complete with flashings, insulation and reinforcement; using materials, bond, jointing and pattern as specified for final work. Include a typical control joint in each wall sample. Where extent of mock-up is not shown, provide wall sample 10 ft.high x 5 ft. wide x full depth.

a. Build face block mock-up on the site in a location to receive direct sunlight.

b. Clean mock-ups with materials and techniques intended for use on the Project.

c. Obtain Professional's acceptance of visual qualities of each sample panel before proceeding with the final work.

2. Testing Mock-up: Perform testing on mockups according to requirements in "Field Quality Control" Article.

3. Facade Mock-Up Testing: Provide unit masonry products and materials for testing mock-ups in composite configurations with windows and window walls as specified in Section 080355 "Exterior Wall Mock-Ups and Testing".

4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Professional specifically approves such deviations in writing.

5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

6. Demolish and remove mockups when directed unless otherwise indicated.

F. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not uses units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

G. Field Samples: Prior to the Pre-Construction Conference, provide a field sample for each type of concrete masonry unit in the building at area to be designated by the Professional. Utilize the same materials and installation methods in the sample as required for the final Work. Schedule the installation so that the sample may be examined, and any necessary adjustments made, at least 1 week prior to date scheduled for commencing installation of the Work. When accepted, sample areas shall serve as the standard for materials, workmanship, and appearance for such Work throughout the project and shall remain a part of the final Work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. General: Deliver and store materials in manufacturer's original unopened containers, bundles, pallets or other standard packaging devices; fully identified with name, type, grade, color and size.

B. Sequence deliveries to avoid delays, but minimize on-site storage.

C. Storage and Protection: Store on platforms off the ground, in a dry location and protect from weather, soiling and damage. Store aggregates where grading and other required characteristics can be maintained and contamination avoided. Store masonry accessories including metal items to prevent corrosion and accumulation of dirt and oil. Do not use metal reinforcing, ties, or other components which are coated with loose rust or other deleterious matter that will reduce or destroy bond with mortar and grout.

1.7 FIELD / SITE CONDITIONS

A. Ambient Conditions:

1. Cold Weather Conditions: Do not erect masonry when the temperature is below 40 deg. F. unless provisions for heating and drying the materials and protecting the completed work comply with the requirements specified in Paragraph 1.8 of ACI 530.1/ASCE 6/TMS 602 "Specifications for Masonry Structures". Do not build upon frozen work. Do not lay unit masonry having a film of water or frost on their surfaces.

2. Hot Weather Conditions: Do not erect masonry when the temperature is above 100 deg. F. or 90 deg. F with a wind velocity greater than 8 mph to comply with the requirements specified in Paragraph1.8 of ACI 530.1/ASCE 6/TMS 602 "Specifications for Masonry Structures".

1.8 WARRANTY

A. General: Warranties and guaranties specified in this Article shall not deprive the Department of other rights the Department may have under other provisions of the Contract Documents and are in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

A. Design Criteria:

1. Products of other manufacturers will be considered only if evidence is furnished showing compliance with the minimum design and performance requirements specified.

B. Performance Criteria: For information only. Reinforcing bar schedule and locations are shown on the drawings.

1. Exterior Performance Criteria: Comply with the applicable requirements specified in Section 080350 Exterior Enclosure, General.

2. Load and Deflection Criteria:

a. Construct interior unit masonry walls to withstand a lateral loading of minimum 5 psf positive and negative pressure, except where more stringent requirements are indicated.

b. Walls of Atria: Minimum 15 psf loading.

c. Walls of Air Plenum Shafts: Minimum 10 psf loading.

d. Walls of Elevator Shafts: Minimum 5 psf loading.

e. Walls of Stair Wells: Minimum 5 psf loading.

C. Sustainable Design Requirements: Provide the Work, and submit documentation, as necessary for compliance with sustainable requirements noted herein:

1. Recycled content: 15% Minimum

2.2 UNIT MASONRY MATERIALS

A. Concrete Unit masonry: ASTM C90, modified as follows:

1. Aggregates for Normal Weight CMU: Complying with ASTM C33 “Standard Specification for Concrete Aggregates”, and graded from No. 4 to 0 to assure constant texture. The blending of screenings or other deleterious substances is prohibited.

a. Normal Weight CMU Density: The oven dry density of the concrete masonry unit shall **be** ~~not exceed~~ 125 lbs/ ft^3 **or greater.**

2. Compressive Strength: Based on net area as follows:

   a. Minimum compressive strength of one unit: 1700 psi.

   b. Minimum average compressive strength of three units: 1900 psi.

3. Face Size: Nominal 8 in.x 16 in. , unless otherwise shown. Width or thickness as indicated.

4. Linear Shrinkage: Not over 0.065% at delivery when tested in accordance with ASTM C426.

5. Maximum Water Absorption

   a. Lightweight CMU

      1) Maximum water absorption of one unit: 20 lbs/ ft^3

      2) Maximum water absorption of three units: 18 lbs/ ft^3

   b. Normal Weight CMU

      1) Maximum water absorption of one unit: 15 lbs/ ft^3

      2) Maximum water absorption of three units: 13 lbs/ ft^3

6. Provide special shapes where indicated and as follows:

   a. For lintels, corners, jambs, sash, control joints, headers, bonding and other special conditions.

   b. Provide square edged units for outside corners except as otherwise shown or specified.

7. Exposed Units: Provide units for exposed construction with fine textured surface, sharp straight arises, and without chips, cracks or other defects on exposed edges or surfaces which would impair appearance.

8. Manufacturers: Subject to compliance with requirements, provide unit masonry products of one (1) of the following:

   a. Westbrook Concrete Block.

   b. Echelon – Cordova Stone.

   c. York Building Products.

   d. Or approved equal.

B. Decorative Masonry Units: ASTM C90, Type I Moisture Controlled Units, complying with criteria specified above in paragraph "Concrete Unit Masonry" with specified finish, Colors shall be as selected by the Professional. The units shall be free from chips, cracks, or other imperfections that would detract from the overall appearance of the wall.

1. Provide special sizes and shapes where indicated, as required by wall assembly descriptions and details, and as follows:

    a. For lintels, corners, jambs, sash, control joints, headers, bonding and other special conditions.

    b. Provide square edged units for outside corners except as otherwise shown or specified.

2. Split Faced Products: Concrete masonry units with faces formed by splitting. Subject to compliance with requirements, provide one of the following:

    a. Westbrook Concrete Block

    b. Echelon – Cordova Stone

    c. York Building Products

    d. Or approved equal.

3. Ground Faced Products: Concrete masonry units with faces ground to expose selected aggregates. Subject to compliance with requirements, provide one of the following:

    a. Westbrook Concrete Block

    b. Echelon – Cordova Stone

    c. York Building Products

    d. Or approved equal.

4. Polished Faced Products: Subject to compliance with requirements, provide one of the following:

    a. Westbrook Concrete Block

    b. Echelon – Cordova Stone

    c. York Building Products

    d. Or approved equal.

C. Integral Water Repellent: Provide units made with integral water repellent for exposed units and where indicated. Provide liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive according to ASTM E514, with test period extended to 24 hours, show no visible water or leaks on the back of test specimen. Provide one of the following:

    1. “Block Plus W-10” (Addiment Incorporated).

    2. “Dry-Block” (GCP Applied Technologies).

3. “MasterPel 240” (Master Builders Solutions of BASF).

4. Or approved equal.

D. Precast Concrete Sills and Copings: Custom fabricated shapes, precast with air-entrained concrete and hot-dip galvanized steel reinforcing. ASTM C39 , minimum 5500 psi compressive strength at 28 days ASTM C140, maximum 5% moisture absorption. Color and texture selected by Professional. Sizes and configurations as indicated.

2.3 CONCRETE MASONRY UNIT AND PRECAST CONCRETE SCHEDULE

A. **CMU-01:** Concrete Masonry Unit, Split Face.

1. Manufacturer: WESTBROOK
   Size: 8" X 24" X 4"
   Color: SF-608
   Finish: SPLIT FACE
   Bond: STACK

2. Manufacturer: ECHELON - CORDOVA STONE
   Size: 8" X 24" X 4"
   Color: MIDNIGHT ROCK FACE
   Finish: ROCK FACE
   Bond: STACK

3. Manufacturer: YORK BUILDING PRODUCTS
   Size: 8" X 24" X 4"
   Color: CHARCOAL
   Finish: SPLIT FACE
   Bond: STACK

B. **CMU-01A**: Concrete Masonry Unit, Split Face.

1. Manufacturer: WESTBROOK
   Size: 8" X 24" X 8"
   Color: SF-608
   Finish: SPLIT FACE
   Bond: STACK

2. Manufacturer: ECHELON - CORDOVA STONE
   Size: 8" X 24" X 8"
   Color: MIDNIGHT ROCK FACE
   Finish: ROCK FACE
   Bond: STACK

3. Manufacturer: YORK BUILDING PRODUCTS
   Size: 8" X 24" X 8"
   Color: CHARCOAL
   Finish: SPLIT FACE
   Bond: STACK

C. **CMU-02**: Concrete Masonry Unit, Ground Face

1. Manufacturer: WESTBROOK
   Size: 8" X 24" X 8"

Color: GF-608
Finish: GROUND FACE
Bond: STACK

2. Manufacturer: ECHELON - CORDOVA STONE
Size: 8" X 24" X 8"
Color: MIDNIGHT GROUND FACE
Finish: GROND FACE
Bond: STACK

3. Manufacturer: YORK BUILDING PRODUCTS
Size: 8" X 24" X 8"
Color: CHARCOAL
Finish: GROUNDFACE
Bond: STACK

D. **CMU-03**: Concrete Masonry Unit, Ground Face.

1. Manufacturer: WESTBROOK
Size: 8" X 24" X 4"
Color: GF-608
Finish: GROUND FACE
Bond: STACK

2. Manufacturer: ECHELON - CORDOVA STONE
Size: 8" X 24" X 4"
Color: MIDNIGHT GROUND FACE
Finish: GROND FACE
Bond: STACK

3. Manufacturer: YORK BUILDING PRODUCTS
Size: 8" X 24" X 4"
Color: CHARCOAL
Finish: GROUNDFACE
Bond: STACK

E. **CMU-04**: Concrete Masonry Unit:

1. Size: 8" X 16" X 4"

F. **CMU-04A**: Concrete Masonry Unit, Split Face.

1. Manufacturer: WESTBROOK
Size: 8" X 16" X 4"
Color: GF-608
Finish: SPLIT FACE
Bond: STACK

2. Manufacturer: ECHELON - CORDOVA STONE
Size: 8" X 16" X 4"
Color: MIDNIGHT ROCK FACE
Finish: ROCK FACE
Bond: STACK

3. Manufacturer: YORK BUILDING PRODUCTS
Size: 8" X 16" X 4"
Color: CHARCOAL
Finish: SPLIT FACE
Bond: STACK

G. **CMU-06**: Concrete Masonry Unit.

1. Size: 8" X 16" X 6"

H. **CMU-6A**: Concrete Masonry Unit, Ground Face.

1. Manufacturer: WESTBROOK
Size: 8" X 24" X 6"
Color: GF-608
Finish: GROUND FACE
Bond: STACK

2. Manufacturer: ECHELON - CORDOVA STONE
Size: 8" X 24" X 6"
Color: MIDNIGHT GROUND FACE
Finish: GROND FACE
Bond: STACK

3. Manufacturer: YORK BUILDING PRODUCTS
Size: 8" X 24" X 6"
Color: CHARCOAL
Finish: GROUNDFACE
Bond: STACK

I. **CMU-06C**: Concrete Masonry Unit, Glazed Face.

1. Manufacturer: WESTBROOK
Size: 8" X 16" X 6"
Color: Charcoal
Finish: Spectra Glazed
Bond: STACK

2. Or approved equal as manufactured by the following:

a. Echelon – Cordova Stone

b. York Building Products

c. Approved equal.

J. **CMU-08**: Concrete Masonry Unit.

1. Size: 8" X 16" X 8"

K. **CMU-08A**: Concrete Masonry Unit, Ground Face.

1. Manufacturer: WESTBROOK
   Size: 8" X 16" X 8"
   Color: GF-608
   Finish: GROUND FACE
   Bond: STACK

2. Manufacturer: ECHELON - CORDOVA STONE
   Size: 8" X 16" X 8"
   Color: MIDNIGHT GROUND FACE
   Finish: GROND FACE
   Bond: STACK

3. Manufacturer: YORK BUILDING PRODUCTS
   Size: 8" X 16" X 8"
   Color: CHARCOAL
   Finish: GROUNDFACE
   Bond: STACK

L. **CMU-08B**: Concrete Masonry Bond-Beam Unit.

1. Size: 8" X 16" X 8"

M. **CMU-08C**: Concrete Masonry Unit, Glazed Face.

1. Manufacturer: WESTBROOK
   Size: 8" X 16" X 8"
   Color: Charcoal
   Finish: Spectra Glazed
   Bond: STACK

2. Or approved equal as manufactured by the following:

   a. Echelon – Cordova Stone

   b. York Building Products

   c. Approved equal.

N. **CMU-10**: Concrete Masonry Unit.

1. Size: 8" X 16" X 10"

O. **CMU-12**: Concrete Masonry Unit.

1. Size: 8" X 16" X 12"

P. **CMU-12A**: Concrete Masonry Unit.

1. Manufacturer: WESTBROOK
   Size: 8" X 24" X 12"
   Color: GF-608
   Finish: SPLIT FACE
   Bond: STACK

2. Manufacturer: ECHELON - CORDOVA STONE
Size: 8" X 24" X 12"
Color: MIDNIGHT
Finish: SPLIT FACE
Bond: STACK

3. Manufacturer: YORK BUILDING PRODUCTS
Size: 8" X 24" X 12"
Color: CHARCOAL
Finish: SPLIT FACE
Bond: STACK

Q. **PCCM-01**: Precast Concrete Masonry Trim.

1. Manufacturer: WESTBROOK
Size: 24" length, height and depth as indicated on the Drawings.
Color: 323
Texture: ARCHITECTURAL CAST STONE TO MATCH SF-608

2. Or the following:

a. Echelon – Cordova Stone

b. York Building Products

c. Approved equal.

2.4 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

B. Hydrated Lime: ASTM C207, Type S.

C. Aggregate for Mortar: ASTM C144, except for joints less than 1/4 in.use aggregate graded with 100% passing the No. 16 sieve. In areas requiring white mortar use natural white sand or ground white stone.

D. Aggregate for Grout: ASTM C404.

E. Admixtures: Set accelerators, anti-freeze compounds, mortar extenders and air-entraining and other admixtures are prohibited.

F. Water Repellent Mortar Admixtures: Liquid water-repellent mortar admixture intended for use with concrete masonry units, containing integral water repellent by same manufacturer. Use waterproofing admixtures only for CMU single wythe wall construction with integral water repellant, on the exterior to the building envelope or for CMU single wythe wall construction with integral water repellant such as planters, site masonry, screen walls. Provide one of the following:

1. “Mortar Tite” (Addiment Incorporated).

2. “Dry-Block Mortar Admixture” (GCP Applied Technologies).

3. “MasterPel 240” (Master Builders Soliutions of BASF).

G. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides of high purity, nonfading and limeproof, compounded for use in mortar mixes and in compliance with ASTM C979; color as selected. Use only pigments with record of satisfactory performance in masonry mortars/

H. Water: Clear, potable and free of harmful amounts of acid, alkalies, salts, organic materials or other deleterious material which would impair the Work.

2.5 MASONRY ACCESSORIES

A. **MA-xx** - Refer to the keynote legend on the drawings.

B. Anchors and Ties: ASTM A82 Steel, hot-dipped heavily galvanized steel in accordance with ASTM A153 , Class B-2, conforming with ASTM A951 and complying with the following requirements:

1. Partition Top Anchors: Provide hot dip galvanized steel partition top anchors developed to provide lateral shear resistance at the upper limit of the masonry walls and permitting vertical deflection of the slab above; Provide "#PTA420 Partition Top Anchor" and/or "#PTA422 Partition Top Anchor" (Hohmann & Barnard, Inc.) or approved equal. Provide at a maximum spacing of 48 in. and to resist a lateral force of 200 lbs/ft. or as otherwise noted on the drawings or as required.

2. Anchor Bolts: 1/2 in.dia., complying with ASTM A307, Grade A, hot-dipped galvanized in accordance with ASTM A153 , Class C; 12 in. long with a 2 in. turned leg, unless otherwise shown. Provide bolts with galvanized hex nuts and flat washers.

3. Column and Beam Anchors: ASTM A36 steel, 1/4 in. minimum thickness; hot-dipped galvanized in accordance with ASTM A153 , Class B-1. Provide units of profiles and sizes as required for locations shown.

4. Seismic Veneer Anchor: 3/16 in. wire loop, 12 gauge backplate.

5. Wire Ties: 10-gauge looped at both ends.

6. Wire Mesh Ties: 16-gauge , 1/2 in. mesh, 3 in. wide, length as required.

7. Hardware Cloth: 16-gauge , 1/2 in. mesh, size as required.

8. Anchor Straps: 1-1/4 in. x 1/8 in. by length required, with ends turned up 2 in. .

C. Dovetail Slots: 22-gauge , felt, plastic foam or fiber filled; sized to receive flexible anchors. Place slots at locations shown or as recommended. Provide "#305 Dovetail Slot " (Hohmann & Barnard, Inc.) or approved equal.

1. Flexible Anchors for Dovetail Slots: 16-gauge end and 3/16 in. dia. wire, of length required; Provide "#315-BL Flexible Dovetail Brick Tie" (Hohmann & Barnard, Inc.) or approved equal.

2. Flexible Anchors for Dovetail Slots: 16-gauge end and 3/16 in. dia. wire, of length required; Provide "#315-BT Flexible Dovetail Brick Tie" (Hohmann & Barnard, Inc.) or approved equal.

D. Channel Slots for Surface Attachment to Structural Steel and Masonry: 12-gauge steel; sized to receive flexible gripstay anchors. Provide "#360 Gripstay Channels" (Hohmann & Barnard, Inc.) or approved equal. Place slots at locations shown or as recommended.

1. Flexible Gripstay Anchors for Welded Channel Slots: 16-gauge dovetail end and 3/16 in. dia. wire, of length required; Provide "#363-BL Flexible Gripstay Brick Anchor" (Hohmann & Barnard, Inc.) or approved equal.

2. Flexible Gripstay Anchors for Welded Channel Slots: 16-gauge dovetail end and 3/16 in. dia. wire, of length required; Provide "#363-BT Flexible Gripstay Brick Anchor" (Hohmann & Barnard, Inc.) or approved equal.

E. Horizontal Joint Reinforcement: Truss type, fabricated from 9-gauge cold drawn steel wire complying with ASTM A82; hot dip galvanized as per ASTM A153 Class B2; conforming with ASTM A951 deformed side rods; smooth cross rods; out to out spacing of side rods not less than 2 in. less than nominal wall dimension. Provide manufacturer's standard or custom fabrications to comply with the specified requirements.

1. Single Wythe Concrete Unit masonry Walls: One piece truss type horizontal joint reinforcement with prefabricated corner and tee units. Sizes as required for walls shown.

a. "Dur-O-Wal D/A 3100 Truss" (Dur-O-Wal, Inc.).

b. "Single Wythe Wall with #120 Truss Mesh" (Hohmann & Barnard, Inc.).

c. “Two Wire System 300" (WIRE-BOND).

2. Composite Walls: One piece truss type horizontal joint reinforcement with prefabricated corner and tee units. Sizes as required for walls shown.

a. "Dur-O-Wal D/A 3100 TR Truss Tri Rod" (Dur-O-Wal, Inc.).

b. "Composite Wall with #130 Truss Tri Mesh" (Hohmann & Barnard, Inc.).

c. “Truss Type Series 300" Single Wythe (WIRE-BOND).

3. Cavity Walls (Two Piece) With Concrete Unit Masonry Backup: Truss type horizontal joint reinforcement fabricated from 9-gauge cold drawn steel wire complying with ASTM A82 ; hot dip galvanized as per ASTM A153 Class B2 conforming with ASTM A951; sized for the inner wythe masonry construction with loose, adjustable pintle type wire anchors sized for the outer wythe masonry construction. Fabricate pintles from 9-gauge) cold-drawn steel wire, hot-dipped galvanized, designed to snugly engage 3/16 in. eyelet sections fabricated onto the truss and located at 16 in. o.c. Size pintles to extend to within 1 in. from the exterior face of the outer wythe. Provide prefabricated tee and corner units.

a. "Dur-O-Eye D/A 3700 " (Dur-O-Wal).

b. "Lox-All Adjustable Truss Type #170" (Hohmann & Barnard, Inc.).

c. "Series 900 Cavity Hook and Eye" (WIRE-BOND).

4. Cavity Walls (Two Piece) With Concrete Unit masonry Backup For Seismic Applications: Truss type horizontal joint reinforcement specifically manufactured and tested for seismic applications and approved by local authorities having jurisdiction; fabricated from 9-gauge cold drawn steel wire complying with ASTM A82 ; hot dip galvanized as per ASTM A153 Class B2 conforming with ASTM A951; sized for the inner wythe masonry construction with loose, adjustable anchors sized for the outer wythe masonry construction and designed for seismic applications. Provide prefabricated tee and corner units.

   a. "D/A 3700 S Seismic Dur-O Eye " (Dur-O-Wal).

   b. "Lox-All Adjustable Truss Type #170 with Seismiclip Interlock System" (Hohmann & Barnard, Inc.).

   c. "Series 900 Cavity Hook and Eye Wire-Bond Clip" (WIRE-BOND).

5. Horizontal Wire Reinforcement for Block Veneer: 9-gauge cold-drawn steel wire complying with ASTM A82 , hot-dipped galvanized.

F. Reinforcement:

1. Rod Reinforcement: 1/4 in.steel pencil rods free from mill scale and loose rust or other deleterious matter.

2. Deformed Bar Reinforcement: ASTM A615 steel, Grade 60; hot-dipped galvanized in accordance with ASTM A123 free from mill scale and loose rust or other deleterious matter. Provide sizes and spacing as shown.

G. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.14 in. steel wire, hot-dip galvanized after fabrication. Provide units with either two loops or four loops as needed for number of bars indicated. Provide one of the following:

1. “D/A 810, D/A 812 or D/A 817” (Dur-O-Wal).

2. “No. 376 Rebar Positioner“ (Heckmann Building Products Inc.).

3. “#RB or #RB-Twin Rebar Positioner” (Hohmann & Barnard, Inc.).

4. “O-Ring or Double O-Ring Rebar Positioner” (WIRE-BOND).

H. Expansion and Control Joint Fillers: Provide a system of joint fillers for unit masonry work of sizes and profiles shown. Provide fillers in joints to receive sealant sized to allow space for sealant and back-up materials.

1. Concrete Unit Masonry Control Joints: ASTM D2000, Shore A Durometer 80 +/- 5. Preformed closed-cell synthetic rubber, size and shape intended for use with concrete masonry sash blocks, unless otherwise shown.

2. Control Joint: ASTM D1056, closed cell neoprene, capable of 35% compression.

I. Full Mortar Bed Height Weep/Vents (**MA-02**):

1. Cellular Plastic Weep/Vent: One piece, flexible extrusion made form UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch (3.2mm) less than depth of outer wythe, in color selected from manufacturer's standard.

    a. 16QVQUADRVENT (Hohmann & Barnard, Inc.) or approved equal.

J. Cavity Drainage Material (**MA-03**): Free-draining mesh, made from polymer strands that will not degrade within the wall cavity. Provide one of the following:

1. "Mortar Break II" (Advanced Building Products Inc.).

2. "DA1008 Mortar Net" (Dayton Superior Corporation, Dur-O-Wal Division).

3. "Mortar Net" (Mortar Net USA, Ltd.).

4. "Driwall Mortar Deflection" (Keene Building Products, Inc.).

K. Metal Flashing Trim: Stainless steel, ASTM A167, Type 304, dead soft fully annealed except where harder temper required for forming or performance; 24-gauge unless otherwise shown, finish No. 2D. Provide factory preformed and crimped edge. Comply with Section 076200 Sheet Metal Flashing and Trim.

L. Insulation: Provide insulation specified in Section 072100 "Thermal Insulation".

M. Air and Water Barrier: Provide air and water barriers as specified in Section 072700 Air and Water Barriers.

2.6 MORTAR MIXES

A. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109 for compressive strength, ASTM C1506 for water retention, and ASTM C91 for air content.

2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

B. Chloride Content of Mix: The total chloride (CL) ion content in the entire mortar or grout mix shall not exceed 0.10% of the weight of cement. Mortar and grout with excess chlorides will be subject to removal.

C. Mortar for Unit Masonry: ASTM C270, Portland Cement-Lime Mortar; Type N for interior work and exterior wall work except use Type S mortar for reinforced unit masonry. Do not use quicklime or masonry cement for mortar.

1. In mortar used for polished concrete unit masonry, sand shall pass a No. 16 sieve.

D. Waterproof Mortar: For exterior solid wall construction, add mortar waterproofing admixture to the mix in accordance with the manufacturer's recommendation, but do not exceed 2% admixture by volume.

E. Pigmented Colored Mortar: For pigmented mortars, use colored Portland cement-lime mix of formulation required to produce color indicated, or if not indicated, as selected from manufacturer's standard formulations. Pigments shall not exceed 10 % of Portland cement by weight for mineral oxides nor 2% for carbon black. Provide individual mortar mixes to match the Professional's sample, containing mortar pigment for the following:

1. Face Block: Provide custom colors for each color and type of face block scheduled, as selected by the Professional.

F. Fire Clay Mortar: For fire block construction, mix in accordance with manufacturer's recommendations.

G. Grout: ASTM C476, Portland Cement Grout; provide individual mixes for fine aggregate grout and coarse aggregate grout as specified. Provide grout with a slump of 8 to 11 inches as measured in accordance with ASTM C143 .

H. Measurement and Mixing of Mortar Materials: Comply with ASTM C270 for measuring and mixing of mortar materials and for retempering of mixed mortar. Measure and mix mortar to provide the following properties:

1. Compressive Strength: Minimum 28-day strength as follows:

a. Type N: 750 psi..

b. Type S for Reinforced Masonry Only: 1800 psi.

2. Water Retention: 75%, minimum.

3. Air Content: 12%, maximum.

I. Measurement and Mixing of Grout Materials: Comply with ASTM C476 for measuring and mixing of grout materials. Control batching procedure to ensure proper volume proportions of grout materials and to achieve a grout slump of 8 in. to 11 in., and a 28-day minimum compressive strength of 2500 psi in accordance with ASTM C1019.

J. Measuring Devices: Use accurate measuring devices to mix materials by volume. The use of shovels for measurement is prohibited.

K. Mixing of Pigmented Colored Mortars: Mix colored mortars separately to prevent contamination from other mortars.

L. Mixture and Retempering Procedures: Mix only sufficient mortar as required at a given time. Retemper stiffened mortar as required, except discard mortar not utilized within 2 hrs. of initial mixing. Do not retemper colored mortar.

2.7 SOURCE QUALITY CONTROL

A. Contractor’s Quality Control Responsibilities: Contractor is solely responsible for quality control of the Work.

B. General: Provide and maintain an effective Quality Control program and perform sufficient inspections, surveys and tests of the Work, including those of other trades, to ensure compliance with the Contract Documents. Furnish appropriate facilities, accurately calibrated instruments and testing devices required to perform the quality control operations and with sufficient work forces to cover the construction operations

within the actual construction sequences. Coordinate this work with the quality control requirements of other technical Sections of the Specifications and with requirements of the Department and governing authorities having jurisdiction.

C. Contractor's Testing: Perform testing in an independent certified testing laboratory. Furnish the laboratory sufficient quantities of specimens to comply with referenced testing standards. Test and furnish test reports for materials specified.

1. Concrete Masonry Unit Testing: After the Professional's review of samples, test each type, class and grade of concrete masonry unit specified in accordance with ASTM C140. Provide testing specimens from actual production batches. Perform the following tests:

    a. Compressive strength

    b. Absorption

    c. Moisture content

    d. Weight

    e. Dimensions

2. Prism Test: Provide a prism test for each type of wall construction indicated. Prism test concrete unit masonry to determine the actual f'_m of the concrete unit masonry wall construction. Construct and test concrete unit masonry prisms in accordance with ASTM C1314, and to comply with requirements of local authorities having jurisdiction. Test grouted and hollow concrete unit masonry wall specimens. Test concrete unit masonry thickness and mortar types intended for use on the Project. Test prisms a minimum of 16 in. in height.

3. Aggregate Testing: Test aggregate as follows:

    a. Mortar Aggregate: ASTM C144

    b. Grout Aggregate: ASTM C404

4. Mortar Testing: Test mortar samples in accordance with ASTM C780 for mortar compression strength, composition and properties. Test each mortar mix, type and color each week. Prior to commencement of Work, provide preconstruction tests to establish a basis for comparison.

5. Grout Testing: Test and submit test reports of grout samples in accordance with ASTM C1019 for compression strength. Test grout during construction for each 5000 ft^2. ^{2} of wall area or portion thereof. Prior to commencement of Work, provide preconstruction tests to establish a basis for comparison.

6. Chloride Ion Testing: Test each mortar and grout mix to verify that the total chloride (Cl) ion content of each mix is within the specified limits. Perform chloride tests in accordance with ASTM C1152

PART 3 - EXECUTION

3.1 GENERAL

A. Manufacturer's Instructions: Prepare substrates and erect the Work of this Section; including components, accessories in accordance with the manufacturer's instructions, except where more stringent requirements are shown or specified, and where project conditions, require extra precautions or provisions to ensure satisfactory performance of the Work.

3.2 EXAMINATION

A. Verification of Conditions: Examine the areas to receive the Work and the conditions under which the Work would be performed. Remedy conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected. Examine rough-in and built-in construction to verify actual locations of piping and other connections prior to installation.

3.3 PREPARATION

A. Substrate Acceptability: Commencement of installation shall constitute acceptance of substrate conditions by the Installer.

B. Surface Preparation: Clean surfaces scheduled for unit masonry, before installation to remove dirt, dust, debris, loose material and other foreign matter detrimental to proper bonding.

C. Lay Out of Walls: Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and for accurate locating of openings, movement-type joints, returns, and offsets. Avoid the use of less-than-half-size units at corners, jambs, and where possible at other locations

3.4 INSTALLATION

A. General Requirements: Provide unit masonry construction in accordance with the referenced standards and the manufacturers' recommendations for conditions of each particular application, except where more stringent requirements are shown or specified.

1. Concrete Masonry: ACI 530 and ACI 530.1 standards.

B. General: Lay masonry plumb, true to line with level and accurately spaced courses; corners plumb and true; each course breaking joint with the course below, except as may be otherwise indicated or specified. Maintain plumb bond. Comply with tolerances as specified in "References" and the following:

1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/4 in. in 20 ft. , nor 1/2 in. maximum.

2. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 in. in 10 ft. or 1/2 in., maximum.

3. For conspicuous horizontal lines, such as exposed lintels, sills, parapets, and reveals, do not vary from level by more than 1/4 in. , in 20 ft. , nor 1/2 in. maximum.

4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 in., with a maximum thickness limited to 1/2 in. Do not vary from bed-joint thickness of adjacent courses by more than 1/8 in .

5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 in. . Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 in.

C. Leave openings for equipment to be installed before completion of masonry. After installation of equipment, complete masonry to match construction immediately adjacent to the opening.

D. Stopping and Resuming Work: In each course, rack back 2-unit length for one-half running bond or 1/3 unit length for 1/3 running bond; do not tooth. Clean exposed surfaces of set masonry, wet clay unit masonry lightly (if required), and remove loose unit masonry and mortar prior to laying fresh masonry.

E. Condition of Exposed Masonry: No cracked, chipped, broken, discolored, defaced or open celled units will be permitted on exposed masonry.

F. Cutting, patching and repairing in connection with masonry work as required to accommodate the work of other trades shall be performed under this Section.

G. Use of Motor Driven Diamond Saw: Use motor driven diamond saw designed to cut unit masonry with clean sharp corners. Cut units as required to provide pattern shown and to fit adjoining work neatly. Use full units without cutting wherever possible. If required, locate less than half-sized units at inside corners. Do not use less than half-size units at outside corners, jambs and at other conspicuous locations.

H. Joints:

1. Exterior: Tool exposed joints slightly concave unless otherwise shown. Lay masonry unit with uniform joint widths. Tool joints to squeeze mortar back into joints. Tool after mortar has taken its initial set. At inside face of exposed masonry air shafts, strike joints flush.

2. Interior: Exposed joints shall be raked unless otherwise shown. Lay masonry unit with uniform joint widths. Tool joints to squeeze mortar back into joints. Tool after mortar has taken its initial set. At inside face of exposed masonry air shafts, strike joints flush.

I. Anchors and Ties: Provide loose anchors and ties where shown and where required to supplement other reinforcement specified and in accordance with the applicable requirements of governmental authorities having jurisdiction.

1. Anchor, tie, reinforce and bond masonry at corners and intersections in accordance with the applicable requirements of governmental authorities having jurisdiction.

2. Space loose anchors and ties a maximum of 16 in o.c. horizontally and vertically.

3. Set anchors, with vertical legs, within the core of the masonry wythe and fill core solid with mortar or grout.

4. Provide wire mesh ties, hardware cloth, or expanded lath below core space to retain mortar or grout at embedded anchors.

5. Provide loose anchors at columns, beams and other structural elements as shown and as required to support imposed loads. Install anchors to structural elements to prevent rattle and lateral displacement in any direction.

J. Flashing and Weep Holes: Install embedded flashing including weep holes if required, in masonry construction at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall as indicated and as specified.

1. Prepare masonry and concrete surfaces so they are smooth and free from projections that could puncture flashing. Unless otherwise indicated, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.

2. At lintels and shelf angles, extend flashing a minimum of 4 in. into masonry at each end. At heads and sills, extend flashing 4 in. at ends and turn flashing up not less than 2 in. to form a pan. Protect flashing from damage during construction.

3. Extend sheet metal flashing beyond face of masonry at exterior and turn flashing down to form a drip, as indicated on the drawings.

4. Install metal drip edges beneath elastomeric flashing at exterior face of wall. Stop elastomeric flashing 1/2 in. back from outside face of wall and adhere to top of metal drip edge.

5. Install weep holes in the head joints in exterior wythes of the first and second course (staggered) of masonry immediately above embedded flashing.

6. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

K. Installation of Loose Lintels, Relieving Angles and Other Miscellaneous Support Steel: Install loose lintels, relieving angles and other miscellaneous support steel where shown. Adjust as required to provide square, level, plumb and true openings for attachment and alignment of other work. Grout lintels fully. Provide minimum lintel bearing at each jamb of 4 in. for openings which do not exceed 6 ft. and 8 in. for openings in excess of 6 ft.

1. Fill cores in hollow concrete unit masonry with grout 3 courses 24 in. under bearing plates, beams, lintels, posts, and similar items, unless otherwise shown.

2. At underside of relieving angles and other miscellaneous support steel where shown or required, provide compressible filler.

L. Built-In Work: Build in frames, struts, hangers, miscellaneous metal and other items of work furnished under other Sections. Prepare for, build in and protect flashings, reglets, anchors and other similar items occurring in connection with work of this Section. Set and grout loose lintels. Build in anchors, furnishing such as may be required exclusively by reason of work under this Section.

1. Access Doors, Frames and Access Panels: Install access doors, frames and access panels occurring in masonry construction where shown and required for access to mechanical and electrical installations and equipment.

2. Chases, Slots, Reglets or Openings: Chases, slots, reglets or openings necessary for the proper installation of work of other trades shall be formed as required. Keep chases and reglets free from mortar or other debris..

M. Mortar Cants: Provide mortar cants in elevator shafts and stair halls where concrete and/or steel beams abut and project from masonry walls.

N. Pointing: At completion of any portion of work, point holes in joints of exposed masonry surfaces by completely filling with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application. After pointing has hardened clean the masonry surfaces. Clean masonry in small sections prior to the installation of contiguous work by other trades.

3.5 LAYING CONCRETE UNIT MASONRY

A. Procedures for Erection of Concrete Unit masonry: Erect concrete unit masonry (CMU) where shown. Solidly bed each course in mortar. Butter vertical joints their entire length. Lay concrete unit masonry with units in running bond with vertical joint in each course centered on units in courses above and below. Bond each course at corners and intersections and bond into or anchor to adjacent construction with metal anchors spaced not over 32 in. o.c. in both directions. Do not use units with less than nominal 4 in. horizontal face dimensions at corners or jambs.

B. Procedures for Setting Units: Set units with care around frames so as not to bulge the sides or change the position of the frames. Break joints in units set around the tops of door frames so as to minimize the danger of loosening the units due to door jarring. Set units tightly against metal frames and fill voids completely. Build frame anchors into joints. Cut units accurately to fit around pipes, ducts, openings, etc. and fill voids full. Fill jambs and head of hollow metal frames solid with mortar.

C. Partitions: Build partitions of thickness shown. Give sufficient opportunity to the various trades to install built-in work before proceeding with the partitions, leaving openings where required for testing, etc.; such openings to be closed later. Except where first course is shown to be laid on a concrete curb, lay first course directly on structural slab with cells vertical and fill cells with mortar to one-half the height of the unit. Construct masonry partitions full height and terminate against underside of structure above unless otherwise shown.

1. Stop installation of partition, leaving a minimum gap of 3/4 in. at top, to allow for deflection of floor slab. Fill void with continuous compressible filler of min. width 1 in. less than width of concrete masonry unit, centered unit leaving a 1/2 in. gap on each side. Seal gap on both sides with sealant type shown.

    a. Sealants and compressible fillers are specified under Section 079200 Joint Sealants.

2. In areas where walls are fire rated, stop installation of partition 3/4 in. from top of structure above and leave ready for firestopping.

3. Provide specified galvanized steel partition top anchors at top of concrete unit masonry partitions in accordance with manufacturer's written instruction so as to laterally tie wall to structure and allow for deflection.

D. Appearance of Work: Line up courses of exposed work throughout to obtain a uniform appearance. Install units at locations where conduits, pipes, etc. are to be enclosed in a manner to produce the regular jointing pattern of the adjacent surfaces. Provide necessary reinforcement for bonding where block units are used. Holes made in exposed units for attachment of handrail brackets and similar items shall be neatly drilled. Provide necessary special jamb, irregular and regular angle units where required to obtain smooth, evenly jointed and regular patterns throughout exposed surfaces.

E. Joint Reinforcement: Place joint reinforcement in horizontal mortar joints on 16 in. centers unless otherwise shown. Make reinforcement continuous except at control joints and expansion joints. Lap reinforcement 6 in. at ends and use prefabricated "T" and "L" sections at corners and intersections to provide continuity. Place reinforcement to obtain min. 5/8 in. mortar cover at side rods. Provide reinforcement in first and second bed joints above lintels and below sills extending 2 ft. beyond jamb openings.

F. Control Joints: Construct continuous control joints to provide an unbroken vertical separation through the entire thickness of walls, in the manner shown by the details, complying with referenced standards and at locations shown. Locations of control joints not shown shall be approved by the Professional prior to the start of construction. Where locations are not shown, construct control joints throughout the unbroken length of walls as follows:

1. Not to exceed 25 ft. on center in same plane as wall.

2. Where joints occur in construction supporting masonry wall.

3. Where masonry abuts dissimilar construction or structural element such as a column.

4. At one jamb for major openings less than 6 ft. in width and at both jambs for wider openings. (Control joints can be omitted if adequate tensile reinforcement, as approved by the Professional, is placed above and below wall openings.)

5. Where a change occurs in masonry wall height or thickness, and at chases and recesses in the masonry wall.

G. Joint for Sealant: Leave an open joint for sealing entirely around metal frames in exterior and interior concrete masonry walls. Unless otherwise indicated on the Drawings, size of joint shall be 1/4 in. wide and 3/4 in.deep, left clean and ready for sealing.

H. Concrete Bond Beams and Lintels: Provide concrete bond beams and masonry lintels consisting of specially formed units, with reinforcing bars and fill with grout, wherever shown and wherever openings in concrete masonry of more than 1 ft. are shown without structural steel or other supporting lintels. Unless otherwise shown provide one bar for each 4 in. thickness of wall, and use bars of a size number not less than the number of feet of opening width. Provide minimum lintel bearing at each jamb of 4 in. for openings which do not exceed 6 ft. and 8 in. for openings in excess of 6 ft.. Precast lintels or form lintels in place with adequate temporary support. Cure precast lintels thoroughly before handling and installing

I. Miscellaneous Masonry Items: Install structural steel lintels and supports for unit masonry as indicated and as specified in Section 055000, “Metal Fabrications”. Build sleeves, frames, or other miscellaneous metal items into masonry, and fill solidly around each built-in item as Work progresses.

3.6 REINFORCED UNIT MASONRY

A. Reinforcement Placement:

1. Clean reinforcement of loose rust, mill scale, or other deleterious materials. Do not use reinforcement with kinks or reduced cross-section due to excessive rusting or other causes. Do not use reinforcement with bends other than shown on final shop drawings.

2. Position reinforcement accurately at spacing shown. Support and secure bars against displacement.

   a. Provide laps of dimension shown; if not shown, as required by governing authority.

   b. Anchoring: Anchor masonry work to supporting structure as indicated. At intersection of reinforced masonry walls with non-reinforced masonry, provide anchorage as shown.

B. Temporary Shoring: Provide temporary shoring as required to support masonry elements; to conform to masonry shapes, lines and dimensions shown.

C. Installation of Reinforced Concrete Unit Masonry: Lay concrete unit masonry with full-face shell mortar beds. Use Type S mortar for reinforced unit masonry. Fill vertical head joints (end joints between units) solidly with mortar from face of unit to a distance behind face equal to not less than the thickness of longitudinal face shells. Solidly bed cross-webs of starting courses in mortar. Maintain head and bed joint widths shown, or if not shown, provide 3/8 in. joints.

D. Walls:

1. Pattern Bond: Lay concrete unit masonry wall units in half running bond with vertical joints in each course centered on units in courses above and below, unless otherwise indicated. Bond and interlock each course at corners and intersections. Use special-shaped units where shown, and as required for corners, jambs, sash, control joints, lintels, bond beams and other special conditions.

   a. Maintain vertical continuity of core or cell cavities, which are to be reinforced and grouted, to provide minimum clear dimensions indicated and to provide minimum clearance and grout coverage for vertical reinforcement bars. Keep cavities free of mortar. Solidly bed webs in mortar where adjacent to reinforced cores or cells.

2. Where horizontal reinforced beams (bond beams) are shown, use special units or modify regular units to allow for placement of continuous horizontal reinforcement bars. Place small mesh expanded metal lath or wire screening in mortar joints under bond beam courses over cores or cells of non-reinforced vertical cells, or provide units with solid bottoms.

3. Grouting: Install grout in accordance with ACI 530.1/ASCE 6.

   a. Use "Fine Grout" for filling spaces less than 3 in. in both horizontal directions.

   b. Use "Coarse Grout" for filling 3 in. spaces or larger in both horizontal directions.

4. Low-Lift Grouting:

   a. Provide minimum clear dimension of 2 in. and clear area of 8 $in.^2$ in vertical cores to be grouted.

   b. Place vertical reinforcement prior to laying of concrete unit masonry. Extend above elevation of maximum pour height as required to allow for splicing. Support in position utilizing metal supports, centering clips, spacers, ties or caging devices located near the ends of each bar and at intermediate vertical intervals not exceeding 192 bar diameters nor 10 ft.

   c. Lay concrete unit masonry to maximum pour height. Do not exceed 4 ft. height, or if bond beam occurs below 4 ft. height stop pour at course below bond beam.

   d. Pour grout using container with spout or by chute. Rod or vibrate grout during placing. Place grout continuously; do not interrupt pouring of grout for more than one hour. Terminate grout pours 1-1/2 in. below top course of pour except at the finish course. Puddle or agitate grout thoroughly to eliminate voids. Remove masonry displaced by grouting operation and re-lay in alignment with fresh mortar.

   e. Bond Beams: Stop grout in vertical cells 1-1/2 in. below bond beam course. Place horizontal reinforcement in bond beams; lap at corners and intersections as shown. Place grout in bond beam course before filling vertical cores above bond beam.

E. Movement (Control) Joints: Provide horizontal and vertical movement (control) joints to separate masonry into segments to prevent cracking.

1. Vertical control joints shall be placed where shown on the drawings and if not shown either at corners or two joints placed no more than 20 ft. apart around the corners. Straight solid walls shall not exceed 40 ft. without a control joint. Coordinate with column placement and backup construction as required.

2. Coordinate control joints with continuous and non-continuous openings such as doors and windows in accordance with the manufacturers recommendations.

3. Keep movement joints free of mortar, debris, and reinforcement.

4. Locate as shown on the Drawings, 3/8 to 1/2 in.depending on building movement, kept watertight with pre-molded foam or neoprene pad, with exterior sealant backer rod and commercial sealant that can withstand the calculated movement including temperature, moisture movement, creep in concrete, horizontal and vertical deflections, location of horizontal angles, lintels and other supports.

F. Installation

1. Do not install cracked, broken, chipped, or otherwise damaged block masonry units.

2. Lay-out and adjust each coursing to each wall space so that no course finishes at an external corner or jamb with less than a half size unit. Bond of each course at jamb openings shall be symmetrical.

3. Lay block masonry units plumb and true to lines, head joints to align and be plumb. Lay with completely filled mortar joints; bed joints should not be deeply furrowed and masonry units buttered with sufficient mortar to fill head joints except at weep holes.

4. Adjust units to line and level while mortar is soft and plastic. Do not disturb unit once in place except to completely remove and set in fresh bed of mortar. If head joints are opened during adjusting, refill head joints.

5. Do not pound corners and jambs to fit stretcher units after they are set in position. Where an adjustment must be made after mortar has started to harden, remove mortar and replace with fresh mortar.

G. Back Joints and Frames: Back joints against concrete, metal or other units shall be slushed, grouted or shoved full as the course is laid. Fill jambs and head of metal frames solid with mortar as the work progresses.

H. Joint for Sealant: Leave an open joint for sealing entirely around metal frames in exterior and interior block walls. Unless otherwise indicated on the Drawings, size of joint shall be 1/4 in. wide and 3/4 in.deep, left clean and ready for sealing under Section 079200 "Joint Sealants".

3.7 CAVITY WALL CONSTRUCTION

A. General: Construct cavity walls as shown; consisting of an outer wythe of face block, an air space, cavity insulation, weepholes, fillers, flashings, vapor barrier and an inner wythe of concrete unit masonry and/or cast-in-place concrete. The outer and inner masonry wythes shall be tied together with horizontal joint reinforcement.

1. Cavity Space: Care shall be taken to keep the cavity space free from mortar droppings and other deleterious materials. Use wood strips temporarily placed in cavity to collect mortar droppings. As work progresses, remove strips, clean off mortar droppings, and replace in cavity.

2. Flashing and Weephole Ventilators: At bottom terminations of cavity, install flashing continuously with weepholes. Provide weephole ventilators at bottom of cavity, not more than 2 ft. o.c. in the vertical block joint resting on the horizontal leg of the relieving angle above the flashing.

3. Open Cell Filler Materials, Stainless Steel Edging and End Dams: At the bottom terminations of the cavity and at other flashing locations, install continuous open-cell filler material above flashing for the full width of the cavity and 8 in. vertically within the cavity. Provide stainless steel edging as shown adhered to mortar with double face tape overlapped 4 in. every 24 ft. o.c. Coordinate with the related flashing work specified elsewhere. Provide end dams at flashing terminations, extending the full height of the flashing.

4. Vapor Barrier: Provide continuous cavity mastic vapor barrier within the cavity under scheduled building insulation. Provide a continuous vapor barrier.

5. Horizontal Joint Reinforcement: Provide continuous horizontal joint reinforcement at a maximum interval of 16 in. o.c. vertically, unless otherwise shown. Lap reinforcement not less than 6 in. at ends. Place reinforcement to obtain min. 5/8 in. mortar cover at side rods. Install reinforcement to engage between joints in the cavity insulation and mechanically lock the insulation in place to prevent displacement.

6. Additional Reinforcement: In locations where two-piece truss-type joint reinforcement is shown or required, provide an additional continuous horizontal wire or truss-type reinforcement within the face block wythe at a maximum of 16 in. o.c. vertically. Locate wire reinforcement consistently one joint coursing above or below the adjustable pintle reinforcement and a minimum of 1 in. inward from the exterior face of the mortar joint.

7. Cavity Insulation: Provide cavity insulation in masonry cavity construction horizontally between rows of masonry wall reinforcement bonded to the inner masonry wythe. Install insulation in accordance with insulation manufacturer's printed instructions. Cut and shape insulation to fit snugly around cavity projections and openings. Provide a continuous air space, sized as shown, between the outer masonry wythe and the cavity insulation. Extend insulation full thickness over entire area to be insulated. Install in a single layer unless otherwise shown.

8. Use of Compatible Mastic Adhesive to Secure Insulation: Secure insulation to the substrate utilizing a compatible mastic adhesive recommended by the insulation manufacturer and following the manufacturer's printed instructions; butter insulation edges, cutouts and seams to insure continuous sealed joints.

    a. Apply mastic barrier/adhesive to surfaces to receive cavity insulation. Comply with mastic manufacturer's requirements for preparation of substrates and application of mastic. Apply mastic uniformly to substrates with smooth edged trowels.

    b. Apply mastic with special attention and care to provide a complete seal at masonry anchors and other cavity projections.

9. Sheet Membrane: Embed sheet membrane to mastic coated surfaces at joints between masonry and other contiguous cavity substrates. Follow manufacturer's instructions for overlap and related installation requirements.

B. Coordination of Installation Sequence: Coordinate installation sequence with flashing and other materials in cavity construction.

3.8 DEPARTMENT’S QUALITY ASSURANCE SERVICES

A. Quality Assurance Services: Independent Testing and Inspection Agency(ies), engaged at the Department’s expense through the Professional, will monitor the Contractor’s Quality Control Services. The Department's Quality Assurance Services monitoring of activities do not relieve the Contractor of responsibilities under the Contract.

B. Contractor's Assistance to the Quality Assurance Services: Furnish the Department's Quality Assurance Services with access to the Work, materials and facilities as required

by the Agency(ies). Provide adequate notice of construction activities to allow timely inspections and observation of Contractor tests, and be available for pre-installation meetings. Furnish the Department's Testing and Inspection Agency(ies), with on-site office facilities.

3.9 ADJUSTING

A. Remove and replace defective materials; correct defective workmanship; leave masonry clean.

3.10 POINTING AND CLEANING

A. Upon completion of the Work, remove unused materials, debris, containers, equipment and mortar droppings daily. Remove mortar droppings on connecting or adjoining work before it has attained final set.

B. Cleaning of Concrete Masonry: Concrete unit masonry which are to remain exposed in the finished work shall be cleaned down daily at the end of each day's Work by the use of wire brushes or other method which will produce a satisfactory surface and in accordance with NCMA "TEK Note 45, Removal of stains from Concrete Masonry Walls".

C. Cleaning of Block: Comply with "No. 20, Cleaning Brick Masonry" of the Brick Institute of America for masonry cleaning utilizing the "Bucket and Brush Method". Protect surfaces not intended to be cleaned.

1. Face Block: Wet block surfaces exposed in the finished work and then clean with a diluted solution of muriatic (Hydrochloric) acid or proprietary cleaning solutions as recommended by the block manufacturer. Solution strength by volume shall be as recommended by the block manufacturer and as successfully utilized on the visual mock-up. Apply with stiff fiber brushes leaving the masonry clean, free of mortar daubs and with tight mortar joints throughout. The acid solution shall be controlled so as not to unduly come in contact with adjacent surfaces. Immediately after cleaning, the masonry surfaces shall be thoroughly rinsed down with clean water.

3.11 PROTECTION

A. General: Protect masonry from rain and snow until the work is complete and the mortar has set.

B. Waterproof Covering: Protect on-going and completed portions of work with strong waterproof membrane well secured in place, or other suitable protective methods. Where one wythe of multi-wythe masonry walls is completed in advance of other wythes, secure waterproof cover a minimum of 24 in. down face next to unconstructed wythe and hold cover in place.

C. Loads: Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.

D. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Remove immediately grout, mortar, and soil that come in contact with masonry. Protect base of walls from rain-splashed mud and mortar splatter by means of coverings spread on ground and over wall surface. Protect sills, ledges, and projections from mortar droppings. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes from mortar droppings.

END OF SECTION

SECTION 061719

CROSS-LAMINATED TIMBER CONSTRUCTION

PART 1 – GENERAL

1.1 SUMMARY

A. Stipulations:

1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Division 01 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

B. General: Provide Cross-Laminated Timber Construction in accordance with requirements of the Contract Documents.

C. Related Work Specified Elsewhere:

1. Section 061800 Glued-Laminated Timber Construction.
2. Section 051200 Structural Steel Framing.

1.2 REFERENCES

A. General: Comply with the applicable provisions of the referenced standards except as modified by governing codes and the Contract Documents. Where a recommendation or suggestion occurs in the referenced standards, such recommendation or suggestion shall be considered mandatory. In the event of conflict between referenced standards, this specification or within themselves, the more stringent standard or requirement shall govern.

1. American Wood Council (AWC):

   a. NDS-2018, “National Design Specification for Wood Construction” and supplements.

2. American Institute of Timber Construction (AITC):

   a. AITC 109-2007, “Standard for Preservative Treatment of Structural Glued Laminated Timber”.

3. The Engineered Wood Association (APA):

   a. ANSI/APA PRG 320-2012, Standard for Performance Rated Cross-Laminated Timber.

   b. APA EWS S580D-2013, Technical Note: Preservative Treatment of Glued Laminated Timber.

   c. APA EWS T300-2007, Technical Note: Glulam Connection Details.

4. ASTM International (ASTM):

a. ASTM A36/A36M-2019, Standard Specification for Carbon Structural Steel.

b. ASTM A276/A276M-2017, Standard Specification for Steel Bars and Shapes.

c. ASTM A666-2015, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar.

d. ASTM A1011/A1011M-2018a, Standard Specification for Steel Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.

5. FPInnovations (FPI):

   a. SP-529-2013, CLT Handbook, Cross-Laminated Timber (U.S. Edition).

6. American Welding Society (AWS):

   a. AWS D1.1, “Structural Welding Code, Steel”.

1.3 DEFINITIONS

A. Cross-Laminated Limber (CLT): An engineered wood building system used to complement light-and heavy-timber framing options. Layers of lumber are laminated together in alternating directions to form a solid wood panel with high strength and dimensional stability. Typical lay-ups use an odd number of layers, resulting in a primary and secondary structural axis.

1.4 SUBMITTALS

A. Delegated Design Submittals: Submit for Professional’s information. For cross-laminated timber construction indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

B. Product Data: Submit for Professional’s action. Furnish a material list with technical data documenting the primary function, quality, and performance of each system to be used in the Work, e.g., the lumber stress rating, species, appearance grade, fastener load capacity, connector materials, or other such primary characteristics as required by the Drawings or Specifications. Include the following:

1. Environmental Product Declaration (EPD): For each product.
2. Product Data: For installation adhesives and coatings, indicating VOC content.
3. Chain-of-Custody Certificates: For certified wood products. Include statement of costs.
4. Laboratory Test Reports: For composite wood products, indicating compliance with requirement for low-emitting materials.

C. Shop Drawings: Submit for Professional's action. Furnish shop drawings for the fabrication and installation of the Work. Show full dimensions of every member and layout of entire structural system. Indicate wood species, appearance grades and stress grades of lumber, and other characteristics of the Work. Include details of connections at a scale not less than 1 1/2" = 1'-0".

1. Indicate sequence of panel placement.

2. Indicate screw and attachment locations.

3. Provide any special handling instructions.

D. Samples: Submit for Professional's action. Label samples to indicate product, characteristics, and locations in the Work. Samples will be reviewed for color and appearance only. Compliance with all other requirements is the exclusive responsibility of the Contractor. Furnish samples of exposed wood members, representative of the required species, grade, types, and surface treatment. Make samples not less than 12 inches square with 3 laminations and finished with required coating system.

E. Quality Control Submittals: Submit for Professional's information and Department's Testing Agency's review.

1. Quality Assurance Programs: Furnish details of the fabricator's and the installer's quality assurance programs. Include inspector qualifications, method of reporting, frequency of reporting and distribution of reports. Identify individuals(s) responsible for the program.

F. Certifications: Submit for Professional's information. Furnish certified reports signed by the fabricator for the following.

1. CLT stress grade and appearance classification.

2. Lay-up of wood, species, and grades used.

3. Connection Hardware Standards in accordance with CLT Manufacturer's specifications.

4. Manufacturer's panel durability tests and testing results. Ensure material tested is typical of a production run of the same material used in the project. Conduct tests on the same production lot(s) for delivery of the panels.

G. Moisture Protection Method Statement: Submit for Professional's information. Develop and furnish a method statement for field moisture control for review. The moisture protection method statement shall be reviewed during a pre-construction conference no later than one month prior to timber erection.

1.4 **QUALITY ASSURANCE**

A. Fabricator / Installer: Cross-laminated timber shall be produced by an active member firm of AITC and/or APA and licensed to apply the AITC and/or APA Quality Mark and who has ten (10) years of experience doing projects similar in scope. Installation shall be performed by the fabricator or by a separate installer approved by the fabricator.

B. Grade Markings: Grade marks, inspection stamps and other markings shall be applied on surfaces to be concealed from view in the completed Work.

C. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of Federal, State and Municipal authorities having jurisdiction. Obtain necessary approvals from all such authorities.

D. Structural and Visual Mock-ups:

1. Provide structural and visual mock-ups of the Cross-Laminated Timber Construction, including adjacent materials. Extent as shown on Drawings and representative of the finished work. Provide mock-ups for visual review by the Professional. Provide panel joint conditions and features that will be used in the final Work. Mock-ups shall be erected to sizes agreed to by Professional and Contractor.

2. Replace unsatisfactory Work as required to obtain approval of the Professional. The approved visual mock-ups will become the standard workmanship. The approval of the visual mock-ups does not relieve the Contractor of its obligation to perform the work in accordance with the Contract Documents.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver the cross-laminated timber to the Project site in covered or protected systems in accordance with manufacturer's standards or recommended instructions for proper handling and storage. Label and deliver in sequence of construction for the Project, equipped with loading straps by the manufacturer, erected by certified crane operators and fabrication handlers and protected for prolonged inclement weather conditions after erected. Replace any damaged or deteriorated panels.

B. Submit manufacturer's instructions for handling, erection procedures, sequencing, administration of screws and attachments and recommended tools and tolerances. Note applicable safety precautions and standards. Have a copy of all instructions present on the Project site.

PART 2 – PRODUCTS

2.1 CROSS-LAMINATED TIMBER

A. General: All cross-laminated timber panels shall be fabricated in accordance with ANSI/APA PRG 320. unless otherwise noted in the Drawings.

B. Lumber: Douglas Fir (Bottom Layer). Provide industry accepted certification showing timber is sustainably sourced and harvested.

C. Stress Grade: CLT panels must meet minimum effective stress and modulus values stated on the Drawings, graded in accordance with ANSI/APA PRG 320.

D. Appearance Grade: CLT panels must meet the “Architectural” appearance classification in accordance with ANSI/APA PRG 320. Limit knot holes and voids to 1/2 inch maximum. Fill knot holes and voids. Provide Unit Price for AITC Premium Grade.

E. Moisture Content: Comply with ANSI/APA PRG 320 for moisture content, up to a maximum of 15 percent, and compatible with the criteria of the certified adhesive applied.

F. Adhesive: Adhesives must be certified by test for use with the species to which it is applied in accordance with ANSI/APA PRG 320. Apply and allow set times as required by the adhesive

manufacturer's instructions. Also, apply pressure on the panels and for the duration during manufacture as required by the adhesive manufacturer's instructions.

~~G. Fire Retardant Treatment: Pressure impregnate fire-retardant-treated wood with an approved process for the location in accordance with AITC 109 or APA EWS S580D, AWPA T1, and AWPA U1. Any strength or stiffness reduction due to treatment must be provided by the treater. Kiln dry all wood after treatment to remove the moisture added during treatment. Moisture content throughout material after drying must be less than 15 percent.~~

2.2 ANCHORS, FASTENERS AND HARDWARE

A. Fasteners: Provide the fastenings necessary for secure installation of the Work. Types and sizes as best suited for each application.

B. Custom Anchors and Connectors: Design connections to AWC NDS, and AISC 360, to resist shears, moments and forces indicated. Fabricate connective hardware in accordance with AISC 360.

C. Structural Steel: Provide structural steel shapes, plates, and flat bars as indicated for assembly and connection of members conforming to ASTM A36/A36M.

D. Hot-Rolled Steel Sheet: Provide hot-rolled steel sheet complying with ASTM A1011/A1011M, structural steel, Type SS, Grade 33.

E. Stainless Steel:

1. Provide stainless steel bars and shapes complying with ASTM A276/A276M Type 316.
2. Provide stainless steel plate, flat bars, and sheets complying with ASTM A666 Type 316.

2.3 FABRICATION

A. Fabrication Tolerances: Comply with requirements of ANSI/APA PRG 320-2012.

2.4 WOOD FINISHES

A. Translucent Stain Wood Finish System (Pigment, Satin): Apply in accordance with manufacturer's recommendations. Manufacturer's standard stain finish system designed for protection of panels consisting of the following:

1. Shop-Applied Translucent Basecoat: (1 Coat).

   a. Sansin "KP-12UVW"

2. Shop-Applied Translucent Top Coat: (2 Coats applied per Manufacturer's Direction).

   a. Sansin "Purity Glacier"- Low Lustre

PART 3 – EXECUTION

3.1 GENERAL

A. Manufacturer's Instructions: Prepare substrates and install the work of this Section, including, components and accessories in accordance with the manufacturer's instructions, except where more stringent requirements are shown or specified, and where project conditions require extra precautions or provisions to ensure satisfactory performance of the Work.

3.2 **EXAMINATION**

A. Verification of Conditions: Examine the areas to receive the Work and the conditions under which the Work would be performed. Contractor shall remedy conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected. Survey of related existing construction to be submitted to Professionals for review with related shop drawings prior to shipping of work.

B. Verify that cross-laminated timber panels may be erected in strict accordance with all referenced standards, the original design, and the Shop Drawings.

C. In the event of discrepancy, immediately notify the Professionals.

D. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 **INSTALLATION**

A. General: Provide in accordance with reviewed shop drawings and installation procedures. Set Work accurately to required lines and levels, members plumb and true, accurately fitted and securely connected. Field repair or modification of members is not permitted without written approval of the manufacturer. Provide erection bracing in addition to required blocking or bridging as necessary to keep panels straight and plumb with adequate lateral support for the entire system until permanent bracing has been installed. Stresses beyond design limits are not permitted, including temporary construction loads.

B. Installation: Conform to spacing and placement of panels and installation methods in accordance with the manufacturer's instruction and APA EWS T300.

1. Provide close fits and neat appearance of joints without binding or adding additional stresses to the panel.

2. Hoist panels in place in accordance with the manufacturer's instructions using non-marring straps and connectors.

3. Brace erected member so as to maintain a safe working environment and stable structure.

4. Avoid on-site cuts; however, if neccessary, only with the approval of the Professional, except for fastener drilling and other minor cutting. Coat all cuts and inside surfaces of drilled holes with end sealer.

C. Erection Tolerances: Provide as indicated and within the following permissible deviations. Compensate for daily temperature variations, construction loadings, sequential applications of permanent dead loads, or any other predictable conditions that could cause distortions to exceed tolerance limitations.

D. Coordination: Schedule and coordinate the Work with other trades. Furnish anchors, fastenings and other miscellaneous items required for securing to other construction.

E. Protection from Weather: Provide waterproof protective coverings for cross-laminated timber panels after installation and before building is enclosed.

F. Wood Finish System, Top Coat: **In-field repair, field application to match shop applied finishes** when the building is open in strict accordance with manufacturer’s written instructions.

3.3 FIELD QUALITY CONTROL

A. Surveys: Survey the final erected structure prior to the application of any other work, reporting any discrepancies from Contract requirements to the Professional.

3.4 CONTRACTOR'S MONITORING ACTIVITIES

A. Testing Agency: Contractor's testing agency to perform field monitoring activities in accordance with the Contractor's approved Quality Control Program.

3.5 CLEANING

A. Upon completion of the cross-laminated timber Work, remove unused materials, debris, containers and equipment from the project site.

3.6 DEPARTMENT'S QUALITY ASSURANCE SERVICES

A. Quality Assurance Services: Independent Testing and Inspection Agency(ies), engaged at the Department's expense through the Professional, will perform the following activities to monitor the Contractor's Quality Control Services. The Department's Quality Assurance Services monitoring of activities do not relieve the Contractor of responsibilities under the Contract.

A. Visual Inspection of Cross-Laminated Timber Installation: Perform inspection of the field erection to verify compliance with the specification and the Contractor's erection procedures.

B. Special Inspections: Perform special inspections as required per applicable building codes and standards during shop fabrication and field installation.

END OF SECTION

SECTION 084100

ENTRANCES AND STOREFRONTS

GENERAL

1.1 SUMMARY

A. Stipulations:

1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Division 01 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

B. General: Provide entrances and storefronts in accordance with requirements of the Contract Documents.

C. Section Includes, but not limited to, the following:

1. **SF-01**: Storefront System.

2. **SF-02**: Storefront System.

1. **SF-03**: Storefront System.

2. Storefront systems include:

a. Metal-framed glazed swing entrances.

b. Storefront and transoms.

c. Glazing for pre-glazed doors.

D. Extent of Work: Details for the entrances and storefronts are shown schematically and together with the profiles to be developed are intended to establish visual, performance and material qualities desired.

1. The entrances and storefronts, including vestibules work as shown shall be a complete system including all framing, glass, finish hardware, fasteners, sealants, gaskets, joining, miscellaneous pieces, components, assemblies and material thicknesses as required to form a high quality weatherproof enclosure.

2. The exterior enclosure contractor in conjunction with the entrance and storefront supplier, shall be responsible for development of final details to accommodate the fabrication, assembly, and installation of the work in accordance with the design intent shown.

3. All proposed details and finishes for each type of entrances and storefront system shall be reviewed and accepted by the Professional prior to fabrication.

4. Aluminum trim as may be necessary to join adjoining materials to the metal and glass assemblies including finish coatings.

5. Glass and glazing accessories associated with the entrance and storefront enclosure

6. Aluminum panels in designated portions of the entrance and storefront assemblies including finish coatings.

7. Reinforcing (stiffeners, brackets, etc.) required to strengthen or reinforce members that are not specifically called out as structural steel or miscellaneous metal fabrications.

8. Sealants, joint fillers, gaskets, etc. necessary to produce a watertight installation including sealants and joint fillers at the junction of the entrance and storefront metal and glass elements and contiguous facade components.

9. Weeps, baffles, thermal breaks, flashings, etc. necessary to meet performance requirements.

10. Anchors, inserts, embedded devices, etc. necessary to support the entrance and storefront system. This shall include but not be limited to design, engineering, coordination, manufacture, supply, layout, field checking, installation and any necessary repair of the fixing anchors and their attachment to the embedded anchorage and the anchorage embeds.

11. Coordination with other trade contractors that have components of their work installed on or within the entrance and storefront system.

12. Shop drawings, structural calculations, manufacturer's data, certifications of compliance and selected samples of materials and warranties pertaining to the entrance and storefront enclosure.

13. Construction of full size visual mock-ups.

14. Field measurements of adjacent and/or supporting construction and verification of existing conditions.

15. Field testing of assemblies for water penetration.

16. Protection and cleaning of finished work.

17. Participation in coordination meetings throughout the course of the Work.

18. Preparation of "as-built" shop drawings reflecting changes (from original "approved" shop drawings) that may have occurred during the course of the work.

E. Related Requirements:

1. Section 051200, Structural Steel.

2. Section 072100, Thermal Insulation.

3. Section 079200, Joint Sealants.

4. Section 080350, Exterior Enclosure, General.

5. Section 087100, Hardware.

6. Section 088000, Glazing.

7. Applicable Division 09 Finishes Sections for floor finishes scheduled for installation in door assemblies.

8. Applicable Division 26 Electrical Sections and Division 27 Communications Sections for electrical wiring and access control required for entrance systems specified.

1.2 REFERENCES

A. General: Comply with the applicable provisions of the referenced standards except as modified by governing codes and the Contract Documents. Where a recommendation or suggestion occurs in the referenced standards, such recommendation or suggestion shall be considered mandatory. In the event of conflict between referenced standards, this specification or within themselves, the more stringent standard or requirement shall govern.

B. Reference Standards

1. ADA/ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disability Act"(ADA) and Architectural Barriers Act (ABA) "Accessibility Guidelines for Buildings and Facilities."

2. Aluminum Association (AA)

a. AA ASD-1 "Aluminum Standards and Data."

b. AA ADM "Aluminum Design Manual."

c. AA DAF45 "Designation System for Aluminum Finishes."

3. ASTM International

a. ASTM C1401, "Standard Guide for Structural Sealant Glazing."

b. ASTM E283 "Standard Test Method for Determining Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors under Specified Pressure across the Specimen."

c. ASTM E330 "Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference."

d. ASTM E331, "Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference."

e. ASTM E527 "Standard Practice for Numbering Metals and Alloys in the United Numbering System (UNS)."

4. American National Standards Institute (ANSI)

a. ANSI H35.2 "Aluminum National Standard Dimensional Tolerances for Aluminum Mill Products."

b. ANSI/BHMA A156.4 "American National Standard - Door Controls - Closers."

c. ANSI/BHMA A156.19 "American National Standard for Power Assist and Low Energy Power Operated Doors."

d. ANSI Z97.1 2015 "American National Standard for Safety Glazing Materials Used In Buildings - Safety Performance Specifications and Methods of Test."

5. American Society of Civil Engineers (ASCE)

a. ASCE 7, "Minimum Design Loads for Buildings and Other Structures."

6. American Society of Heating, Refrigeration and Air-conditioning Engineers (ASHRAE):

a. ASHRAE Standard 90.1 "Energy Standard for Buildings except Low-Rise Residential Buildings."

7. American Institute of Steel Construction (AISC)

a. AISC "Code of Standard Practice for Steel Buildings and Bridges."

8. American Society for Heating, Refrigeration and Air-conditioning Engineers (ASHRAE)

a. ANSI/ASHRAE/IES Standard 90.1, "Energy Standard for Buildings Except Low-Rise Residential Buildings."

9. American Welding Society (AWS)

a. AWS D1.1 "Structural Welding Code, Steel."

b. AWS D1.2 "Structural Welding Code, Aluminum."

c. AWS D1.3 "Structural Welding Code, Sheet Steel."

10. Fenestration and Glazing Industry Alliance (FGIA)

a. AAMA CW13 "Structural Sealant Glazing Systems."

b. AAMA SFM-1, "Aluminum Storefront and Entrance Manual."

c. AAMA TIR-A1, "Sound Control for Fenestration Products."

d. AAMA TIR-A8, "Structural Performance of Composite Thermal Barrier Framing Systems."

e. ANSI/AAMA/NWDA 101/I.S.2/A440 "Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors."

f. AAMA 701/ 702, "Voluntary Specification for Pile Weatherstripping and Replaceable Fenestration Weatherseals."

g. AAMA 2603, "Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels."

h. AAMA 2604, "Voluntary Specification, Performance Requirements and Test Procedures for High Performing Organic Coatings on Architectural Extrusions and Panels."

i. AAMA 2605, "Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels."

11. International Standards Organization (ISO)

a. ISO 14025, "Environmental Labels and Declarations: Type III Environmental Declarations – Principles and Procedures."

b. ISO 21930, "Sustainability in Buildings and Civil Engineering Works - Core Rules for Environmental Product Declarations of Construction Products and Services."

12. National Association of Architectural Metal Manufacturers (NAAMM)

a. NAAMM AMP-500 "Metal Finishes Manual for Architectural and Metal Products."

13. National Fenestration Rating Council (NFRC)

a. NFRC 100, "Procedure for Determining Fenestration Product U-factors."

b. NFRC 200, "Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence."

c. NFRC 500, "Procedure for Determining Fenestration Product Condensation Index Ratings."

14. National Glass Association (NGA)

a. GANA "Engineering Standards Manual."

b. GANA "Fully Tempered Heavy Glass Door and Entrance Systems Design Guide."

c. GANA "Glazing Manual."

d. GANA "Sealant Manual."

1.3 SUBMITTALS

A. Delegated Design Submittals, General: Submittals for entrances and storefronts indicated shall comply with performance requirements, including analysis data signed by the

Contractor's qualified Professional Engineer in the Commonwealth of Pennsylvania responsible for their preparation.

B. Combined Submittals: See special procedure for combined submittals involving Exterior Enclosure Work specified in Section 080350 "Exterior Enclosure, General."

C. Product Data: Submit for Professional's action. Manufacturer's literature, specifications and installation instructions describing the general properties of each material and accessory to be used in the Work. Include the following:

1. Environmental Product Declarations (EPD): For each product (where available).

2. Statement that each product to be furnished is recommended for the application shown.

3. Two (2) copies of the manufacturer's specification and installation instructions for door units.

4. Complete instructions for handling, storing, mixing, priming, installing, curing and protecting each glazing material.

D. Shop Drawings: Submit shop drawings for Professional's action. Show on shop drawings typical and atypical details at large scale for conditions for every member, joint, anchorage, glazing system and interface with contiguous construction. Assemble shop drawings of the principal component parts which may be specified in other Sections into this submittal and prepare coordination details and erection diagrams. Shop drawings shall contain the seal of Contractor's qualified Professional Engineer as part of Delegated Design.

1. Prepare details at not less than 3-in. = 1-ft. minimum scale. Show details of support system, method of attachment to building structure, anchorage details and interface with adjacent work. Submit shop drawings as a minimum for the following:

a. Swing door entrances both framed and unframed.

b. Storefronts and transoms including related metal work.

2. Show component locations and intersection details, method of isolating dissimilar materials, provisions for expansion and contraction, method of drainage of the system including gutters, weeps and flashings including method of drainage of condensation which might form external to the vapor barrier and reglazing sequence both in the factory and remedial for the field.

3. Show reinforcement within framed swing doors and framed storefront systems required to comply with specified performance requirements and for support loads imposed by door weight, door operations and for door hardware.

4. Hardware Schedule: In conjunction with shop drawing submittal, submit complete hardware schedule organized into sets based on hardware specified. Coordinate hardware with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish. Include item name, name of the manufacturer and complete designations of every item required for each door opening.

5. Glazing Schedule: In conjunction with shop drawing submittal, submit a glazing

schedule utilizing the same designations shown on Drawings for glazed doors and openings listing glass types and thicknesses for each size opening and location.

E. Setting Drawings: Submit for Professional's information, setting drawings and templates for the location of entrance and storefront items that are to be embedded in or anchored to concrete or masonry.

F. Samples: Submit, for Professional's action. Submit the following:

1. Color and Finish Samples: 3 sets of samples for each finish and color required. Submit sample finishes on aluminum having the specified alloy, temper, substrate preparation treatment and thickness of metal required for the Work. Provide 12-in. lengths for extrusions and 12-in. squares for sheet or plate; showing the maximum range or variation in color and shade.

2. Fabrication Sample(s): Of each vertical-to-horizontal intersection of systems, made from 12-in. lengths of full-size components and showing details of the following:

a. Joinery.

b. Anchorage.

c. Expansion provisions.

d. Glazing.

e. Flashing and drainage.

G. Calculations: Submit for Professional's information. Where installed products are indicated to comply with certain structural design loadings, include structural computations, material properties, and other information needed for structural analysis. Calculations shall be prepared by and contain the seal of Contractor's qualified Professional Engineer as part of Delegated Design. Submit the following:

1. Engineering calculations to show that maximum deflections do not exceed specified performance requirements under full design loading.

2. Structural calculations for frames, panels, connections and anchorage systems demonstrating that they will sustain imposed design loads.

3. Calculations of thermal expansion and contraction.

4. Thermographic calculations.

H. Quality Control Submittals: Submit for Professional's information.

1. Test Reports

a. Up-to- date (within 5 years), certified test reports from an independent testing laboratory stating that similar sized entrances and storefronts have been tested and meet the performance for structural requirements and for air and water infiltration and comply with references.

2. Installer’s Qualifications.

3. Certifications

a. Document Review: Before commencing work, submit a written statement signed by the Contractor and the Applicator certifying that the Contract Documents, shop drawings and product data have been reviewed with material manufacturers' qualified technical representatives and that they agree the selected materials are proper, compatible with contiguous materials and adequate for the application shown.

b. Certification that the hardware supplied for operable doors are sufficient to carry weight of doors and imposed operational loads on doors.

c. Submit manufacturer's and fabricator's certification that the resinous coating complies with the Contract Documents and AAMA 2605.

d. Manufacturer's and fabricator's certification indicating that pigmented organic coating complies with the Contract Documents and AAMA 2603.

e. Certification, Structural Glazing Sealants: Certification of the following:

1) Certification that the structural silicone sealants and accessories comply with the Contract Documents and are recommended by the sealant manufacturer for the use intended.

2) Certification that the samples tested for adhesion by the sealant manufacturer comply with their requirements for structural glazing; signed by the sealant manufacturer.

I. Closeout Submittals: Submit for Department’s documentation.

1. Warranties: Special warranties as specified.

2. Maintenance Data: Furnish maintenance manual, describing the materials, and procedures for cleaning and maintaining the entrances and storefronts. Include manufacturer's data describing the materials and finishes used in the work.

1.4 QUALITY CONTROL

A. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of Federal, State and Municipal authorities having jurisdiction. Obtain necessary approvals from such authorities.

B. Qualified Installer: The entrance and storefront work shall be performed by a firm having 5 years' experience in the installation of specified materials on comparable projects. The firm shall have the approval of the entrance and storefront materials manufacturer. The applicator shall provide evidence of successful completion of work of similar scope to that shown and specified for this Project using similar entrance and storefront systems, as determined by one of the following:

1. Installer shall be certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AG&M) contractors, and shall employ glazing technicians certified under the Architectural Glass and Metal Technician (AGMT) certification program.

Or

2. Installer shall provide written evidence of the following:

   a. Five (5) years of glazing systems company ownership and experience.

   b. Project references to demonstrate successful completion of similar projects. Three (3) projects minimum.

   c. A formal Safety Program.

   d. A formal Quality Manual.

   e. Resume and qualifications of project Quality Manager.

   f. A fully implemented Quality Management System, including installation quality verification metrics to be utilized on project.

~~3. Maintenance Proximity: Additionally, the Installer of entrance systems shall maintain offices and repair or service facilities not more than 2 hours' normal travel time from the Project site.~~

C. Sole Source Responsibility: Award the Work to a specialized firm, as part of the entire exterior enclosure system, to provide undivided responsibility for the complete exterior enclosure system; including the entrances and storefront Work specified herein.

   1. Comply with requirements of Section 080350 "Exterior Enclosure, General."

D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

   1. Visual Mockup: Build mockup of Entrance and Storefront as indicated on Drawings.

      a. Provide, at Project site where directed, visual mock-up(s) of the entrance and storefront(s) for visual review by the Professional, extent as shown, and representative of the finished Work. Provide joint conditions, anchorage, specified glass, panels, door and finish hardware, paint finish and other materials and features as will be used in the final Work.

      b. Visual mock-up(s) shall be erected to sizes as noted, containing materials required for proposed finished entrance and storefront system containing at least 1 entrance door complete with finish hardware.

      c. Clean mock-up(s) with materials and techniques intended for use on the Project.

      d. Replace unsatisfactory Work as required to obtain approval of the Professional.

      e. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Professional specifically approves such deviations in writing.

      f. Subject to compliance with requirements, approved mockups may

become part of the completed Work.

E. Pre-Installation Meetings:

1. Comply with the requirements for pre-installation meetings specified in Section 080350, Exterior Enclosure, General.

1.5 DELIVERY STORAGE AND HANDLING

A. Delivery of Fabricated Units: Deliver fabricated units and component parts to project site completely identified in accordance with erection diagrams. Store in accordance with manufacturer's instructions, above grade on dunnage, properly protected from the weather and construction activities.

B. Protective Coatings or Coverings: Temporary coating and coverings may be furnished at manufacturer’s or Contractor’s option to protect the Work during shipment and construction. Such protection shall avoid development of non-uniformity in finishes, shall not impart a residue which would adversely affect the adhesion of sealants, nor cause other deleterious effects in the Work. Temporarily remove protection when requested by Professional for inspection of finishes, and completely remove protection when no longer required.

C. Material Delivery: Deliver materials to Project site in manufacturers' unopened containers, fully identified with trade name, color, size, hardness, type, class, and grade. Store each item in accordance with manufacturer's instructions. Deliver, store and handle glass in accordance with manufacturer's recommendations; protected from weather, staining and damage. During storage and handling of glass provide cushions at edges to prevent impact damage. Protect glass from scratches and abrasion.

D. Storage: Store in accordance with manufacturer's instructions, above grade on dunnage, properly protected from the weather and construction activities.

1.6 PROJECT/ SITE CONDITIONS

A. Field Glazing: Do not perform glazing when temperature is below 40 deg. F. , unless the manufacturer of the glazing materials specifically recommends application of his materials at lower temperatures. If job progress or other conditions require glazing work when temperatures are below 40 deg. F. (or below the minimum temperature recommended by the manufacturer), consult the manufacturer and establish the minimum provisions required to ensure satisfactory work. Record in writing to the manufacturer, with copy to the Professional, the conditions under which glazing work was performed and the provisions made to ensure satisfactory work.

B. Bulk Compounds: Do not proceed with installation of bulk compounds during inclement weather unless requirements and manufacturer's instructions can be complied with and unless the work can proceed in accordance with the agreements of the pre-installation meeting. Do not proceed with the installation of sealants under extreme temperature conditions which would cause joint openings to be at either maximum or minimum width or when such extreme temperatures or heavy wind loads are forecast during the period required for initial or nominal cure of sealants. Whenever possible, schedule the installation and cure of sealants during periods of mean temperatures (nominal joint width shown) so that subsequent stresses upon the cured sealants will be minimized.

1.7 WARRANTIES

A. General: Warranties specified in this Article shall not deprive the Department of other rights the Department may have under other provisions of the Contract Documents and are in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Warranty, Entrance Door Assemblies: Submit for Department's documentation. Provide a written warranty for a period of five (5) years, against defects in material or workmanship and leaks resulting from defects during the warranty period. Upon notification of defects, within the warranty period, make the necessary repairs at the convenience of the Department. Warranty shall be signed by the Contractor and the firm awarded the work. Failures, include but are not limited to:

1. Failure of the system to meet performance requirements including but not limited to excessive deflection, racking, warpage, excessive water leakage or air infiltration.

2. Failure of operational parts to function normally.

3. Deterioration, fading, excessive non-uniformity, pitting, cracking, peeling, crazing or discoloration of finishes and other materials beyond normal weathering.

4. Noise or vibration created by thermal and structural movement and wind.

5. Loosening or weakening of fasteners, attachments, and other components.

6. Sealant failure.

C. Special Warranty, Superior Performing (Hyper-Durable) Powder Coatings: Provide a written warranty, addressed to the Department and assignable to all future Departments within this warranty period from the manufacturer (formulator) of powder coating system and the finisher, for a period of twenty (20) years, warranting against the loss of film integrity, chalking, fading, non-uniformity, corrosion and the overall performance of color of the resinous coatings. Upon notification of such defects, within the warranty period, make the necessary replacements at the convenience of the Department.

1. Color retention not to exceed 5Δ E Units (Hunter) color change as calculated in accordance with ASTM D2244 on exposed surfaces cleaned with clean water and a soft cloth.

2. Degree of chalking not to exceed rating No. 8 for colors and No. 6 for whites when measured in accordance with ASTM D4214 Test Method, Test Method A on exposed unwashed surfaces.

D. Special Warranty, High Performing (Super-Durable) Powder Coatings (Interior): Provide a written warranty, addressed to the Department and assignable to all future Departments within this warranty period from the manufacturer (formulator) of powder coating system and the finisher, for a period of twenty (20) years, warranting against the loss of film integrity, chalking, fading, non-uniformity, corrosion and the overall performance of color of the resinous coatings. Upon notification of such defects, within the warranty period, make the necessary replacements at the convenience of the Department.

E. Special Warranty, Resinous Coatings: Submit for Department's documentation. Provide a written warranty, from the manufacturer (formulator) of resinous coating system and the

finisher, for a period of Twenty (20) years, warranting against the loss of film integrity, chalking, fading, non-uniformity, corrosion and the overall performance of color of the resinous coatings. Upon notification of defects, within the warranty period, make the necessary replacements at the convenience of the Department.

1. Color retention not to exceed 5ΔE Units (Hunter) color change as calculated in accordance with ASTM D2244 on exposed surfaces cleaned with clean water and a soft cloth.

2. Degree of chalking not to exceed rating No. 8 for colors and No. 6 for whites when measured in accordance with ASTM D4214 Test Method, Test Method A on exposed unwashed surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers, Aluminum-Framed Entrance and Storefront Systems: Subject to compliance with requirements, provide aluminum-framed entrance and storefront systems by the following, or approved equal:

B. Storefront **Type SF-01**:

1. Manufacturer: RAICO

   a. Product: Therm S-I SG

   b. Material: Painted Aluminum

   c. Color: Match **MTL-01**

   d. Glass: **GL-03.**

2. Manufacturer: Old Castle Building Envelope

   a. Product: Reliance Cassette

   b. Material: Painted Aluminum.

   c. Color: Match **MTL-01**

   a. Glass: **GL-03.**

3. Manufacturer: Wausua

   a. Product: Invision 8250i HR

   b. Material: Painted Aluminum.

   c. Finish: Match **MTL-01**

   a. Glass: **GL-03.**

A. Storefront **Type SF-02**:

1. Manufacturer: Old Castle Building Envelope

    a. Product: 3000 Series

    b. Material: Painted Aluminum

    c. Color: Match **MTL-09**

    a. Glass: **GL-01.**

2. Manufacturer: Wausua

    a. Product: Invision 6250i HRX

    b. Material: Painted Aluminum.

    c. Finish: Match **MTL-09**

    d. Glass: **GL-01.**

3. Manufacturer: Kawneer

    a. Product: 1600 System 1

    b. Material: Painted Aluminum

    c. Color: Match **MTL-09**

    d. Glass: **GL-01.**

B. Storefront **Type SF-03**:

1. Manufacturer: Old Castle Building Envelope

    a. Product: 6000 XT

    b. Material: Painted Aluminum

    c. Color: Match **MTL-09**

    d. Glass: **GL-01.**

2. Manufacturer: Wausua

    a. Product: 4250

    b. Material: Painted Aluminum.

    c. Finish: Match **MTL-09**

    d. Glass: **GL-01.**

3. Manufacturer: Kawneer

a. Product: 601UT System

b. Material: Painted Aluminum

c. Color: Match **MTL-09**

d. Glass: **GL-01.**

C. Products of other manufacturers will be considered only if evidence is furnished showing compliance with the minimum design and performance requirements specified.

2.2 DESIGN AND PERFORMANCE REQUIREMENTS

A. General System Description: The entrance and storefront system as described herein is that portion of the facade that comprises materials, components and assemblies between the internal and the external surfaces at the entrance level which shall be considered a complete system providing a high quality, watertight, airtight and structurally sound entrance and storefront enclosure to the specified standards.

B. Delegated Design: Contractor shall engage a qualified professional engineer registered in the Commonwealth of Pennsylvania to design and engineer entrances and storefront systems in compliance with performance criteria.

C. Performance Requirements

1. Exterior Performance Requirements: Comply with the requirements specified in the "Performance Requirements" in Section 080350, Exterior Enclosure, General.

2. Flatwork Tolerances: Metals panels, fascia, sills and other sheet or plate fabricated items shall be flat and free of bow or "oil canning" or "read thru" of stiffeners, welds, etc. Exposed metal faces shall be of such flatness that the maximum uniform bow in two feet shall not exceed 1/32-in. and the maximum overall variation in plane between high and low point within a panel shall not exceed 1/16-in. .

3. Traffic: Design and fabricate entrances, storefronts and transoms to withstand the operating loads which result from heavy traffic conditions using the specified hardware, without measurable permanent deflection. Limit elastic deflections so as to provide the normal degree of rigidity required to avoid glass breakage, air leaks and other objectionable results of excessive flexibility.

4. Swing Door Requirements: Design, fabricate and install swing doors that are sufficient to carry weight of doors and imposed operational loads on doors. Provide hardware for swing doors that comply with the following:

a. Opening Force

1) Exterior and Egress Doors: Not more than 15 lbf to release the latch and not more than 30 lbf to set the door in motion and open the door to its minimum width and not more than5 lbf to fully open door for scheduled ADA accessible doors.

2) Accessible Interior Doors: Not more than5 lbf to fully open door for scheduled ADA accessible interior doors.

b. Delayed-Action Closing: Comply with requirements of authorities having jurisdiction or the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), and Architectural Barriers Act (ABA) "Accessibility Guidelines for Buildings and Facilities," whichever are more stringent.

1) Accessible Interior Doors: Not more than 5 lbf to fully open door for scheduled ADA accessible interior doors.

c. Delayed-Action Closing: Comply with requirements of authorities having jurisdiction or the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), and Architectural Barriers Act (ABA) "Accessibility Guidelines for Buildings and Facilities," whichever are more stringent.

D. Unacceptable Conditions: Noise or vibration created by thermal movement, structural movement, or wind; thermal movement transferred to building structure; loosening, weakening or failure of fasteners, attachments or other components.

E. Design Modifications: Make design modifications of work shown only as may be necessary to meet performance requirements and coordinate the work. Variations in details and materials which do not adversely affect appearance, durability or strength shall be submitted to the Professional for review. Maintain the general exterior design concept without altering profiles and alignments shown.

F. Basis of Design (BOD): When particular manufacturers' materials, products or processes are specified for an item of Work, any one thereof is acceptable for the Contractor to choose. An alternative material, product or process will be considered if the Contractor submits a written substitution request together with all such information as may be necessary to assist the Professional in determining whether the proposed substitution is acceptable; the burden of proof rests solely upon the Contractor.

2.3 METAL MATERIALS

A. Aluminum

1. General: Utilize aluminum members used for entrances and storefront frames meeting parameters documented in industry-wide environmental product declaration (EPD) published by the Aluminum Association.

2. Aluminum Extrusions: Shapes as shown and as required to fulfill performance requirements, but not less than 1/8-in. thick, unless otherwise shown. Suitable alloy and proper temper for extruding and fabricating with adequate structural characteristics, and suitable for finishing as specified.

3. Aluminum Sheets and Plates: Sizes and minimum gauges as shown and as required to fulfill performance requirements. Suitable alloy and proper temper for forming and fabricate with adequate structural characteristics and suitable for finishing as specified.

B. Stainless Steel

1. General: ASTM A240 ; Provide the most suitable austenitic alloy, form and finish required to produce the Work. Provide Type 304 or Type 316 and low-carbon Type 304L or 316L for components to be welded, unless otherwise noted.

2. Plate and Sheet: ASTM A480 , Stretcher level sheets.

3. Bar Stock and Shapes: ASTM A276.

4. Round, Square and Rectangular Welded Tubing: ASTM A554, Grades MT 304, as standard with manufacturer.

5. Pipe: ASTM A312 , Grade TP 304.

6. Castings: ASTM A743 , Grade CF8 or CF20.

2.4 FASTENERS, ANCHORAGE AND REINFORCING

A. Anchor Assemblies: 3-way adjustable anchors that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer/fabricator.

1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A123 or ASTM A153 requirements. Provide bolts, washers and shims as required, hot dip galvanized, ASTM A153 , Class A.

2. Steel Anchorage: Anchor assemblies secured to structural steel framing shall be fabricated in accordance with the criteria governing structural steel and where exposed, architecturally exposed structural steel.

B. Shims: Shim and allow for movement resulting from changes in thermal conditions and building movements. Provide separators and isolators to prevent corrosion, electrolytic deterioration, and freeze-up of moving joints.

1. At dynamic connections, where required, and unless otherwise shown, provide Type 316 stainless steel for shims, blocking and spacers incorporating separators for dissimilar materials. Do not use horseshoe (U) shaped shims at dynamic connections.

2. Do not use plastic shims at structural connections. Stacking of shims shall not be permitted where conditions of structural failure may occur. Utilize solid shims where required.

C. Fasteners: Stainless steel type 300 series, selected to prevent galvanic action with the components fastened. Where exposed in finished surfaces, use oval-head countersunk Phillips heads and color to match adjacent surfaces. Where fasteners screw-anchor into aluminum less than 1/8 in. thick. reinforce the interior surface with aluminum or non-magnetic type stainless steel to receive screw threw threads or provide manufacturer's standard non-corrosive pressed-in splined grommet nuts. Screwed connections shall be drilled. Unless otherwise indicated, bolts and other fastening devices, including their accessory items (washers, nuts, etc.), shall incorporate self-locking devices and be torques tightened as required to achieve maximum torque tension relationship required by fasteners.

D. Structural Support Steel: ASTM A36 .

E. Steel Angles, Plates, Bars, Rods and Other Steel Accessories Required to Join or Reinforce Assembly of Aluminum Components: ASTM A36 and ASTM A283 , galvanized or, if galvanized is not compatible with alloy of component parts, shop painted with specified primer after cutting to size.

F. Aluminum Angles, Plates, Bars, and other Aluminum Members Required to Join or Reinforce Assembly of Aluminum Components: Alloys recommended by manufacturer or fabricator to develop required strength of assembly.

2.5 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Glass and Glazing: As specified in Section 088000, Glazing.

B. Hardware: As specified herein and in Section 087000 Hardware.

C. Sealants: As specified in Section 079200, Joint Sealants.

D. Stainless Steel Flashing: ASTM A666 , Type 304, dead soft fully annealed except where harder temper required for forming or performance; 0.015 in. (28 gage) thick unless otherwise shown, finish No. 2D. Provide 60 - 40 tin/lead solder, with acid-chloride type flux, except use rosin flux over tinned surfaces in accordance with ASTM B32

E. Slip Gaskets (at bolted slip-joints in skylight): Non-metallic, low friction material (high impact polystyrene or nylatron) having the temperature resistance, moisture resistance and low abrasion properties as required to suit performance criteria.

1. Provide "Eel-Slip Pads" (Scan-Pac), or approved equal.

F. Separator Gaskets (except at bolted slip-joints): Non-corrosive, non-toxic impregnated felt or butyl tape with pressure sensitive adhesive on one surface which is formulated for proper adhesion to metals specified, thickness and width as required. Gaskets shall contain temperature and moisture properties as required to suit specified performance criteria.

G. Thermal Separators: Polyvinylchloride, 50 Shore A durometer hardness +/- 5 or poured homogeneous structural polyurethane of a cross sectional profile, interlocking with aluminum extrusions (minimum 3/8 in. separation) forming an integral structural unit.

H. Weep Baffles: PVC coated, reticulated, flexible open cell reticulated polyurethane foam; 30-40 pores per 1-in. or as recommended by the fabricator. PVC coating shall have a bacteriostat additive added to the formulation.

1. Provide "PVC Coated SIF-G Industrial Foam" (Foamex Corp.), or approved equal.

I. Welding Electrodes: Type and alloy recommended by the producer of the metal to be welded and as required for color match, strength and compatibility in the fabricated items.

J. Sound Damping Compound: Visco-elastic sound damping material in emulsion form, non-toxic, non-flammable; spray, brush or trowel applied; air-dried after application to form a non-tacky, non-marring film of medium hardness, with a flame spread rating of less than 25 and a smoke development rating of less than 50 when tested in accordance with ASTM E84. Provide one of the following:

1. "Antivibe DL-10" (Bachford Ltd.; Distributed by AVNEC, Inc.)

2. "GP-1, Damping Compound" (Sound Coat; Distributed by Controlled Acoustics Corp.)

3. "Vibrasorb Damping Compound" (E.N. Murray Co., Inc.)

2.6 PAINTS AND COATINGS

A. Rust Inhibitive Primer for Ferrous Metals Not Galvanized: Compatible with finish coats of paint (if any) of the respective dry film thickness (DFT) specified; One of the following:

1. "Series 10-99" (Tnemec Co. Inc.); 2.0 mils - 3.5 mils) DFT.

2. "Carbocoat 115 Series" (Carboline Co.); 2.0 mils DFT.

3. "Interprime 298" (International Paint), 3.0-4.0 mils DFT.

B. Galvanizing Repair Paint: Zinc rich paint for repairing galvanized surfaces and field welds in compliance with ASTM A780.

C. Dielectric Separator: Heavy coating of epoxy paint in minimum 2.0 mils dry film thickness.

D. Resinous Coatings for Aluminum, Factory-Applied. Refer to Paragraph "Aluminum Finishes" in Article "Metal Finishes" of this Section.

2.7 FABRICATION

A. General: Fabricate storefront and entrance components to meet performance and aesthetic criteria specified. Fabricate system at the manufacturer's shop to the fullest extent possible and before applying finishes. Fabricate system with materials proven compatible in testing specified.

B. Field Measurements: Verify dimensions and conditions at the job site so that entrances and storefronts will accurately fit to adjacent work.

C. Forming: Form work to true shapes, without distortion, with accurate surfaces and edges. Unless otherwise shown, form metal corners by bending to smallest radius possible without impairing the work. Machine cut or saw material for butt jointed or square corners.

D. Assembly: Carefully fit and assemble work with continuity of line and design, using rigidly secured joints with hairline contact, unless otherwise shown. Form butt hairline joints with roll-over edge exposed. Grind off roll-over edge flush with and matching of adjacent metal. Fit and assemble work in the shop insofar as practicable. Disassemble units too large for shipment and provide alignment and splice plates for accurate field fit.

E. Welding: Weld with electrodes and by methods recommended by the base metal manufacturer, and in accordance with applicable recommendations of the AWS, to avoid distortion or discoloration of exposed faces. Make welds continuous, unless otherwise shown. Grind exposed welds flush, to match adjacent metal. Bevel cut base metal before welding to maintain continuity of line at joints.

F. Reinforcing: Reinforce members and joints with structural shapes and plates in concealed locations, as necessary for adequate strength, sag resistance and rigidity and to comply with performance criteria. Separate metal surfaces at moving joints with plastic inserts or other non-abrasive concealed inserts which will permanently prevent "freeze-up" of the joint. Fabrication of supporting steel elements shall be in accordance with AISC Manual of Standard Practice.

G. Fastenings: Provide concealed fastenings, unless otherwise shown. Locate necessary exposed fastenings, where permitted, in an orderly pattern, in accordance with reviewed shop drawings. Where fasteners screw-anchor into aluminum members less than 1/8 in.

thick, reinforce the interior with aluminum or nonmagnetic stainless steel to receive screw threads, or provide standard noncorrosive pressed-in splined grommet nuts.

H. Framing Member Anchorages: Framing members attaching entrance and storefront components to building supports shall provide for 3-way adjustments to accommodate fabrication and construction tolerances and allow for thermal and building movements.

I. Component Fabrication: Fabricate components to ensure that glazing is thermally and physically isolated from framing members. Fabricate components to allow for expansion and contraction, field adjustment, and minimum clearance and shimming at perimeter. Carefully fit and match work with continuity of line and design. Rigidly fit and secure corners and joints with screw and spline, internal reinforcement or welding. Make exposed framing and trim joints and connections flush, hairline and weatherproof.

J. Frame Units: Factory assemble frame units according to shop drawings to greatest extent possible. Rigidly secure non-movement joints. Seal joints watertight, unless otherwise indicated. Assemble components to drain water passing joints, condensation occurring in glazing channels, condensation occurring within framing members, and moisture migrating within the system to the exterior.

K. Factory-Glazed Structural Silicone Glazing Work: Clean frames and glass surfaces with an approved solvent. Prime surfaces and apply structural sealant ASTM C1401 "Standard Guide for Structural Sealant Glazing." Clean excess structural sealant before curing. Do not transport units until silicone has cured.

1. Aluminum Finish at Structural Silicone Installations: Provide one of the following finishes

a. Mill finish is not acceptable at structural silicone bonding surfaces, nor for any aluminum.

b. Aluminum surface to which structural silicone will be adhered shall have a finish which demonstrates by test the ability to satisfy specified requirements. Subject to demonstrated effectiveness by satisfactory testing, acceptable finishes are as follows.

c. A paint conforming to AAMA 2605.

d. Alodine conversion coating. The product used to form the alodine chemical conversion coating on aluminum extrusions or paneling shall conform with ASTM D1730, Type B, method 5 (amorphous chromium phosphate treatment) or method 7 (amorphous chromate treatment). Coating weight of chemical conversion coating shall conform with that specified in ASTM B449, section 6, class 1. Processing shall conform with that specified in ASTM B449, section 5.

L. Glazing Pockets: Provide minimum clearances for thickness and type of glass indicated according to GANA’s "Sealant Manual" and "Glazing Manual."

M. Dissimilar Metals: Separate dissimilar metals with dielectric separator to prevent galvanic action. Do not extend coatings onto exposed surfaces.

N. Weepholes: Provide weepholes and internal water passages in the glazing recess as recommended by the glass manufacturer to conduct infiltrating water to the exterior. Provide weep baffles secured to inside of frame behind weepholes to prevent water

migration.

O. Sound Damping: Apply sound damping compound on inside of entrance door stiles and rails and elsewhere where shown.

2.8 METAL FINISHES

A. General: Comply with NAAMM's AMP-500 "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes.

1. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2. Remove die markings prior to finishing operations. Where necessary to remove die markings from any part of the work, members must be finished by the same process, whether or not die markings exist. Perform this work in addition to the finish specified. Scratches, abrasions, dents and similar defects are unacceptable.

B. Aluminum Finishes

1. Hyper-Durable Organic Powder Coat Finish (Exterior): Fluoropolymer resin powder finish complying with AAMA 2605 and containing 100 percent fluorinated ethylene vinyl ether (FEVE) resin. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

a. Acceptable Manufacturers/ Finish Systems: Provide one of the following, or approved equal in color(s) and sheen matching control sample(s) [and as selected by Professional]:

1) "Interpon D3000 Series" (Akzo Nobel).
2) "IFS 500FP" (IFS Coatings).
3) "Coraflon" (PPG).
4) "Series 75" (TIGER Drylac Inc.)

b. Finish: As indicated

2. Standard Organic Powder Coat Finish (Interior): Polyester resin organic powder coat finish compliant with AAMA 2603 certification. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

a. Acceptable Manufacturers/ Finish Systems: Provide one of the following, or approved equal in color(s) and sheen matching control sample(s) [and as selected by Professional]:

1) "Interpon D1000 Series" (Akzo Nobel).
1) "IFS 300SP" (IFS Coatings).
2) "Envirocron-03" (PPG)
3) "Series 38" (TIGER Drylac Inc.)

b. Do not use this coating on areas requiring structural silicone unless tested and approved in writing by the structural silicone sealant manufacturer.

c. Finish: As indicated.

3. Aluminum in Wet Areas: Provide alodine conversion coating.

a. Alodine conversion coating. The product used to form the alodine chemical conversion coating on aluminum extrusions or paneling shall conform with ASTM D1730, Type B, method 5 (amorphous chromium phosphate treatment) or method 7 (amorphous chromate treatment). Coating weight of chemical conversion coating shall conform with that specified in ASTM B449, Section 6, Class 1. Processing shall conform with that specified in ASTM B449, Section 5.

C. Stainless Steel Finishes

1. Surface Treatment, General: After fabrication, clean and de-scale and passivate all stainless members in accordance with ASTM A380.

2. Mechanical Finishes for Stainless Steel: As selected by Professional

a. **MTL-04**: No. 4 (bright directional polish).

2.9 SHOP PAINTING FOR FERROUS METAL

A. General: Shop paint ferrous metal work, except members or portions of members to be embedded in concrete or masonry, surfaces and edges to be field welded, unless otherwise specified.

B. Cleaning

1. Remove oil, grease and similar contaminants in accordance with SSPC SP-1 "Solvent Cleaning", prior to any additional surface preparation specified.

2. Clean and prepare metal surfaces before applying shop coat. Remove rust and mill scale in accordance with SSPC SP-3 "Power Tool Cleaning."

C. Priming

1. Immediately after surface preparation, apply primer in accordance with manufacturer's instructions. Use painting methods which will result in full coverage and dry film thickness specified.

2. Apply one shop coat of primer to fabricated metal items, except apply 2 coats of primer to surfaces inaccessible after assembly or erection. Change color of second or finish coat to distinguish it from the first coat.

2.10 METAL-FRAMED SWING DOORS

A. Type: Provide aluminum framed glass doors with matching fittings and hardware of sizes, shapes and profiles shown.

B. Integrated Door Assemblies: Provide complete integrated door assemblies with tubular

framework, designed and fabricated with mechanical joints utilizing heavy concealed reinforcing plates and other items necessary for proper installation and operation. Units shall be capable of supporting weight of units withstanding imposed operational loads as well as complying with specified performance criteria.

C. Fabrication: Fabricate doors to facilitate replacement of glass or panels without disassembly of stiles and rails. Provide continuous channel frame welded into door body. Stile and rail doors shall be blanked out from one sheet of metal. No face welded shall be permitted. Prepare doors for glazing and weatherstripping as shown. Provide manufacturer's standard replaceable type weatherstripping complying with AAMA 701.1.

D. Reinforcement: Reinforce doors and frames for finish hardware in accordance with manufacturer's templates. Provide the complete hardware package for each swing door in accordance with specification Section 087000 Hardware.

E. Glass for Metal Framed Swing Doors: Provide glass and glazing as specified in Section 088000 Glazing. Cut and prefit glass at the factory and install under the swing door manufacturer's supervision.

2.11 STOREFRONT AND TRANSOMS

A. Type: Provide with aluminum with finish to match **MTL-01** (or as indicated), flush glazed jambs, sills and mullion members for glazing as shown. Provide concealed structural framing as required to comply with specified performance criteria.

B. Fabrication: Fabricate framing in profiles indicated for flush glazing (without projecting stops). Provide subframes and reinforcing of types indicated or, if not indicated, as required for a complete system. Factory assemble components to greatest extent possible. Disassemble components only as necessary for shipment and installation. Provide glazing rebates as required by the GANA, with weepholes for drainage, and removable interior glazing beads. Fabricate glazed frames for storefront and transoms with an integrally concealed low conductance thermal separator to eliminate direct metal to metal contact between exterior metal and metal exposed on the interior. Coordinate the detailing of the glazed frames with adjacent entrances and the work of other trades.

1. Snap-On Covers: Where snap-on covers are used, provide a minimum of two (2) concealed fasteners per 5 ft. length to prevent displacement or accidental removal of trim.

PART 3 - EXECUTION

3.1 GENERAL

A. Manufacturer’s Instructions: Prepare substrates, [apply primers,] and install the Work of this Section; including components, accessories in accordance with the manufacturer’s instructions, except where more stringent requirements are shown or specified, and where project conditions, require extra precautions or provisions to ensure satisfactory performance of the Work.

3.2 EXAMINATION

A. Verification of Conditions: Examine the areas to receive the Work and the conditions under which the Work would be performed. Check carefully the provisions for anchorage

and adjustment, allowances for expansion and contraction, and conditions of preset flashings and flashing connections. Contractor shall remedy conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

B. Verify dimensions of supporting structure by field measurements so that work will be accurately designed, fabricated and fitted to the structure. Tolerances for supporting structure are specified in other Sections.

3.3 PREPARATION

A. Substrate Acceptability: Commencement of installation shall constitute acceptance of substrate conditions by the Installer.

B. Coordination

1. Templates: Obtain and distribute, to parties involved, templates for doors, frames, and other work specified to be factory prepared for installing entrance doors.

2. Floor Recesses: Coordinate size and location of scheduled recesses hardware and equipment in floor construction, including anchorages for frames and supports. Furnish setting drawings, templates, and directions for installing hardware, equipment and anchorages that are to be embedded into concrete. Deliver items to Project site in time for installation.

3. Electrical System Roughing-in: Coordinate layout and installation of entrance door assemblies requiring connections to power supplies and/or security-access-control system.

3.4 INSTALLATION

A. General: Coordinate installation with the Work of other trades. Provide inserts and other anchorage devices at the proper time so as to avoid delays. Install the Work level, plumb, and true to line, with uniform joints. Support on shims and secure in place by bolting to clip angles and similar supports anchored to supporting structure. Use only the types of equipment, wedges, spacers, shims and other items during installation which will not corrode nor stain or mar the finish surfaces.

B. Assumed Design Temperature: Dimensions shown on Drawings are based on an assumed design temperature of 70 deg. F. Fabrication and erection procedures shall take into account the ambient temperature range at the time of the respective operations.

C. Erection: Install entrances and storefronts plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place. Install components to drain water passing joints and condensation and moisture occurring or migrating within the assembly to the exterior. Lubricate operating hardware and other moving parts. Do not erect members which are warped, bowed, deformed or otherwise damaged to such extent as to impair strength or appearance. Remove and replace members damaged in the process of erection. Paint concealed contact surfaces of dissimilar materials with dielectric separator or provide other type approved separation. Prime paint concealed ferrous metal with specified metal primer. Finish paint exposed primed ferrous metal using finish paint system in accordance with Section 099100 Painting. Seal joints in a concealed manner, unless exposed sealant is shown. Comply with requirements of Section 079200 Joint Sealants. Install Work of this Section and

demonstrate that the completed operable units are installed in a condition acceptable to the Department and Professional.

D. Cutting and Trimming: Cut and trim components only with the approval of the manufacturer or fabricator and in accordance with his recommendations. Do not cut reinforcing. Restore finish completely. Remove evidence of cutting and trimming.

E. Electrical Wiring and Connections: For entrances requiring electrical wiring, provide complete installation of wiring (both power and lo voltage) to connect parts of the equipment. Install wiring using the materials and installation procedures for motors and controls as specified in Division 16. Interconnect electrical components as required for proper operation. Test the entire wiring system for insulation to ground.

F. Frame Units: Factory assemble frame units according to Shop Drawings to greatest extent possible. Rigidly secure nonmovement joints. Seal joints watertight, unless otherwise indicated. Assemble components to drain water passing joints, condensation occurring in glazing channels, condensation occurring within framing members, and moisture migrating within the system to the exterior.

G. Erection Tolerances: Erect components within the following tolerances:

1. Variation From Plumb: 1/8 in. maximum.

2. Variations From Level: 1/8 in. maximum.

3. Variation From Theoretical Position: 1/4 in. maximum.

4. Offset In Alignment Of Consecutive Members: 1/16 in. maximum.

5. Diagonal Measurements: The maximum difference in diagonal measurements shall not exceed 1/8 in. .

6. Offset at Corners: The maximum out-of-plane offset of framing at corners shall not exceed 1/32 in.

3.5 FIELD QUALITY CONTROL

A. Contractor’s Quality Control Responsibilities: Contractor is solely responsible for quality control of the Work.

B. After completion of the installation and nominal curing of sealants and glazing compounds, test 100% of glazed frames for storefronts and transoms for water leaks. Conduct tests in accordance with AAMA Standard 501.2, , "Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Wall and Sloped Glazing Systems" except perform tests on 100%of glazed frames for storefronts and transoms . Provide powered scaffold, hose, radios, water supply and manpower to perform scheduled tests. Correct deficiencies observed as a result of test.

3.6 ADJUSTING

A. Adjustment: Adjust doors to provide an even, tight fit at contact points and weather stripping for smooth operation and weather tight closure. Adjust doors to operate smoothly with hardware and operators functioning properly. Lubricate hardware and other moving parts. Readjust doors after repeated operation of completed installation equivalent to three days' use by normal traffic (100 to 300 cycles).

B. Touch-Up to Powder Coated Paint System: Touch up all damaged, scratched, marred or abraded exposed baked organic coatings utilizing manufacturer/fabricator approved air dried fluoropolymer resinous, or other paint system in matching colors and sheen using means and methods as recommended by the manufacturer. Obtain Professional's approval of finished touch-up.

3.7 CLEANING

A. Maintenance of Installation: Maintain the metal-framed skylights throughout the construction period in a clean and properly protected condition so that it will not be damaged at the time of acceptance by the Department. Cleaning and protective methods shall be carefully selected, applied and maintained so that finishes will not become uneven or otherwise impaired as a result of unequal exposure to light and weathering. Remove deleterious materials from surfaces of aluminum and glass immediately. Protect glass from breakage immediately upon installation. Use streamers or ribbons suitably attached to framing and held free of the glass. Do not apply warning markings directly to the glass.

B. Cleaning: Upon completion of installation, wash exposed surfaces using methods as recommended by manufacturer to leave clean and free from blemishes.

3.8 PROTECTION

A. Protection: Protect the Work during construction period so that it will be without indication of deterioration, use or damage at time of acceptance When requested for inspection of finishes, remove and replace temporary protection. Remove protection when no longer required.

END OF SECTION

pennsylvania
DEPARTMENT OF GENERAL SERVICES

UNIT PRICE SCHEDULE

Project: Pennsylvania State Police Academy Core Buildings, BESO & Sitework

Project Number: DGS C-0211-0005 - 005

Contract Number: DGS C-0211-0005.1 - 005

FOR AN EXPLANATION OF UNIT PRICES SEE SECTION 010250 OF THE SPECIFICATIONS AND ANY ADDENDUM THAT MODIFIES SECTION 010250

The unit prices are for adjusting the quantities of work listed below and listed and described in the Contract Documents to reflect actual installed quantities. **Only one Unit Price is entered which will apply to both the ADD and the DEDUCT adjustment for actual quantity.**

UNIT PRICE SCHEDULE				
ITEM NO.	DESCRIPTION	UNIT OF MEASUREMENT	QUANTITY	UNIT PRICE
MARQUEE Building				
1	Foundation concrete	Cu. Yds	100	$
2	Foundation reinforcement	Tons	2	$
3	Anchor rods – 1 1/2" x 30" ASTM F1554 Grade 55	Each	4	$
4	Rock anchors – Type 1	Each	2	$
5	Foundation wall penetrations – 12" dia.	Each	4	$
6	Foundation wall penetrations – 6" dia.	Each	6	$
7	Grade beam penetrations – 6" dia.	Each	5	$
8	Floor slab concrete	Cu. Yds	50	$
9	Slab reinforcement	Tons	0.5	$
10	Steel deck – 3" 18 GA	SF	250	$
11	CLT – 5 ply 6 7/8"	SF	250	$
12	Metal Deck Closure	LF	500	$

13	Structural steel framing (identified prior to fabrication)	Tons	30	$
14	Structural steel framing (identified after erection complete)	Tons	2	$
15	Shop installed circular beam penetrations -6" dia.	Each	75	$
16	Shop installed rectangular beam penetrations -10"x20" reinforced	Each	10	$
17	Field installed circular beam penetrations – 6" dia.	Each	10	$
18	Headed shear studs – ¾" x 6" long	Each	500	$
PEMB Foundation				
19	Concrete	Cu. Yds	100	$
20	Reinforcement	Tons	2	$
Other buildings (not including PEMB)				
21	Foundation concrete	Cu. Yds	50	$
22	Foundation reinforcement	Tons	1	$
23	Structural steel framing	Tons	2	$
24	8" Structural CMU wall	SF	250	$
25	Glulam 6 ¾" x 18"	LF	50	$
ACM Waterproofing Material Work				
26	Main Building (Buildings A, B, C, D, E and H). Foundations	SF	30,000	$
27	Main Building (Buildings A, B, C, D, E and H). Structural and masonry components behind face brick	SF	40,000	$
28	Pool Area of Main Building. Waterproofing associated with the Pool and its surroundings	SF	6,000	$
29	Maintenance Building. Foundations	SFG	2,000	$
30	Maintenance Building. Structural and masonry components behind face	SF	5,000	$
31	Miscellaneous Concealed Spaces. Allowance for ACM waterproofing discovered during demolition/site activities	SF	5,000	$

Excavation Work				
32	Over-excavated materials	Cu. Yd	1	$
Temporary Heat Days				
33	Temporary Heat Days	Day	1	$

SECTION 105100

LOCKERS

PART 1 - GENERAL

1.1 SUMMARY

A. Stipulations:

1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Division 01 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

B. General: Provide lockers and associated accessories in accordance with the Contract Documents.

C. Section includes, but not limited to, the following:

1. **LKR-01**: Lockers, Trooper.

2. **LKR-02**: Lockers, Staff.

3. **LKR-03**: Lockers, Transient, Stacked.

4. **LKR-04**: Cubbies.

5. **LKR-05:** Not Used.

6. **LKR-06**: Gun Lockers.

7. **LKR-07**: Weapons Rack.

D. Related Requirements:

1. Wood blocking is specified in Section 061000 “Rough Carpentry”

2. Section 064000 “Architectural Woodwork” for plastic laminate finishes/colors.

1.1 REFERENCES

A. General: Refer to the applicable industry standard references pertaining to materials and assemblies in this section. Where specific requirements have not been noted in the Contract Documents, comply with the applicable provisions and recommendations of the referenced standards and applicable Codes.

1. Architectural Woodwork Institute, Architectural Woodworking Standards (AWS).

2. Industrial Fasteners Institute (IFI): "Fastener Standards Book."

3. Architectural Barriers Act Accessibility Standards and ICC/ANSI A117.1 as applicable.

1.2 SUBMITTALS

A. Product Data: Submit for Professional's action. Submit manufacturer's literature, specifications and installation instructions describing the general properties of each material and accessory to be used in the Work.

B. Samples: Submit for Professional's action

1. Submit samples of finish of each color required, on 6 in. square of specified base material. Submittal and acceptance will be for color and texture of finish only. Compliance with all other requirements is the responsibility of the Contractor.

2. Submit samples of hardware; 1 each

C. Shop Drawings: Submit for Professionals action. Submit shop drawings showing layout, elevations and dimensions of all lockers and benches. Include floor plans, large scale details and locker numbering system. Clearly note lockers meeting ADA criteria. Revise shop drawings as may be required to adjust layout to field measurements.

1.3 QUALITY CONTROL

A. Basis of Design: When particular manufacturers' materials, products or processes are specified for an item of Work, any one thereof is acceptable for the Contractor to choose. An alternative material, product or process will be considered if the Contractor submits a written substitution request together with such information as may be necessary to assist the Professional in determining whether the proposed substitution is acceptable; the burden of proof rests solely upon the Contractor.

B. Qualified Installer: The metal lockers and accessories installation work shall be performed by a firm having 5 years' experience in the installation of specified materials on comparable projects. The installer shall provide evidence of successful completion of work of similar scope to that shown and specified for this Project using similar toilet accessories.

C. Sole Source Responsibility: Obtain metal lockers and accessories from one source of a single manufacturer. Obtain accessory products used in conjunction with metal lockers from the metal lockers manufacturer or from sources acceptable to the manufacturer. The manufacturer shall furnish evidence that the specified materials have been manufactured by the same source and successfully utilized on a yearly basis for a minimum of 5 years on projects of a similar scope to that shown and specified for this Project.

1. Uniformity: Provide metal lockers that are standard products of single manufacturer, with interchangeable like parts. Include necessary hardware, mounting accessories, fittings, and fastenings.

D. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of Federal, State and Municipal authorities having jurisdiction. Obtain necessary approvals from authorities having jurisdiction.

1. Where lockers are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities".

1.4 DELIVERY, STORAGE AND HANDLING

A. Packing, Shipping, Handling, and Unloading: Pack, ship and handle components in accordance with manufacturer's instructions. Protect lockers and accessories during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration. Cover and keep covered with non-staining protective wrapping. Do not deliver lockers until operations that could damage, soil, or deteriorate panels have been completed in installation areas.

1. Deliver lockers and accessory items fully identified for installation and protected from damage from any source.

B. Storage of Materials: Store indoors, above the floor, protected from construction activities and other sources of damage.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE REQUIREMENTS

A. Metal and Laminate Lockers: Single or tiered units with flat tops, and full perimeter concealed ventilation system. Provide each locker as a complete unit from a single manufacturer including hardware, accessory items, lock fitting and fastenings.

1. At least 5 percent, but not less than one of each type (full, half, etc.) in an area must be accessible per ADA Standards.

B. Performance Requirements

2. When doors are locked and the locker inverted, doors shall withstand a drop of not less than 6 in. without the slide latches disengaging.

3. All areas to also have at least one full height, outfitted to be a complete ADA accessible design.

2.1 MATERIALS

A. Metal Materials: Provide materials which have been selected for surface flatness and smoothness. Exposed surfaces which exhibit pitting, seam marks, oil canning, distortions, roller marks, stains, discolorations, or other imperfections on finished units are not acceptable.

1. Steel: Prime grade mild cold-rolled sheet steel free from surface imperfection, capable of taking a high-grade enamel finish and in compliance with ASTM A1008.

2. Steel: Sheet steel components shall be fabricated using zinc-coated steel free from surface imperfection, capable of taking a high-grade enamel finish and in compliance with ASTM A879.

3. Bolts and Nuts: Zinc plated truss fin head bolts and hex nuts.

1. Fastening Devices: Stainless steel, zinc plated or cadmium plated steel, concealed in the finished work wherever possible. Exposed screws shall be vandal-resistant, flat head, countersunk, finished to match the locker where exposed.

B. All Other Materials: Manufacturer's standard for the items required or type best suited for the intended use. Material thicknesses and gauges are manufacturer's standard option unless indicated otherwise.

2.2 LOCKERS

A. Standard and ADA compliant lockers as manufactured by Penco Products, Inc. to establish the basis of design and quality standards required.

B. Products of the following manufacturers will be acceptable provided they meet those established standards:

1. List Industries.
2. ASI Storage Solutions
3. Republic Storage Systems, Inc.
4. Hollman
5. Legacy
6. Forman
7. Or approved equal.

C. Full Height Metal Trooper Lockers (**Type LKR-01**):

1. Mfr: Penco
   a. Model: Patriot
   b. Mfr. No: Trooper Gear
   c. Size: Full height lockers – 2 ft. x **3** ~~2~~ ft. x 6 ft. Tall
   d. Color: Paint to match **PLAM-02**

D. Full Height Staff Lockers (**Type LKR-02**):

1. Hollman
   a. Essential A
   b. 72" H, 18" W, 20" D
   c. Finish: **PLAM-02**
   d. Gray Melamine Interior
   e. Keyless1 Lock and Coat Hooks

2. Legacy
   a. Model A
   b. 72" H, 18" W, 20" D
   c. Finish: **PLAM-02**
   d. Gray Melamine Interior
   e. Keyless1 Lock and Coat Hooks

3. Forman Locker Systems
   a. Single Tier Locker
   b. 72" H, 18" W, 20" D
   c. Finish: **PLAM-02**

d. Gray Melamine Interior
e. Keyless Lock and Coat Hook

E. Full Height Transient Lockers (**Type LKR-03 ~~2~~**):

1. Hollman
   a. Essential B1
   b. 72" H, **15~~12~~**" W, 15" D
   c. Finish: **PLAM-02**
   d. Gray Melamine Interior
   e. Keyless1 Lock and Coat Hooks

2. Legacy
   a. Model B1
   b. 72" H, **15~~12~~**" W, 15" D
   c. Finish: **PLAM-02**
   d. Gray Melamine Interior
   e. Keyless1 Lock and Coat Hooks

3. Forman Locker Systems
   a. Two Tier Locker
   b. 72" H, **15~~12~~**" W, 15" D
   c. Finish: **PLAM-02**
   d. Gray Melamine Interior
   e. Keyless Lock and Coat Hook

F. Cubbies, 6-tier, Metal Lockers (**Type LKR-04**):

1. Mfr: Penco
   a. Model: **Invincible II** ~~Patriot~~
   b. Mfr. No: Cubbies **(lockers without doors)**
   c. Size: Six Tier lockers – **15** ~~12~~ in. W. x 12 in. H. x 18 in. D. x 6 ft. Tall
   d. Color: Paint to match **PT-03**

G. **Type LKR-05**: Not Used.

H. Provide each full size locker with the following accessories:

1. One hat shelf 10 in. below locker top.

2. One double-prong ceiling hook and 3 single-prong wall hooks.

3. Number plate.

I. Filler Pieces: Provide filler and corner closure where shown of the same construction and finish as locker body. Miter and form pieces as required.

J. Built-In Combination Lock (where required): Key-controlled, 3-number combination lock.

K. Number Plates: Manufacturer's standard, non-ferrous metal, attached to door with at least 2 fasteners of same finish as number plate.

2.2 **SPECIALTY LOCKERS:**

A. Gun Lockers, (**Type LKR-06**)

1. Mfr: Store More Store
   a. 10 Compartment Flush Wall Mount Pistol Lockers With Tube Locks
   b. 25" W X 6 1/2" D X 32 1/8" H
   c. Designer Gray

2. Space Saver
   a. 10 Compartment Flush Mounted Gun Locker
   b. Individual Locks With Master Key
   c. Medium Gray

3. Southwest Solutions
   a. 10 Compartment Keyed Flush Lock
   b. Pistol Side Arm Locker Storage
   c. Medium Gray

B. Weapons Lockers, (**Type LKR-07**)

1. Universal Weapons Rack

   a. Model UWRC4284

   b. 42.38” W X 16.18” D X 83.75” H

   c. Standard Color

2.3 **BENCHES:**

A. General: Provide benches (Type **BCH-01 and BCH-02**) as produced by one manufacturer.

1. Standard and ADA compliant benches as manufactured by Penco Products, Inc. (Bench Top and stainless steel Pedestal) to establish the basis of design and quality standards required.

B. Products of the following manufacturers will be acceptable provided they meet those established standards:

1. List Industries.

2. ASI Storage Solutions

3. Republic Storage Systems, Inc.

4. Or approved equal.

2.4 **FABRICATION**

A. General: Each locker fabricated with its own door and frame, size as shown. Provide flat tops where soffits are shown and sloping tops elsewhere unless otherwise noted.

B. Laminate Locker Construction: Provide factory pre-assembled locker units. Lockers shall be fabricated using doweled and glued & nailed assembly process per Premium AWI standards. Fabricate lockers square, rigid and without warp, with the finished faces flat and free of scratches and chips. Knock down units are unacceptable.

1. Trim Panels: Provide end panels, filler panels, base trim, valance, and slope top panels as required to complete the installation of the lockers.

    a. Single-Tier Lockers: Not less than 3-point latching.

C. Metal Locker Construction: Fabricate lockers square, rigid, and without warp, with metal faces flat and free of dents or distortion. Make exposed metal edges safe to touch. Weld frame members together to form rigid, one-piece structure. Weld, bolt, or rivet other joints and connections. Grind exposed welds flush. Do not expose bolts or rivet heads on fronts of locker doors or frames.

1. Door Frame: Channel shaped, with corners tenoned and electrically welded, forming a solid one-piece structure. Punch holes in frame on 9 in. centers for attachment to body. Do not expose bolt or rivet heads on front of frame or locker.

2. Door: Reinforce door top and bottom with right angle bends, a minimum of 27/32 in. deep. Provide sides with channel formation, with door edges not less than 15/16 in. and return flanges not less than 9/16 in. Construct doors to prevent springing and to close quietly against air cushion type rubber bumpers. Weld doors at all corners. Factory install doors by a method that will prevent misalignment in handling, shipping and installation. Provide door swing of 180 deg. Provide louvered doors in manufacturer's standard louver pattern.

3. Body: Offset flanged sides to provide double thickness of metal at connections. Flange tops and bottoms on 4 sides.

4. Hinges: Two-inch high, 0.074 inch thick sheet steel, double spun, full loop, tight pin, projection welded to door frame and securely fastened to the door with two steel rivets.

    a. Doors over 48 inches high: Three 2 inch high five- knuckle hinges.

    b. Doors over 24 inches wide: Four 2 inch high five- knuckle hinges

5. Recessed Handle and Latch: 20-gauge stainless steel housing to form recess for latch lifter, locking devices and number plate; nonprotruding latch lifter containing strike and eye for padlock; and automatic, prelocking, pry-resistant latch mechanism with latching action as follows:

    a. Doors 60 inches and 72 inches high: Three points.
    b. Doors 20 inches to 48 inches high: Two points.

6. Locking Devices: Spring actuated slide latch having quiet, positive and automatic operation. Enclose latch on 4 sides in a boxed receptacle in the lock bar channel and prelocking devices which shall be tamperproof, pickproof and equipped with elastomeric rubber silencers.

2.5 **FINISHES**

A. Paint: Manufacturer's standard enamel powder coat paint finish electrostatically applied and properly cured to dry thickness of 1 to 1.2 mils.

B. Other Exposed Metal for Hardware: US26 polished chromium finish.

PART 3 - EXECUTION

3.1 GENERAL

A. Manufacturer's Instructions: Prepare substrates and install the work of this Section, including components and accessories in accordance with the manufacturer's instructions, except where more stringent requirements are shown or specified, and where project conditions require extra precautions or provisions to ensure satisfactory performance of the Work.

3.2 EXAMINATION

A. Verification of Conditions: Examine the areas to receive the Work and the conditions under which the Work would be performed. Remedy conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

1. Verify all measurements and dimensions at the Project site and coordinate the Work with the work of other trades. Allow for adjustments within specified clearances where ever taking field measurements before fabrication might delay work.

B. Coordination: Furnish inserts and anchorages which must be built into other work for installation of metal lockers and related work; coordinate delivery with other work to avoid delay.

3.3 PREPARATION

A. Substrate Acceptability: Inspect areas and accept surfaces designated to receive metal lockers as satisfactory for the reception of the Work specified in this Section. Commencement of installation shall constitute acceptance of substrate conditions by the Installer.

3.4 INSTALLATION

A. Install lockers at the locations shown in accordance with the manufacturer's written instructions, level and true without gaps and/or spaces at interior corners or joints between locker units. Anchor securely to supporting construction.

B. Space fastenings in metal lockers about 48 in. o.c., unless otherwise recommended by manufacturer, and apply through backup reinforcing plates where necessary to avoid metal distortion, using concealed fasteners.

C. Install trim, flat top units, and metal filler panels and end panels, using concealed fasteners. Provide flush, hairline joints against adjacent surfaces.

D. Do not erect members which are warped, bowed, deformed or otherwise damaged to such extent as to impair strength or appearance. Remove and replace members damaged in the process of erection.

E. Dielectric Separator: Separate dissimilar metals and metals in contact with concrete or masonry with a dielectric separator.

F. Upon completion of installation, lubricate and adjust doors to operate easily free from warp, twist or distortion and fitting tightly for entire perimeter.

3.5 **ADJUSTMENT**

A. Adjust doors and latches to operate easily without binding. Verify that integral locking devices are operating properly.

3.6 **CLEANING AND PROTECTION**

A. Clean surfaces and leave free from smears. Repair minor scratches and other finish imperfections. Replace damaged work. Provide protection as necessary to prevent damage during remainder of construction period.

B. Touch up marred finishes, but replace units that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

C. Protect the metal lockers and accessories through the construction period so that they will be without damage at the time of acceptance by the Department.

END OF SECTION

SECTION 114000

FOODSERVICE EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Stipulations:

1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Section 01 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

B. General: Provide 114000 Foodservice Equipment in accordance with requirements of the Contract Documents.

C. Section Includes the Following: Provide labor, materials, and equipment necessary to complete the Work of this Section, including that which is reasonably inferred to provide for the successful completion and operation of the facility, including regulations and rulings of local health authorities or other governing authorities relative to the Work, including but not limited to, the following:

1) Fabricated equipment.

2) Food waste machines.

3) Cooking equipment.

4) Self-contained refrigeration equipment.

5) Walk-in refrigeration equipment.

6) Powered food-preparation equipment.

7) Warewashing equipment.

8) Serving equipment.

9) Utility distribution systems.

10) Uncrating, assembling, rigging setting, leveling, and properly securing fastening devices to walls and floors.

11) Provision of necessary items such as braces, filler pieces and related items according with best approved industry standards.

12) Furnishing, erecting and maintaining staging and scaffolding, including mechanical hoisting equipment, required for the performance of the Kitchen Equipment Contractor’s work.

13) All plumbing, electrical, steam, and general accessories for items specified herein, including, but not limited to: lead-free (zero lead content) faucets, strainers, lever-wastes, tail pieces, control

valves, cords and plugs, and disconnects normally provided as standard accessories to the equipment specified herein. Items shall be furnished to the proper mechanical and electrical trades' final connection of utility services. Each item shall be tagged with the equipment number for easy reference.

14) Additional appurtenances the KEC shall provide are specified in Part 2: Products.

15) Exposed walk-in refrigeration drain lines shall be painted by the refrigeration contractor with silver epoxy paint. All other exposed sanitary and water piping shall be constructed of chrome plated type ACR OR DW hard tempered copper; PVC is not permitted. Gas pipes shall be painted with yellow epoxy paint.

16) The KEC shall submit one (1) approved set of each package of submittals to the Health Department(s) for record.

17) The KEC shall provide one (1) insert pan and adapter bar for each equipment opening designed for insert pans.

b. Fabrication Specification: On all shop-fabricated equipment, the KEC shall provide the exact fabrication methods specified and detailed. If custom fabricated items are submitted and accepted as an alternate to standard manufactured items, these items shall meet the requirements of Part 2 – Products, Article 2.2, Custom Fabrication.

c. Department-Furnished Equipment: Where indicated, the Department will furnish equipment for installation by Contractor.

D. Related Requirements: The following items of Work are not included in the Section and are specified under the following designated Sections/Sections:

1) Section 21, 22, and 23 Sections for supply and exhaust fans; exhaust ductwork; service roughing-ins; hose bibs; vacuum breakers, except for disposer assemblies, soda systems or dispensers, coffee makers, and hose reels which are specified with the equipment as standard accessories; gas pressure regulators, final gas stops, and shut-off valves; plumbing piping and fittings; water stops, shut-off valves and water pressure regulators; atmospheric vents, waste traps and tail pieces; fire-extinguishing systems; installation information for disposer assemblies, soda systems or dispensers, coffee makers, hose reels; trim and other materials required to complete foodservice equipment installation and final connections to the fixtures as specified.

2) Section 23 Section "Commercial-Kitchen Hoods" for coordination of ventilation hoods as specified in 114000.

3) Section 26 Section for connections to fire-alarm systems; wiring, disconnect switches, fan switches; electrical receptacles and other electrical materials required to complete foodservice equipment installation.

4) Section 06 Section for rough carpentry for wall reinforcing or backing required for wall-mounted equipment.

5) Section 260553 Section for color coding

1.2 PRICE AND PAYMENT PROCEDURES

A. Refer to Section 01 for direction regarding Allowances, Unit Prices, Alternates and Measurement and Payment.

1.3 REFERENCES

A. Abbreviations and Acronyms:

1. Definitions:

a. Wherever used in the Contract Documents, the following items shall have the meanings indicated which shall be applicable to both singular and plural thereof. Reference to parties within this Specification are made as if singular in number which is done only for expedience.

b. Approved: Acceptable, in the judgment of, approved by, or acceptable to, or satisfactory to, or in the judgment of the Department.

c. Professional: A special consultant, expert in a specialized field.

d. Exposed: All surfaces that are visible below and in the same plane as the line of sight when same is lowered, from a height of 4 feet 0 inches to the floor. All surfaces that are visible when the line of sight is raised from a height of 4 feet 0 inches to 6 feet 6 inches. All surfaces behind cabinet doors when doors are open and the latter conditions are invoked. This includes both servery and kitchen areas.

e. Fabricated: Custom-made equipment built by the Kitchen Equipment Contractor (KEC) in the KEC's or KEC Sub-contractor's Shop or at the Project Site.

f. Furnish: The term "furnish" means to supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

g. Install: The term "install" describes operation at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

h. Provide: The term "provide" means to furnish and install, complete and ready for the intended use, complete in all respects, set, level and sealed, ready for utility connections; unless otherwise noted.

i. Kitchen Equipment Contractor (KEC): The Kitchen Equipment Contractor is a sub contractor to the Contractor and is the party responsible for furnishing and installing all items included in Specification Section 114000, unless otherwise specified.

j. Standard or Manufactured Equipment: Equipment which is manufactured in other than the KEC's Shop, such equipment being furnished by the specific manufacturer so stated in the Contract Documents.

k. Supplier: Any person or organization who supplies materials or equipment for the Work, including that fabricated to a special design but who does not perform labor at the site.

B. Reference Standards:

1. Jurisdiction: All Work and materials shall comply with all State and Federal laws, municipal ordinances, regulations and directions of inspectors having jurisdiction.

2. Regulations: The Drawings and Specifications shall govern whenever they require larger sizes and higher standards than are required by regulations.

3. The regulations shall govern whenever Drawings and Specifications require something which will violate the regulations. KEC is responsible to be knowledgeable of local requirements and regulations. No extra charge will be paid for furnishing items required by the regulations, but not specified or shown on the Drawings, except where local codes or regulations vary greatly from nationally or normally recognized codes or regulations, at which time the Professional shall determine if extra charge is justified. Rulings and interpretations of the enforcing agencies shall be considered a part of the regulations.

4. Fabrication Standards: SMACNA Standard: Where applicable, fabricate food service equipment to comply with the Sheet Metal and Air Conditioning Contractors National Association's (SMACNA) "Kitchen Equipment Fabrication Guidelines," unless otherwise indicated.

5. ANSI Standards: Comply with applicable ANSI standards for electric-powered and gas burning appliances, for piping to compressed gas cylinders, and for plumbing fittings including vacuum breakers and air gaps to prevent siphonage in water piping.

6. Base Building Standards: All electrical, mechanical, and refrigeration work required under this Section shall be performed in accordance with Section 22, 23 – Mechanical, and Section 26 – Electrical Specifications as applicable.

7. Electric Standards: Electric equipment and components shall be Underwriter's Laboratories (UL) listed and labeled on prime electrical components and "recognized marking" on other items with electrical components, signifying listening by UL, where available and shall conform to the latest standards of National Electric Manufacturer's Association (NEMA) Code as well as local standards. For wiring and devices, comply with the National Electric Code (NEC), and NFPA 70.

8. Exhaust Air Standards: Exhaust hoods/ventilators, ducts, and fans materials, construction, and installation shall conform to the current edition of NFPA-096, UL710 and local standards.

9. Fire Suppression Standards: Fire suppression systems installations and configuration shall conform to NFPA Bulletins 13, 17, 17A, 96, and UL300, Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment.

10. Gas Standards: Gas heated equipment shall be equipped with automatic igniters and automatic safety pilots, to conform to AGA standards, and carry AGA seal and comply NFPA 54 National Fuel Gas Code.

11. Government Agencies: Work and materials shall be in accordance with the latest rules of US Public Health Service; National Board of Fire Underwriters; OSHA; local and state ordinances, State Accident Commission's safety orders, regulations of the State Fire Marshall, and with all prevailing rules and regulations.

12. Health Standards: All applicable items shall conform to latest Standards and Revisions established by the National Sanitation Foundation (NSF), Ann Arbor, Michigan. Provide each principal item of food service equipment with a NSF "Seal of Approval." If items are modified in any way from the model or configuration approved by NSF, the manufacturer shall obtain approval from NSF of the modification and furnish a letter of acceptance by NSF.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Pre-Installation Conditions:

a. Permits and Certificates: The KEC shall arrange, obtain, and pay for all approvals, permits, certificates, and licenses required for the performance of his work and shall post all notices required by the law.

b. Access: Verify conditions at the building, particularly door openings and passages, to assure access for all equipment. Equipment shall be provided in sections as required to ensure passage to installations point at no additional charge to the Department. Any pieces too bulky for existing facilities shall be hoisted or otherwise handled with apparatus as required. Provide all special handling equipment charges at no additional cost to the Department.

2. Final Locations: Exact locations, distances, and levels shall be governed by the confines of the buildings as approved by the Professional. All Drawings by HFS are definitive only and are not to be used for construction or shop details. KEC shall accept this Contract with understanding.

3. The KEC shall confirm the 8" (203mm) water column local gas pressure will be acceptable for gas equipment that can operate in a range of water column pressures. Where fixed water column is required (ovens, fryers, etc.) and the gas regulator is not built into the equipment, the KEC shall provide the appropriate regulator. For site pressures above 8" (203mm) water column, Section 23 shall provide a pressure reducing valve on the gas supply to the kitchen.

4. Vacuum breakers shall not be exposed in public areas.

5. Wall Reinforcing: KEC shall coordinate with Contractor for wall reinforcing or backing required for wall-mounted equipment.

6. Manufactured articles, materials, and equipment shall be applied, connected, erected, used, cleaned, and conditioned as directed by the manufacturer in all

cases unless noted in item Specifications or Drawings and shall be protected from damage until Final Acceptance.

7. Coordinate locations and requirements of utility service connections.

8. Coordinate the following operations that depend on each other for proper installation, connection, operation and related construction.

   a. Vacuum Breaker Part 1, paragraph 1.2, C.1

   b. Appropriate Regulator Part 1, paragraph 1.2, C.1

   c. Beverage Conduit Hangars specified in Part 2, paragraph 2.3. A.

   d. Water Conditioner specified in Part 2,13.

   e. Refrigeration System specified in paragraph 2.15.J and 2.15.M.

   f. Equipment bases.

   g. Floor depressions.

   h. Insulated floors.

   i. Floor areas with positive slopes to drains.

   j. Floor sinks and drains serving foodservice equipment.

   k. Roof curbs, equipment supports, and penetrations.

B. Demonstrations:

1. Provide demonstrations by manufacturer's certified demonstrators. Cost for demonstrations shall be itemized separately from the price of each item on the Bid Form. Schedule with the Department at least seven (7) days in advance by notifying Professional of demonstration date. Four (4) copies of Service manuals are to be provided to the Professional 30 days in advance of demonstrations.

C. Field Measurements:

1. Verify all measurements at the Site and assume full responsibility for their correctness before proceeding with Work. No extra compensation will be allowed because of differences between Site conditions and those indicated on the Drawings.

2. Any discrepancies between the Drawings, Specifications, and Site Conditions or ambiguities shall immediately be reported to the Contract and Professional, in writing. If the Contract Documents disagree as to quality or quantity of Work required, the better quality or greater quantity shall be supplied, unless otherwise instructed in writing by the Contracting Officer. Any Work performed at locations in question after discovery of discrepancies, inconsistencies, ambiguities, or errors, without securing resolution from Professional, shall be at the KEC's risk.

D. Holes And Escutcheons:

1. Cut holes in equipment for pipes, drains, electric outlets, and similar items, as required for installation. This also includes providing and installing welded sleeves, collars, ferrules, escutcheons and angled escutcheons in equipment. All sleeves and penetrations in building systems shall be prepared by the Contractor.

E. Refrigeration Installation:

1. KEC shall provide a submittal letter to Professional confirming one-point responsibility for refrigeration components and installation.

F. Remove Debris:

1. KEC shall remove all debris resulting from KEC's operations.

G. Repairs:

1. KEC shall repair any damage as a result of KEC's operations.

H. Sealants:

1. Provide empty sealant tubes after application for verification by the Professional that sealants used meet the Specifications.

I. Set In Place:

1. Set each item of non-mobile and non-portable equipment securely in place, level and adjust to the correct height. Anchor to supporting substrate according to manufacturers' recommendations where indicated and where required for sustained operation and use without shifting or dislocation. Conceal anchorages where possible with sanitary covers or filters. Adjust countertops and other work surfaces to level tolerance of 1/16 inch (4mm) maximum offset, and maximum variation from level or indicated slope of 1/6 inch (4mm) per 12 inches (305mm).

J. Stands:

1. Provide stands and required supports for all equipment requiring them.

K. Commissioning:

1. Provide start-ups by manufacturer trained and authorized service agents to start-up equipment. Start-Up Documentation: Include with the equipment brochures submittal, the start-up agent and affiliation for all items specified with start-ups, complete with their telephone numbers.

2. KEC shall provide a competent representative to be present when installation is put into operation for start-up and test each item of operational equipment to demonstrate that it is operating properly and that controls and safety devices are functioning. Repair or replace equipment found to be defective in its operation, including units that are below capacity or operating with excessive noise or vibration.

3. Compensation for Service Agents is the responsibility of the KEC. Service Agents must certify their Work. Start-up shall be performed before turnover to the Department. The Department is not responsible for damage to equipment which has been placed in service before start-up as a result of delay on the part of the KEC to schedule start-ups.

L. Demonstration:

1. Provide demonstrations to instruct the Department's employees in the proper use and maintenance of all items in this Contract. Provide a schedule to the Professional for demonstrations within thirty days of turn-over of the space to the Department. A copy of the schedule shall be sent to the Professional.

M. Wall Reinforcement:

1. Locate wall reinforcement or backing, to be provided by the Contractor. KEC shall coordinate equipment requirement for such supports necessary to complete the Food Service Equipment work.

N. Preinstallation Meetings: Refer to Section 01.

O. Sequencing: Refer to Section 01.

P. Scheduling: Refer to Section 01.

1.5 SUBMITTALS

A. Conformance: Review of Drawings, shops details and equipment brochures by the Professional is provided for design and concept only and does not relieve the KEC of responsibility for full compliance with Original Drawings, Specifications, and Details, or for conformity with location, verification of all dimensions of equipment and building conditions, and reasonable adjustments for construction deviations.

B. The following shall be submitted to the Professional for review and approval to proceed. Submit information in sequence according to following schedule of submittal packages. Resubmission may be required if significant exceptions are taken during the review process.

1. Product Data: For each type of product indicated of standard manufacturer, include the following:

a. Manufacturers' catalog data.

b. Manufacturer's model number.

c. Accessories, specified options and components that will be included for Project.

d. Clearance requirements for access and maintenance.

e. All submittals for custom fabricated or factory-built equipment which contain refrigerated components must indicate refrigerant type.

2. Utility service connections for water, drainage, power, and fuel; include roughing-in dimensions. Equipment Data

3. Drawings:

a. For custom fabricated equipment. Include plans, elevations, sections, roughing-in dimensions, fabrication details, utility service requirements, and attachments to other work.

b. Fire Suppression Plan: Component brochures and installation plans of Ansul System for review shall be submitted. Plan shall show locations of manual releases. Show dimensioned elevation of cabinet(s) which are readily accessible for maintenance. On approval, submit for Fire Marshal approval with record approval copy to be furnished to Professional prior to installation.

c. Rough-Ins:

1) The KEC shall request from the Professional a complete set of Professionalural, mechanical, electrical, and plumbing drawings which show the food service area. The timely submission of this information to the KEC is the responsibility of the Professional. The KEC shall check his Rough-in information against the Contract Drawings for accuracy before submission.

2) KEC shall submit a set of reproducible Rough-in Drawings to Professional for review, by appropriate trades. These Drawings shall be dimensioned and show the location of ducts, stubs, and floor and wall sleeves, for ventilation, plumbing, steam, electrical, and refrigeration lines. Submit concrete or masonry base and curb dimensions required for equipment so supported, if applicable. Rough-in Drawings shall also indicate wall backing locations for equipment and restraining devices of quick disconnect devices, reinforcements, anchorage, and related work required for the complete installation of fixtures. Identify the spot connection numbers identified in the Contract Documents.

3) KEC shall be responsible for the accuracy of all information on Rough-in Drawings.

4) Site-verify mechanical, electrical and ventilating rough-in and sleeve locations in coordination with the Contractor and Professional to establish proper Rough-in locations as shown on Rough-in Drawings prepared by the KEC, installation of floors, walls, columns and ceilings and other conditions under which food service work is to be installed. Check all rough-in connections once installed to ensure that his equipment's service connections are as close to Rough-in locations as possible and notify the Contractor and Professional of unsatisfactory locations and dimensions of other work and of unsatisfactory dimensions and conditions for proper installation of food service equipment. Do not proceed with fabrication and installation until unsatisfactory dimensions and conditions have been corrected.

5) The Rough-in Drawings shall refer to Drawings, by sheet number, for “Supplemental Information and Clarification”. Submit reproducible Shop Drawings for items of custom fabrication included in this Contract. Shop Drawings shall be submitted at 3/4 inch (19mm) scale for plan and elevations, and 1-1/2 inches (37mm) scale for details and sections, and shall show dimensions, materials, gauges, details of construction, installation, and relation of adjoining work requiring cutting or close fitting.

C. Submit reproducible Shop Drawings for items of custom fabrication included in this Contract. Shop Drawings shall be submitted at 3/4 inch (19mm) scale for plan and elevations, and 1-

1/2 inches (37mm) scale for details and sections, and shall show dimensions, materials, gauges, details of construction, installation, and relation of adjoining work requiring cutting or close fitting.

D. The KEC shall submit all required submittals to the Professional for review. Partial submittals received will be held until complete. The Professional's review schedule does not commence until the submittal package is complete. Whenever more than one (1) item is submitted at the same time, each item shall have its own transmittal letter attached.

1. Before proceeding with the fabrication of any item, the KEC shall submit to the Professional prints which reflect verified field dimensions and conditions.

2. After review and approval to proceed, the KEC shall supply to the Professional the specified number of distribution prints for record purposes.

3. Any change in Rough-in of service necessitated by reason of the equipment provided as part of this Contract as delivered varying from the Plans and Shop Drawings furnished for use of other Trades shall be at the expense of the KEC.

E. Schedules:

1. Equipment: Six (6) copies of a Maintenance Schedule for all appropriate equipment items shall be provided before Final Acceptance of installation by the Professional. Two (2) sets of maintenance schedules shall be delivered to the Professional for record copy and coordination purposes.

2. Samples for Initial Selection: For units with factory-applied color finishes.

3. Samples for Verification: For each factory-applied color finish required, in manufacturer's standard sizes. Provide samples of exposed finishes for custom fabricated equipment, 8 inch (200mm) squares of materials and 12 inch (300mm) lengths of running members and trim. Provide 24 inch (600mm) length sample of tray slide if custom fabricated. All edges shall be smooth and free of burrs or ragged edges.

4. All submittals for custom fabricated or factory-built equipment which contain refrigerated components must indicate refrigerant type.

F. Informational Submttals:

1. Coordination Drawings: For foodservice facilities.

a. Indicate locations of foodservice equipment and connections to utilities.

b. Key equipment using same designations as indicated on Drawings.

c. Include plans and elevations; clearance requirements for equipment access and maintenance; details of equipment supports; and utility service characteristics.

d. Include details of seismic bracing for equipment when seismic rating is specified in Section 01.

G. Submittal Sequences:

1. Package No. 1 Submittal Description:

a. Equipment Plan

b. Dimensioned Rough-Ins

c. Buy-Out Equipment Brochures

d. Drawings – Custom Fabrication:

e. Shop Drawings – Walk-Ins

f. Shop Drawings – Exhaust Hoods

g. Shop Drawings: Remote Refrigeration

h. Shop Drawings: Food Shields

i. Shop Drawings: Trough Drains

j. Wall Backing Locations

k. Shop Drawings: Fire Suppression System

l. Refrigerant List

m. Fire Marshal Approved Ansul Installation Plan

n. Samples (when specified)

o. Notice By Manufacturer of Lack of Availability (Where applicable)

p. Confirmation of Suitable Gas Pressure

q. Confirmation of Available Utilities

r. Manufacturer Certification of Refrigeration Capacity

s. Water Quality Report

2. Plumbing Contractor Submittal:

a. Floor Sink, Drain, Funnel Floor Drain Specifications

b. Grease Interceptor Specifications, Locations

3. Electrical Contract Submittal:

a. Disconnect Specifications, Locations

b. Electrical Panel Dimensions, Locations

4. Package No. 2 Submittal Description:

a. Verified Rough-In Installations

b. Verified Field Dimensions

c. Verified Ceiling Heights

d. Notice By KEC of Expected Delay (Where applicable)

e. Notice of Field Deficiencies Prior to Installation

f. Sealant Colors

5. Package No. 3 Submittal Description:

a. Transmittal on Delivery of Gas Valves

b. Transmittal on Delivery of Regulators (Where Applicable)

c. Transmittal on Delivery of Ionizers (Where Applicable)

6. Package No. 4 Submittal Description:

a. Service Agents

b. Service Manuals

c. Manufacturer Extended Refrigeration Certificates

d. Transmittal of Master Faucet Repair Kit

e. Start-Up Agents and Phone Numbers

f. Demonstration Schedule

g. Notice of Inspection of Sealant Tubes

7. Operation and Maintenance Manuals:

a. Service Agents: Include with the service and parts manuals, listing of local service agencies for all included manufacturers, complete with telephone numbers and addresses.

b. Start-Up Data: Include with the equipment brochures, start-up agent for all specified start-ups, complete with telephone numbers.

c. Submit completed start-up certificates for equipment specified to require start-up.

d. Refrigeration Certificates: Include service and parts manuals for items of standard manufacture before start-up and one month prior to first use of the equipment by the Department, or according to requirements of Section 01. List refrigerant type and quantity of all refrigerants.

e. List flow rate of all faucets and pre-rinse assemblies

H. Installation Conditions:

1. General: Manufactured articles, materials, and equipment shall be applied, connected, erected, used, cleaned, and conditioned as directed by the manufacturer and shall be protected from damage until Final Acceptance.

I. Closeout Submittals:

1. In addition to items specified in Section 01 Closeout Procedures and Operation and Maintenance Data divisions include the following:

a. Product Schedule: For each foodservice equipment item, include the following:

1) Designation of item number as indicated on Drawings.

2) Manufacturer's name and model number.

3) List of local factory-authorized service agencies including addresses and telephone numbers for all included manufacturers.

4) Operation and Maintenance Data:

5) Include service and parts manuals for items of standard manufacture before start-up and one month prior to first use of the equipment by the Department, or according to requirements of Section 01.

6) Extended Warranty Refrigeration Certificates:

1.6 MAINTENANCE MATERIAL SUBMITTALS (N/A)

1.7 QUALITY ASSURANCE

A. Contractor's Quality Control Responsibilities: Contractor is solely responsible for quality control of the Work.

B. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of authorities having jurisdiction. Obtain necessary approvals from all such authorities.

C. Qualified Installer:

1. The KEC is able to show that the KEC is now and has been engaged in the supply and installation of foodservice equipment under the Contract as the KEC’s principal business. The KEC shall not sublet any of the equipment in this Section, unless specified to be of other manufacture than the KEC. If a specialized function is requested, KEC shall submit a list of equipment to be sublet and the name and address of Sub-contractor with the Bid.

2. Upon Demand, the KEC shall supply evidence of having executed Contracts of size comparable to this Work and the KEC’s experience and ample financial resources to enable the KEC to perform in a satisfactory manner.

3. The Professional shall at all times have access to the KEC's shop or plants for inspection of construction and materials. The Professional reserves the right to make such investigations as he deems necessary to determine the ability of the KEC to perform the Work, and the KEC shall furnish the Professional all information requested.

4. The KEC represents being is familiar with the requirements of the Bidding Documents and that he has visited the site and has become acquainted with local

conditions affecting execution of the Work. Failure to do so shall not relieve the KEC of the obligation to furnish all materials and labor necessary to carry out the provisions set forth Work. Insofar as possible, the KEC, in carrying out the Work, must employ such methods or means as will not cause any interruption of or interference with the Work of any other Contractor.

5. The KEC is cognizant of all federal, state, and local laws, ordinances, regulations, and guidelines, as interpreted by the authority having jurisdiction, which may affect the Work in any way and that the KEC is satisfied that the Work specified herein is in conformance with same.

6. The KEC shall so state, in writing, prior to bidding, any Work called for in the Contract Documents which cannot be guaranteed. Proceeding with any operations is construed as acceptance of all guarantee conditions.

7. The KEC confirms that such temporary and permanent Work required by the Contract shall be performed by the KEC can be satisfactorily constructed and used for the purpose for which it is intended and that such construction will not injure any person or damage any property.

8. KEC shall confirm that conditions exist and satisfied that the existing openings and access to the foodservice area through which his equipment shall be required to pass is satisfactory and the KEC is cognizant of the fact that required equipment delivered complies in sizes and quantities intended for the space indicated.

D. Pre-Installation Meetings: Refer to Section 01, Division 013100 Project Management and Coordination.

E. Start-Up:

1. KEC shall provide a manufacturer trained and authorized service agent to start-up equipment as specified in the Item Specifications. Coordinate the start-up of food service equipment when lines have been tested, sanitized, balanced and adjusted for pressure, voltage, and similar considerations. Before testing, lubricate each piece of equipment item in accordance with manufacturers' recommendations.

2. KEC shall provide a competent representative to be present when installation is put into operation for start-up and test each item of operational equipment to demonstrate that it is operating properly and that controls and safety devices are functioning. Repair or replace equipment found to be defective in its operation, including units that are below capacity or operating with excessive noise or vibration.

3. Compensation for Service Agents is the responsibility of the KEC. Service Agents must certify their Work. Start-up shall be performed before turnover to the Department. The Department is not responsible for damage to equipment which has been placed in service before start-up as a result of delay on the part of the KEC to schedule start-ups.

4. NSF Standards: Provide equipment that bears NSF Certification Mark or UL Classification Mark certifying compliance with applicable NSF standards.

5. N/A

6. Seismic Restraints: Provide seismic restraints according to code requirements of ASCE 7-05 for food service equipment, chapter 13, if indicated in Section 01.

7. UL Certification: Provide electric and fuel-burning equipment and components that are evaluated by UL for fire, electric shock, and casualty hazards according to applicable safety standards, and that are UL certified for compliance and labeled for intended use.

8. Steam Equipment: Provide steam-generating and direct-steam heating equipment that is fabricated and labeled to comply with ASME Boiler and Pressure Vessel Code.

9. Regulatory Requirements: Install equipment to comply with the following:

   a. ASHRAE 15, "Safety Code for Mechanical Refrigeration."

   b. NFPA 54, "National Fuel Gas Code."

   c. NFPA 70, "National Electrical Code."

   NFPA 96, "Ventilation Control and Fire Protection of Commercial Cooking Operations."

1.8 DELIVERY, STORAGE, AND HANDLING

A. General: Deliver and store materials in manufacturer's original packaging, labeled to show name, brand, type, and grade. Store materials in protected location off ground in accordance with manufacturer's instructions.

B. Deliver food service equipment in containers designed to protect equipment and finish until final installation. Make arrangements to receive equipment at Project Site or to hold in warehouse until delivery can be made to the Project Site.

C. Store food service equipment in original containers and in location to provide adequate protection to equipment while not interfering with other construction operations.

D. Handle equipment carefully to avoid damage to components, enclosures and finish. Do not install damaged food service equipment; replace and return damaged components to equipment manufacturer.

1.9 FIELD / SITE CONDITIONS

A. Field Measurements: Verify actual dimensions of construction contiguous with foodservice equipment by field measurements before fabrication. Indicate measurements on Coordination Drawings.

1.10 WARRANTY

A. General: Warranties and guaranties specified in this Article shall not deprive the Department of other rights the Department may have under other provisions of the Contract Documents and are in addition to and run concurrent with other warranties made by the Contractor w/ KEC as sub; Mechanical Contractor, Plumbing Contractor and Electrical contractor under requirements of the Contract Documents.

B. Special Warranty: Submit for Department's documentation. Furnish 5 year written warranty in form stipulated by Professional, signed by the Contractor and Installer, agreeing to repair or replace Work which has failed as a result of defects in materials or workmanship. Upon

notification of such defects, within the warranty period, make necessary repairs or replacement at the convenience of the Department. Other guarantees or warranties may not be substituted by the Contractor for the terms of this special warranty.

C. Refrigeration Compressor Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace compressors that fail in materials or workmanship within specified warranty period.

1. Failure includes, but is not limited to, inability to maintain set temperature.

2. Warranty Period: Five years from date of Substantial Completion.

3. Refrigeration warranties and other warranties specified shall be obtained through the manufacturer, certified and documentation submitted.

4. Cost for warranties are to be included in the KEC's Base Bid.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

ITEM #1 AIR CURTAIN - HEATED

Quantity: One (1)
Manufacturer: Mars Air Systems
Alternate MFG. #1: (No alternate available)
Alternate MFG. #2: (No alternate available)
Model: PH1072-2EBH-PW
Remarks:

1. Model PH1072-2EBH-PW Phantom 10 Air Door, for 72" wide door, electric heated, aluminum cabinet, pearl white powder coat finish, (2) 1/2 HP motors, 208v/60/1-ph, 6.0kW, ETL
2. 18 month warranty
3. 1 year warranty for all parts (except filters)
4. Water-proof construction designed for and warrantied for installation in 34'F space.
5. Plunger switch installed in door frame

ITEM #2 HOSE REEL

Quantity: Two (2)
Manufacturer: Fisher
Alternate MFG. #1: (No alternates available)
Alternate MFG. #2: (No alternates available)
Model: 29851
Remarks:
One unit integrated into #75 Soiled Dishtable
See Detail 6.04

1. Model 29851 Hose Reel Assembly, closed reel rinse wall mounted with spray valve, powder coated steel construction, 30 feet of 3/8"ID, 3 ply hose, working pressure of 200 psi, withstands 160° F water temperature, ½" NPT Female garden hose inlet

2. All stainless steel construction with zero lead content
3. Fisher 5 year warranty against defects in materials or workmanship

ITEM #3 HOSE REEL CABINET

Quantity: Two (2)
Manufacturer: Fisher
Alternate MFG. #1: (No alternates available)
Alternate MFG. #2: (No alternates available)
Model: 1801
Remarks:

See Detail 6.04

1. Model 1801 Reel Rinse Control Unit, valves, gauges and connections are completely enclosed within a stainless steel cabinet, dual check backflow preventer, water hammer silencer, 90° panel lock, padlock hasp & finger latch, 1/2" NPT female inlets & outlets
2. All stainless steel construction with zero lead content
3. Fisher 5 year warranty against defects in materials or workmanship
4. Recessed mounting

ITEM #4 MOP SINK

Quantity: One (1)
Manufacturer: IMC/Teddy
Alternate MFG. #1: (No alternates available)
Alternate MFG. #2: (No alternates available)
Model: DL20-1
Remarks:

1. Model DL20-1 Combo Sink & Utensil/Can Washer, 16 gauge #304 stainless steel construction., one piece wash basin, 1" OD stainless steel tubing wash supports, fully welded, removable. scrap drawer, integr.12" backsplash, double foot pedal valve, return-mounted faucet, with 48" flexible stainless steel hose & spray head

ITEM #5 AIR TREATMENT SYSTEM

Quantity: Five (5)
Manufacturer: Activtek
Alternate MFG. #1: Hussman
Alternate MFG. #2: Biozone
Model: PUREKOOLER A1027A
Remarks:

1. Water-proof construction designed for and warrantied for installation in 34’F space.

ITEM #6 FLY CONTROL UNIT

Quantity: Four (4)
Manufacturer: Paraclipse Systems,

Alternate MFG. #1: Royal Industries
Alternate MFG. #2: (No alternates available)
Model: TERMINATOR
Remarks:

1. 970 square inches of cartridge surface area
2. 60 day cartridge life
3. Approximately 8 month life of (2) 20W UV lamp
4. Approximately 4000 cartridge capacity
5. High strength aluminum construction

ITEM #7 HOSE BIB

Quantity: One (1)
Manufacturer: Speakman
Alternate MFG. #1: Fisher
Alternate MFG. #2: T&S Brass
Model: SC-5911-IS
Remarks:

1. 1 year warranty against defects in materials or workmanship, standard
2. Polished chrome finish
3. Integral stop, vacuum breaker
4. Wall flange

ITEM #8 SPARE NUMBER

ITEM #9 FLOOR TROUGH - AREA

Quantity: Nine (9)
Manufacturer: IMC/Teddy
Alternate MFG. #1: Fabricator per BOD
Alternate MFG. #2: (No alternates available)
Model: FDSS-1212-SG - CUSTOM
Remarks:

1. Model FDSS-1212-SG - CUSTOM FDSS Floor Drain Sump Sink, 12"W x 12"D x 4" deep, 16/304 stainless steel, with drain & (SG) subway grating
2. Flange, ledge and grating flush with and level to kitchen floor
3. NSF
4. GA-14 14 gauge type 300 s/s construction
5. Coved sides and crease bottom
6. 4” waste outlet
7. WCP perforated drain basket
8. Recessed flange supports for quarry tile floor
9. FSG integral seepage flange with “weep” holes
10. Shop drawing required

ITEM #10 MOBILE DRY/NON-FOOD STORAGE SHELVING UNIT

Quantity: Sixteen (16) ~~Eighteen (18)~~
Manufacturer: Metro
Alternate MFG. #1: Advance Tabco
Alternate MFG. #2: Eagle Group
Model: 5N557C
Remarks:

1. Model 5N557C Super Erecta® Starter Shelving Unit, 48"W x 24"D x 74"H, (5) wire shelves, (4) posts, chrome plated finish, KD, NSF
2. Model 5PCM Stem Caster, swivel, 5" diameter, 1-1/4" wide face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included)
3. Model 5PCMB Stem Caster with brake, swivel, 5" diameter, 1-1/4" wide face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, NSF (donut bumpers included)

ITEM #11-12 SPARE NO.

ITEM #13 DUNNAGE RACK

Quantity: (10)
Manufacturer: New Age
Alternate MFG. #1: Lockwood
Alternate MFG. #2: Channel
Model: 1202
Remarks:

1. Model 1202 Dunnage Rack, mobile, 37-3/4"W x 20"D x 8-1/4"H, 1000 lbs. weight capacity, welded aluminum construction, (2) swivel/brake & (2) rigid 5" platform casters, NSF, Made in USA
2. Lifetime warranty against rust & corrosion, 5 year workmanship and material defects warranty, standard

ITEM #14 CENTRAL WATER FILTER ASSEMBLY

Quantity: One (1)
Manufacturer: Everpure
Alternate MFG. #1: (No alternates available)
Alternate MFG. #2: (No alternates available)
Model: EV943732
Remarks:

1. Model EV943732 Everpure® Endurance® High Flow Quad Filter System, used for multiple equipment & combination applications, 200,000 gallon capacity, 15 gpm flow rate, (4) 0.2 micron filter cartridges, 10-100 PSI pressure requirement, 3/4" NPT inlet/outlet, NSF
2. Serves #40, 45, 131, 133, 134

ITEM #15 AIR CURTAIN-HEATED

Quantity: One (1)
Manufacturer: Mars Air Systems
Alternate MFG. #1: Berner
Alternate MFG. #2: Curtron
Model: PH1042-1EBB-PW
Remarks:
Coordinate with door frame specification

1. Model PH1042-1UA-PW Phantom 10 Air Door, for 42" wide door, unheated, aluminum cabinet, pearl white powder coat finish, (1) 1/2 HP motor, 480v/60/3-ph, ETL, 500 watts
2. 5 year warranty
3. 1 year warranty for all parts (except filters)
4. Plunger switch installed in door frame

ITEM #16 CEILING HUNG CORD REEL

Quantity: Nine (9)
Manufacturer: Custom
Model: HOPKINS CORD REEL
Remarks: See Electrical Drawings

1. HBL5369C connector
2. Flat blade
3. Non-locking
4. Coordinate model with voltage and amperage of equipment served by reel

ITEM #17 TWO (2) COMPARTMENT SINK

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (No alternates available)
Model: 94-2-36-24RL CUSTOM
Remarks:
If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02A, 1.03A, 1.06, 3.01, 3.01.1

1. 2-compartment seamless sink, 85”L x 27”W x 45”H
2. Left-hand drainboard with 24”L x 27”W x 14”D sink compartments with 3” radius, with 11”H backsplash on rear and left end, closed 11”H backsplash on right end, stainless steel open frame base, 1” adjustable stainless steel bullet feet, 18 gauge 304 stainless steel on left end, NSF
3. Right-hand drainboard for disposer bowl
4. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
5. Stainless steel gussets welded to die-embossed reinforcing channel
6. 1-5/8” diameter tubular stainless steel legs with legs on left and right drain board ends
7. Front and rear cross brace to secure 1-5/8” stretchers on right drain board
8. Tile edge
9. Recessed bowl surface for cutting boards and sink covers
10. Two (2) vertical cutting board holders on left end drainboard

11. Sink bowls with 14”H water level and 17”H flood level
12. ½” faucet holes for #19 @8” on center;
13. Two (2) Fisher #51295 ¾” zero lead content faucets
12. Punch two holes in sink bowls for overflows of drain
13. Undercoat
14. Two (2) rotary waste support brackets for waste drain handle; (1) support required for each drain
15. Skirted front @ sinks
16. Fully welded
17. NSF
18. Shop drawing required

ITEM #18 FOOD PROCESSOR - COUNTERTOP

Quantity: One (1)
Manufacturer: Hobart
Alternate MFG. #1: Halde
Alternate MFG. #2: Robot Coupe
Model: FP350-1
Remarks:

1. Model FP350-1 Food Processor - Unit Only, angled continuous feed design, full-size hopper, 26 lb per/min production cap., 430 rpm, stainless steel cutting surfaces, planetary gear transmission, triple safety interlocks, aluminum housing, rubber feet, 120/60/1, 1 HP, UL, NSF
2. Standard warranty - 1-Year parts, labor & travel time during normal working hours within the USA
3. Model 3PLATE-6PACK-SSP (6) Plates & Storage Rack, consisting of: (1) 3SLICE-1/16-SS, (1) 3SLICE-5/32-SS, (1) 3SLICE-7/32-SS, (1) 3SLICE-3/8-SS, (1) 3SHRED-5/16-SS, (1) 35DICE-3/8 & (2) WALL-RACK
4. Model WALL-RACK Wall-Rack - Holds 3 Plates
5. Model SST-PAN Product Catch Pan, 12 x 20 x 8, stainless steel, for use with TABLE-FP or PRODUCT-CART accessories

ITEM #19 WALL STORAGE SYSTEM

Quantity: Four (4)
Manufacturer: Metro
Alternate MFG. #1: Eagle Group
Alternate MFG. #2: Quantum
Model: SWK36-1A2-SR
Remarks:

1. Model SWK36-1 SmartWall G3 Medium Duty Task Station Starter Unit, consists of (1) SW40K3 wall track (2) SWU30K3 uprights (2) SWS18K3 shelf supports (1) 1836NK3 wire shelf, & (1) WG1836K3 wire grid, NSF

ITEM #20 PRE-RINSE FAUCET

Quantity: Three (3)
Manufacturer: Fisher
Alternate MFG. #1: (No alternates available)
Alternate MFG. #2: (No alternates available)

Model: 34355
Remarks:

One unit integrated into #75 Soiled Dishtable
One unit integrated into #17 Produce Wash Sink
One unit integrated into #87 Three Compartment Powerwash Sink

1. Model 34355 Pre-Rinse Unit, 8" adjustable wall mount, with spring action flexible gooseneck, wall bracket, Add-On-Faucet with 6" spout
2. All stainless steel construction with zero lead content

ITEM #21 SPARE NO.

ITEM #22 ROLL DOWN SHUTTER

Quantity: One (1)
Manufacturer: Aeroworks Manufacturing
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (No alternates available)
Model: CUSTOM
Remarks:

1. Model CUSTOM See Aeroworks Drawing #P211581
2. One (1) jamb mounted manual security roll down shutter custom built to size of tray drop opening.
3. Door shall be stainless steel construction, manually operated, push up and pull down type.
4. Counter-balance mechanism shall be mounted below lintel and in between jams and concealed with housing.
5. Provide full perimeter window frame manufactured of 16 ga. stainless steel integral with Slat Belt Tray Return Conveyor.
6. Contractor to verify window opening with Professional drawings.
7. Installation by Aeroworks
8. Shop drawing required

ITEM #23 DISPOSER

Quantity: Three (3)
Manufacturer: InSinkErator
Alternate MFG. #1: Red Goat
Alternate MFG. #2: Master
Model: SS-300-18C-AS101
Remarks:

1. Model SS-300-18C-AS101 SS-300™ Complete Disposer Package, with 18" diameter bowl, 6-5/8" diameter inlet, with removable splash baffle & reversible bowl cover, 3 HP motor, stainless steel construction, includes syphon breaker, (2) solenoid valves, (2) flow control valves, wall-mounted programmable AquaSaver® Control Center AS-101 with water-saving technology, automatic water saving function, auto reversing, timed run, post flush
2. (3) years parts & labor warranty from date of installation (standard)
3. Standard height disposer body
4. 480v/60/3-ph, 800 watts

5. T&S Brass Model B-0455-M Syphon breaker standard, 1/2"
6. Type C Bowl Sink assembly
7. #7 collar Adapter Kit
8. Cold water body inlet
9. MSR remote 24V on/off switch mounted on #75 soiled dish table
10. Support leg
11. See Details 5.20 and 5.20.1

ITEM #24 SPARE NO.

ITEM #25 FLOOR TROUGH - PREP

Quantity: One (1)
Manufacturer: IMC/Teddy
Alternate MFG. #1: Advance Tabco
Alternate MFG. #2: Fabricator
Model: FWR-120-SG-CUSTOM
Remarks:
If fabricated, refer to HFS Detail 6.03

1. Model FWR-120-SG-CUSTOM FWR Floor Water Receptacle, 120"W x 7-1/2"D, 4" deep receptacle, (2) 4" OD tailpieces, stainless steel beehive strainer, 16/304 stainless steel construction, brushed satin finish, (SG) subway grating, NSF, Made in USA
2. Shop drawing required

ITEM #26 HAND SINK

Quantity: Six (6) ~~Five (5)~~
Manufacturer: Advance Tabco
Alternate MFG. #1: (No alternates available)
Alternate MFG. #2: (No alternates available)
Model: 7-PS-44
Remarks:

1. Model 7-PS-44 Hand Sink, wall mounted, 14" wide x 10" front-to-back x 5" deep bowl, 18 gauge 304 series stainless steel, splash mounted gooseneck faucet, push operated/knee operated push panel with hot & cold adjustment, basket drain, wall bracket, NSF, cCSAus
2. Model K-08 Low-flow aerator 0.5gpm, fits 55/64-27 male or 15/16-27 female thread on spout, conforms to California AB 19533.
3. Floor pedal valves and tab valves not permitted

ITEM #26.1 HAND SINK SOAP & TOWEL DISPENSER

Quantity: Six (6)
Manufacturer: Fabricator
Model: CUSTOM
Remarks: Refer to Specification Section 102813 Toilet Accessories

ITEM #27 MOBILE INGREDIENT BIN

Quantity: Three (3)
Manufacturer: Rubbermaid Commercial Products
Alternate MFG. #1: BK Resources
Alternate MFG. #2: Cambro
Model: FG360288WHT
Remarks:

1. Model FG360288WHT ProSave® Ingredient Bin, 3-1/2 cu. ft., 15-1/2"W x 29-1/2"D x 28"H, mobile, slant front with sliding lid, 32 oz scoop, seamless construction, 3" extra wide casters front fixed & rear swivel, white base/clear lid, USDA, FDA, NSF

ITEM #28 WORK TABLE WITH SINK

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: TKLG-367 CUSTOM
Remarks:

If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02A, 1.03A, 1.06, 2.01C, 3.02

1. Model TKLG-367-CUSTOM Work Table, 80"L +/- x 36"W, 14 gauge 304 stainless steel top with 5"H backsplash on left, rear and right ends, open base, stainless steel legs
2. Utility Sink on right, 1-compartment, 10" wide x 14" front-to-back x 10" deep bowl, 20 gauge 304 stainless steel
3. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
4. Fisher #53872 zero lead, all stainless steel gooseneck faucet with Fisher 5 year warranty against defects in materials or workmanship
5. Stainless steel gussets welded to die-embossed reinforcing channel
6. 1-5/8” diameter tubular stainless steel legs
7. Front and rear cross brace to secure 1-5/8” stretchers on left and right
8. Tile edge
9. Sink bowl with 12”H water level and 15”H flood level
10. ½” faucet holes for #28, 4” on center
12. Punch two holes in sink bowls for overflows of drain
13. One (1) Fisher #24872 rotary waste with overflow and support bracket for waste drain handle with Fisher 5 year warranty
14. Skirted front @ sink
15. Fully welded
16. NSF
17. Field verify clearance
18. Shop drawing required

ITEM #29 MOBILE MIXER ACCESSORY SHELF

Quantity: One (1)
Manufacturer: Metro
Alternate MFG. #1: SPG

Alternate MFG. #2: Tarrison
Model: 2424NS
Remarks:

1. Four (4) model 2424NS Super Erecta® Shelf, wire, 24"W x 24"D, stainless steel finish, plastic split sleeves are included in each carton, NSF
2. Model 63UPS Super Erecta® Post, 27-3/4"H, for use with stem casters, type 304 stainless steel
3. Model 5PCM Stem Caster, swivel, 5" diameter, 1-1/4" wide face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included)
4. Model 5PCMB Stem Caster with brake, swivel, 5" diameter, 1-1/4" wide face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, NSF (donut bumpers included)

ITEM #30 60 QT MIXER

Quantity: One (1)
Manufacturer: Hobart
Alternate MFG. #1: Blakeslee
Alternate MFG. #2: Globe
Model: HL600-1
Remarks:

1. Model HL600-1 460v/60/3 Mixer; US/EXP configuration
   Legacy Planetary Mixer - Unit Only, 2.7 HP, 60 quart capacity, (4) fixed speeds, gear-driven transmission, 50-Minute SmartTimer™, #12 taper attachment hub, power bowl lift, stainless steel bowl guard
2. Standard warranty
3. S/s bowl
4. Bowl truck
5. S/s flat beater
6. S/s wire whip
7. S/s dough hook
8. S/s pastry hook
9. SCRAPER-HL60
10. Gear driven

ITEM #31-32 SPARE NO.

ITEM #33 MOBILE UTILITY CART

Quantity: Two (2)
Manufacturer: Lakeside Manufacturing
Alternate MFG. #1: BK Resources
Alternate MFG. #2: Channel
Model: 211
Remarks:

1. Model 211 Utility Cart, 3-shelf with 27"L x 17-1/2"W x 35-3/4"H, shelf size 24"W x 15-1/2"D, stainless steel tubular U-frame, 20 gauge stainless steel shelves with reinforced edges, 500 lb.

capacity, 9-1/2" shelf clearance, push handle on each short side, 4" swivel casters, NSF (ships fully assembled), Made in USA
2. Casters, 4", all swivel, polyurethane

ITEM #34 WORK TABLE WITH SINK

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: KMS-3611 CUSTOM
Remarks:

If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02C, 1.03A, 1.06, 1.09, 1.09.1, 2.01, 2.21, 2.21.1, 3.02

1. Model KMS-3611-CUSTOM Work Table, 132"W x 36"D, 14 gauge 304 stainless steel top with 5"H backsplash, 14 gauge stainless steel fixed undershelf, stainless steel legs & adjustable bullet feet, NSF
2. 4”W common splash with Item #35
3. Mount #37 Can Opener on left end
5. Utility Sink on right, 1-compartment, 14" long x 10" W x 12" deep bowl, 20 gauge 304 stainless steel
6. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
7. Fisher #53872 zero lead, all stainless steel gooseneck faucet with Fisher 5 year warranty against defects in materials or workmanship
8. Stainless steel gussets welded to die-embossed reinforcing channel
9. 1-5/8” diameter tubular stainless steel legs
10. S/s 130”L x 20”W two-tier overshelf over #34 and #35 with 14” clear space on each shelf with lower shelf 14” off work top; single shelf support through splash support to leg frame per HFS Detail 2.21; edge of lower shelf per HFS Detail 1.01.F.
11. 82”L check minder mounted on lower shelf of overshelf
12. Sink bowl with 12”H water level and 15”H flood level
10. ½” faucet holes for faucet 4” on center
12. Punch two holes in sink bowls for overflows of drain
13. One (1) Fisher #24872 rotary waste with overflow and support bracket for waste drain handle with Fisher 5 year warranty
14. Skirted front @ sink
15. Fully welded
16. NSF
17. 18”L x 6”W 16 gauge s/s chase common with #34 from work top to finished ceiling for utility sink and #26 Hand Sink water and vent supply lines
18. 82”L undershelf turned up 2” on left, rear and right ends
19. Mounting provision for #26 Hand Sink
20. Terminate undershelf 50” from right end
21. Clearance provided #38 waste bin
22. One (1) drawer per HFS Detail 1.09, 1.09.1
23. Shop drawing required

ITEM #35 WORK TABLE WITH SINK

Quantity: One (1)
Manufacturer: Advance Tabco

Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: KMS-3611 CUSTOM
Remarks:

If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02C, 1.03A, 1.06, 1.09, 1.09.1, 1.12B, 2.01, 2.21, 2.21.1, 3.02

1. Model KMS-3611-CUSTOM Work Table, 132"W x 36"D, 14 gauge 304 stainless steel top with 5"H backsplash, 14 gauge stainless steel fixed undershelf, stainless steel legs & adjustable bullet feet, NSF
2. 4”W common splash with Item #34; sink integrated in #34
3. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
4. Stainless steel gussets welded to die-embossed reinforcing channel
5. 1-5/8” diameter tubular stainless steel legs
6. S/s 130”L x 20”W two-tier overshelf over #34 and #35 with 14” clear space on each shelf with lower shelf 14” off work top; single shelf support through splash support to leg frame per HFS Detail 2.21; edge of lower shelf per HFS Detail 1.01.F.
7. 82”L check minder mounted on lower shelf of overshelf
8. Fully welded
9. NSF
10. 18”L x 6”W s/s 16 gauge chase common with #34 from work top to finished ceiling for utility sink and #26 Hand Sink water and vent supply lines
11. 82”L undershelf turned up 2” on left, rear and right ends
12. Mounting provision for #26 Hand Sink
13. Terminate undershelf 50” from right end
14. Clearance provided #38 waste bin
15. One (1) drawer per HFS Detail 1.09, 1.09.1
16. Shop drawing required

ITEM #36 CEILING HUNG POT RACK & OVERSHELF

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: CUSTOM
Remarks:

If fabricated, refer to HFS Detail 1.12B; Integral with #34/#35

1. Pot Rack, table-mounted above two-tier overshelf, 82"L x 2"W x ¼” thick stainless steel pot rack, includes: (9) plated double pot hooks, NSF
2. Model TA-89 Pot Hooks, plated, double sided (package of 4)
3. Integral with overshelf specified under #34 and #35
5. Shop drawing required

ITEM #37 CAN OPENER

Quantity: One (1)
Manufacturer: Nemco Food Equipment
Alternate MFG. #1: Edlund
Alternate MFG. #2: Admiral Craft

Model: 56050-1
Remarks:

1. Model 56050-1 CanPRO® Can Opener, compact, permanent, cuts from the side as to leave the circumference and lip of the lid intact, along the lid's outer seam, gearless drive, holds up to #10 cans, stainless steel & aluminum nickel-plated construction, NSF
2. 2 year parts & labor warranty, standard
3. Gearless
4. Cutter which alleviates metal slivers
5. #56050-1 permanent clamp mount

ITEM #38 COMMERCIAL WASTE CONTAINER

Quantity: Eight (8) ~~Nine (9)~~
Manufacturer: Rubbermaid Commercial Products
Alternate MFG. #1: CAC China
Alternate MFG. #2: Carlisle
Model: FG263200GRAY/1779734
Remarks: BY DEPARTMENT

1. Seven (7) Model FG263200GRAY ProSave® BRUTE® Container, without lid, 32 gallon, 22"D x 27-1/4"H, round, reinforced rims, built in handles, double rimmed base, high-impact plastic construction, gray, NSF, Made in USA

2. One (1) Model 1779734 ProSave® BRUTE® Container, without lid, 20 gallon, 19.5”D x 22-1/8"H, round, reinforced rims, built in handles, double rimmed base, high-impact plastic construction, black, NSF, Made in USA

ITEM #39 MOBILE WORK TABLE

Quantity: Two (2)
Manufacturer: Advance Tabco
Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: VKS-368 CUSTOM
Remarks:
If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02A, 1.03A, 1.06, 2.01C

1. Model VKS-368 Work Table, 96"L x 36"W, 14 gauge 304 stainless steel top with countertop non drip edge, 10" backsplash rear and right ends, 14 gauge adjustable stainless steel welded-fixed undershelf, stainless steel legs, NSF
2. Provide legs to provide gap in undershelf for clearance for #38
3. Closed right end splash
4. Two (2) stem casters, brake (foot operated), 5" diameter, 1-1/4" face, corrosion resistant, polyurethane horn and wheel tread, with donut bumpers, 300 lb. capacity with brakes
5. Two (2) stem caster, brake (foot operated), 5" diameter, 1-1/4" face, corrosion resistant, polyurethane horn and wheel tread, with donut bumpers, 300 lb. capacity

6. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
7. Stainless steel gussets welded to die-embossed reinforcing channel
8. 1-5/8” diameter tubular stainless steel legs
9. Undershelf turned up on left, rear and right ends
10. Fully welded
11. NSF
12. Shop drawing required

ITEM #40 ICED TEA BREWER

Quantity: Three (3)
Manufacturer: BUNN
Model: 36700.0013
Remarks: BY VENDOR

1. Model 36700.0013 36700.0013 TB3Q Iced Tea Brewer, 3-gallon capacity single brewer, 26.7 gallon/hour, SplashGard® funnel, Quickbrew system (dispensers sold separately), 120v/60/1-ph, 1730w, 14.4amps, NEMA 5-15P, cord attached, UL, NSF

ITEM #41 SLICER

Quantity: Two (2)
Manufacturer: Bizerba
Alternate MFG. #1: Hobart HS9-1
Alternate MFG. #2: Globe SG13A-07
Model: GSP HD I 150
Remarks:

1. Model GSP HD I 150 Automatic Heavy Duty Illuminated Safety Slicer, 13" blade, product fence, 3-speeds, 3-strokes, servo assist, 8-safety interlocks, seamless anodized aluminum construction, high carriage 25° incline towards operator, 40° gravity feed, thumb guard 5.8" W, remote sharpener with spring-loaded dial, slice thickness 0-0.94", VFD-motor, 120v/60/1-ph, 2.6 amps, 0.24kW, cord with NEMA 5-15P, ETL-Sanitation, UL-157 gaskets and seals, cETLus, DGUV safety tested
2. Model STANDARD WARRANTY 1 year parts, labor, & travel time during normal Bizerba working hours within the (50) US, standard
3. Model GVRB-13 13" (330 mm) Grooved Vacuum Release Blade, chromium coated hard alloy, 60-62 Rockwell hardness at the edge
4. Model GSP HD-F2PP-1 Product Fence Set, QTY of two (2) 2" H fence and one (1) Fence Remnant Holder Pusher

ITEM #42 COFFEE GRINDER

Quantity: Four (4)
Manufacturer: BUNN
Model: 33700.0000
Remarks: BY VENDOR

1. Model 33700.0000 33700.0000 G9-2T DBC Coffee Grinder, portion control, dual 6 lb. hoppers, 3 batch sizes per hopper, wireless brewer-grinder interface via Smart funnel® & Dual Soft Heat®

DBC brewer, stainless finish, 3/4 HP, 1128 watts, 120v/60/1-ph, 9.4 amps, cord attached, NEMA 5-15P, UL, cULus, ETL

ITEM #43 ICED TEA DISPENSER

Quantity: (10)
Manufacturer: BUNN
Model: 33000.0000
Remarks: BY VENDOR

1. Model 33000.0000 33000.0000 TDS-3 Iced Tea/Coffee Dispenser, cylinder style, 3 gallon capacity (11.4 liters), sump dispense valve, stainless steel lid, faucet handles are labeled sweetened & unsweetened, side handles, NSF

ITEM #44 WORK TABLE

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: VKS-306 CUSTOM
Remarks:
If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02A, 1.03A, 1.06, 2.01C

1. Model VKS-306 Work Table, 66"L x 30"W, 14 gauge 304 stainless steel top with countertop non drip edge, 10" backsplash, 14 gauge fixed stainless steel undershelf, stainless steel legs & adjustable bullet feet, NSF
2 Closed left end splash
3. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
7. Stainless steel gussets welded to die-embossed reinforcing channel
8. 1-5/8” diameter tubular stainless steel legs
9. Fully welded
10. NSF
11. Undershelf turned up on left, rear and right ends
12. S/s utility chase for #48 Ice Maker from ceiling to top of table splash on left end
13. Shop drawing required

ITEM #45 COFFEE BREWER

Quantity: Four (4)
Manufacturer: BUNN
Model: 35900.0010
Remarks: BY VENDOR

1. Model 35900.0010 35900.0010 BrewWISE® Dual GPR DBC® Coffee Brewer, up to 18.9 gal/hr., digital temperature control, large spray head, splashguard funnel, LCD display, programmable warmer control, wireless brewer grinder interface, stores individual coffee recipes, includes (2) GPR servers (20950.0004), UL, NSF

2. Equipment discount category net prices must be rounded to the nearest dollar
3. 3 years parts and labor or 30,000 pounds of coffee (whichever comes first) and on electronic circuit/control boards and 2 years parts and 1 year labor warranty
4. 120-208V/60/1-ph, 26 amps, 5400 watts, standard
5. One unit not shown on foodservice plans; see Level 0 Professional plans
6. Cord and plug by Electrical Contractor.

ITEM #46 COFFEE DISPENSER

Quantity: Eighteen (18)
Manufacturer: BUNN
Model: 20950.0004
Remarks: BY VENDOR

1. Model 20950.0004 20950.0004 1.5GPR-FF Coffee Server, 1.5 gallon, top handles, fast flow faucet, stainless decor, NSF

ITEM #46.1 DUAL COFFEE DISPENSER HEATED STAND

Quantity: Five (5)
Manufacturer: BUNN
Model: 27875.0000
Remarks: BY VENDOR

1. Model 27875.0000 27875.0000 Soft Heat® Serving Stand, dual, for Soft Heat® servers, controlled heat, 4" legs, stainless decor, 120v/60/1-ph, 180w, 1.5 amps, cord attached, UL, NSF

ITEM #47 REACH-IN BLAST CHILLER

Quantity: One (1)
Basis of Design: Irinox ICY LARGE
Remarks:
(Performance specifications for all manufacturers)

1. Blast Chiller/Shock Freezer, reach-in
2. Capacity - (18) 18" x 26" full size sheet pans or (27) 12" x 20" x 2-1/2" steam table pans (pans NOT included),
3. 110 lbs. blast chill capacity 194°F to 37°F/90 minutes or less and 99 lbs. shock freeze capacity 194°F to 0°F/4 hours or less,
4. Door hinged left,
5. Touch pad controls,
6. (4) standard modes for chilling and freezing,
7. Temperature probe, self-contained,
8. Air-cooled condensing unit,
9. Stainless steel adjustable legs,
10. Stainless steel construction,
11. Plug not included,
12. R404a,
13. UL & NSF approved

14. (2) year parts and labor warranty, standard
15. (5) year compressor warranty, standard
16. 208v/60hz/3-ph, 13.4 amps

ITEM #48 ICE MAKER

Quantity: One (1)
Manufacturer: Manitowoc
Alternate MFG. #1: Scotsman
Alternate MFG. #2: Ice-O-Matic
Model: IYT1500A
Remarks:

1. Model IYT1500A Indigo NXT™ Series Ice Maker, cube-style, air-cooled, self-contained condenser, 48"W x 24-1/2"D x 29-1/2"H, production capacity up to 1660 lb/24 hours at 70°/50° (950 lb AHRI certified at 90°/70°), easyTouch display with 13 different language options, date/time stamp display, automatic reminder/alert icon, one touch asset information, automatic detection of accessories, continuous operating status, programmable production options (time, weight, day or night), one touch cleaning with displayed instructions, Alpha-San anti-microbial protection, acoustical ice sensing probe, self-diagnostic technology, DuraTech™ exterior, half-dice size cubes, R410A refrigerant, NSF, cULus, CE
2. Model WARRANTY-ICE-SC 3 year parts & labor (Machine), 5 year parts & labor (Evaporator), 5 year parts & 3 years labor (Compressor), standard
3. 208-230v/60/1-ph, 18.5 amps, standard
4. Luminice II
5. IAuCS control panel
6. Verify existing

ITEM #49 ICE BIN

Quantity: One (1)
Manufacturer: Manitowoc
Alternate MFG. #1: Scotsman
Alternate MFG. #2: Ice-O-Matic
Model: D970
Remarks:

1. Model D970 Ice Bin, 48"W x 34"D x 50"H, with side-hinged front-opening door, side grips, 532 lbs. application capacity, AHRI certified 17.9 cu. ft., for top-mounted ice maker, Duratech exterior, NSF
2. Model WARRANTY-BIN/DISP 3 year parts & labor warranty, standard
3. Legs, 6" adjustable stainless steel, standard
4. Ice Scoop holder
5. Verify existing

ITEM #50 DRAIN TROUGH & PAN (ICE MAKER)

Quantity: One (1)
Manufacturer: BSI
Alternate MFG. #1: Fabricator

Alternate MFG. #2: (No alternate available)
Model: FTDP-CUSTOM
Remarks:

If fabricated, refer to HFS Detail 6.03

1. Model FTDP BSI, LLC Drain Tech Floor Trough with Integral Drain Pan, 4" deep, stainless steel subway grate & removable basket, with drain, stainless steel construction, NSF standard 2 construction
2. 12 gauge brushed finish type 304 stainless frame and splashes
3. Sand blast drain pan
4. 1/8” x 1” type 304 s/s subway grate type with 3/8” welded s/s reinforced rods (minimum of two), maximum gap 13/16” between grate bars and 6” maximum space between reinforcement rods
5. Coved corner pan
6. 3” I.D. x 6”L s/s tailpiece
7. ¼” s/s rod J-anchors around trough exterior
8. Reinforced sloped pan for weight of ice maker and ice bin when full of ice
9. Closed splash on left and right; sloped rear splash ledge
10. Shop drawing required

ITEM #51 SPARE NO.

ITEM #52 ROLL-UP WALK-IN DOOR

Quantity: Two (2)
Basis of Design: Roll Seal RS600
Remarks:

(Performance specifications for all manufacturers)
Integral to #53

1. Automated roll-up door for medium temperature applications
2. Direct drive attached intelli-Drive Operator
3. 208V/60/1
4. 52.4”L x 106.02 for 36”L x 82”H walk-in door
5. Speed: 48 inches per second
6. Patened sealing technology
7. Impact resistant design
8. CSA, NSF, ETL
9. 40 cycles per hour
10. ½ hP drive
11. Soft start/soft stop
12. Programmable control
13. Manual hand crank handle over-ride
14. Safety beams (photo eyes)
15. Lead edge switch
16. Solenoid brake
17. EISA exempt
18. Emergency egress option
19. Egress buzzer (alerts egress is engaged)
20. Frame material: 304 2b s/s
21. Shop drawing required

ITEM #53 WALK-IN COOLER/FREEZER

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: CUSTOM
Remarks:

Refer to Thermo Kool drawing # Q3439887

1. Walk-in set in 5” depression (4” floor panel over 1” leveling compound)
2. 38’-8.5” L x 16’-1” W x 10’-0” H
3. Exposed exterior: 20 gauge stainless steel
4. Unexposed Exterior: 26 gauge stucco galvanized
5. Interior floors: 4” floor panel in 6” floor depression; 2” tile setting bed and coved base quarry tile per Professional drawings; space below kitchen is occupied.
6. 14 ga. Thresholds and anti-sweat heaters
7. Thermal break at door openings by Contractor
8. Interior: White stucco aluminum
9. 17”H tall foam screeds (lock to wall panels)
10. Pilot light and switch assembly, Kason #1806 vapor proof LED light and two (2) 4” dial thermometers on exterior of door panel for general cooler and two (2) 4” dial thermometers on exterior of door panel for produce cooler
11. 45” H x 1/8” aluminum treadplate kickplates on exposed exterior and jamb guards on interior and exterior of door in Catering Cooler and Freezer
12. Two (2) 208V/60/1 Roll Seal RS-600 48” x 82” doors
13. Two (2) 3-hinged 36” x 82”H doors each with heated frame and glass 14” x 24” window, vinyl strip curtain (one by Thermo Kool and Catering Cooler strip curtain by Contractor and Secure-guard latch; in-swinging door to Catering Cooler
14. Two (2) Mars air curtains, model PH1036-1UD-PW
15. Minimum three (3) LED light fixtures with bulbs to achieve 30-foot candles at floor surface in Catering, Produce and Freezer compartments; Minimum six (6) LED light fixtures with bulbs to achieve 30-foot candles at floor surface in General Cooler
16. LED lights shipped loose of installation by Electrical Contractor: conduit shall be run above the ceiling to each light fixture accessed by poke throughs made by and sealed by kitchen contractor; no exposed lighting conduit permitted inside the compartment
17. Four (4) Thermo Kool TK4700 walk-in monitor system with motion detector, battery back-ups, dry contacts and thermostatically controlled heater wires mounted in door frames.
18. 48”H diamond tread panels on exposed exterior walk-in walls
19. S/s vertical trim @ walls; S/s closure panels not required for 9’-6”H finished kitchen ceiling
20. Two (2) pressure relief ports
21. Two (2) column enclosures
22. Shop drawing required

ITEM #54 FLOOR TROUGH - WALK-IN

Quantity: Two (2)
Manufacturer: IMC/Teddy
Alternate MFG. #1: Advance Tabco
Alternate MFG. #2: Fabricator
Model: FWR-36-SG-CUSTOM

Remarks:

If fabricated, refer to HFS Detail 6.03

1. Model FWR-36-SG-CUSTOM FWR Floor Water Receptacle, 36"W x 7-1/2"D, 4" deep receptacle, (1) 4" OD tailpiece, stainless steel beehive strainer, 16/304 stainless steel construction, brushed satin finish, (SG) subway grating, NSF, Made in USA
2. Offset drain location: submit to Profeessional for location of offset after approval of submittal of trough type by 114000.

2. Shop drawing required

ITEM #55 AIR CURTAIN-UNHEATED

Quantity: Two (2)
Manufacturer: Mars Air Systems
Alternate MFG. #1: (No alternate available)
Alternate MFG. #2: (No alternate available)
Model: PH1036-1UD-PW
Remarks:

Integral to #53

1. Model PH1036-1UD-PW Phantom 10 Air Door, for 36" wide door, unheated, aluminum cabinet, pearl white powder coat finish, (1) 1/2 HP motor, 208/230v/60/1-ph, ETL
2. 5 year warranty, standard
3. 1 year warranty for all parts (except filters), standard
4. Water-proof construction designed for and warrantied for installation in 34’F space.
5. Plunger switch installed in door frame

ITEM #56 SPARE NO.

ITEM #57 MOBILE ROLL-IN PAN RACK

Quantity: Eight (8)
Manufacturer: Lakeside Manufacturing
Alternate MFG. #1: Advance Tabco
Alternate MFG. #2: Cres Cor
Model: 138
Remarks:

1. Model 138 Sheet Pan/Tray Rack, narrow opening, full height, open sides, capacity (16) 18" x 26" pans, angle ledge, 3" spacing, welded stainless steel construction, NSF
2. Casters, 5" swivel stem type, standard

ITEM #58 MOBILE WALK-IN SHELVING UNIT

Quantity: Twenty-eight (28)

Manufacturer: Metro
Alternate MFG. #1: Cambro
Alternate MFG. #2: (No alternate available)
Model: Q456BG3-CUSTOM
Remarks:

Each unit to be equipped with:

1. Model Q456BG3-CUSTOM MetroMax Q™ Mobile Shelving Unit, 48"W x 21"D x 74"H, (4) open grid polymer shelves with Microban® antimicrobial protection, (4) posts, (4) swivel resilient rubber casters (2 braked), epoxy coat steel frame, KD, NSF
2. Model 5PCBXM Polymer Stem Caster, swivel, 5" diameter, 1-1/4" wide face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
3. Model 5PCX Polymer Stem Caster, swivel, 5" diameter, 1-1/4" wide face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)

ITEM #59 EVAPORATOR 35'F (PRODUCE COOLER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BEL0105AS6AMA
Remarks:

1. 115V/60/1
2. 10,150 btus
3. Two-speed EC motor with 2 fans
4. ¾” drain

ITEM #60 REMOTE CONDENSER 35'F (PRODUCE COOLER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BCH0010MCACZ
Remarks:

1. 208V/60/3
2. 10,050 btus for 34’F; heat of rejection 13,065 btus
3. 179 lbs.
4. R-448A refrigerant

ITEM #61 SPARE NO.

ITEM #62 WALL-HUNG EQUIPMENT PLATFORM

Quantity: One (1)
Manufacturer: Fabricator
Model: CUSTOM
Remarks: See Refer to Architectural Drawings for equipment platform

ITEM #63 EVAPORATOR 35'F (CATERING COOLER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BEL0115AS6AMA
Remarks:

1. 115V/60/1
2. 14,500 btus
3. Two-speed EC motor with 2 fans
4. ¾" drain

ITEM #64 REMOTE CONDENSER 35'F (CATERING COOLER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BCH0015MCACZ
Remarks:

1. 208V/60/3
2. 14,340 btus for 34'F; heat of rejection 18,642 btus
3. 221 lbs.
4. R448A refrigerant

ITEM #65 EVAPORATOR 35'F (COOLER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BEL0190AS6AMA
Remarks:

1. 115V/60/1
2. 18,600 btus
3. Two-speed EC motor with 3 fans
4. ¾" drain

ITEM #66 REMOTE CONDENSER 35'F (COOLER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BCH0020MCACZ
Remarks:

1. 208/60/3 12.2 RLA Amps

2. 16,950 btus for 34’F; heat of rejection 22,035 btus

3. 221 lbs.

4. R-448A refrigerant

ITEM #67 EVAPORATOR -10'F (FREEZER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BEL0130BS6EEA
Remarks:

1. 208/60/1, 13.7 heater defrost amps
2. 13,500 btus
3. Single speed EC motor with 3 fans
4. ¾” drain

ITEM #68 REMOTE CONDENSER -10'F (FREEZER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BCH0035LCACZ
Remarks:

1. 208V/60/3
2. 11,550 btus for -10; heat of rejection 17,903 btus
3. 232 lbs.
4. R448A refrigerant

ITEM #69 CAN RACK

Quantity: Two (2)
Manufacturer: Advance Tabco
Alternate MFG. #1: Channel
Alternate MFG. #2: Eagle Group
Model: CR10-162M
Remarks:

1. Model CR10-162M Can Rack, mobile design with casters, with sloped glides for automatic can retrieval, designed for #10 & #5 cans, aluminum construction, holds (162) #10 cans, or (216) #5 cans

ITEM #70 PORTABLE DUNNAGE RACK

Quantity: Five (5)
Manufacturer: New Age
Alternate MFG. #1: Lockwood
Alternate MFG. #2: Channel
Model: 1204
Remarks:

1. Model 1204 Dunnage Rack, mobile, 37-3/4"W x 24"D x 8-1/4"H, 1000 lbs. weight capacity, welded aluminum construction, (2) swivel/brake & (2) rigid 5" platform casters, NSF
2. Lifetime warranty against rust & corrosion, 5 year construction warranty, standard

ITEM #71 SPARE NO.

ITEM #72 BAG IN BOX RACK

Quantity: One (1)
Manufacturer: Eagle Group
Model: 2B2148C
Remarks: BY VENDOR

1. Model 2B2148C Bag-N-Box System, modular, 48"W x 21"D x 54"H, wire shelves with patented QuadTruss® design, (1) slanted shelf with 1" slanted ledge, (3) flat shelves, NSF

ITEM #73 SPARE NUMBER

ITEM #74 HAND SINK W/ EYE WASH ATTACHMENT

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: Eagle
Alternate MFG. #2: Aero
Model: 7-PS-55
Remarks:

1. Model 7-PS-55 Eye Wash Hand Sink, wall mounted, 14" wide x 10" front-to-back x 5" deep bowl, 20 gauge 304 stainless steel, splash mounted gooseneck faucet with eye wash attachment, basket drain, wall bracket

ITEM #74.1 SOAP & TOWEL DISPENSER

Quantity: One (1)
Remarks: Refer to Specification Section 102813 Toilet Accessories

ITEM #75 SOILED DISHTABLE W/ PRE-RINSE SINK & DISH CONVEYOR

Quantity: One (1)
Manufacturer: Aeroworks Manufacturing
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (No alternates available)
Model: SBC-10 CUSTOM
Remarks:
If fabricated, refer to HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.06, 1.07, 3.20, 3.22

1. General Contractor to issue RFI to the Department to verify tray size
2. See Aeroworks Drawing #P211581
3. Stainless steel insulated sight and sound baffle enclosure with one (1) LED light with switch on #75 control panel for slat belt conveyor
4. Construction of sight & sound baffle enclosure shall be 20 ga. stainless steel double-walls, 2" thick with sound-reducing styrofoam in between. Enclosure shall be mounted to Aerowerks conveyor and building wall by Aerowerks installers.
5. Installation by Aeroworks:
   a. Aerowerks shall be responsible for all interconnections of electrical work required for conveyor system.
   b. Final connections to building services shall be by Electrical Contractor.
   c. All plumbing interconnections shall be by the Plumbing Contractor.
   d. Aerowerks shall install and adjust system to the Department's satisfaction and shall provide adequate written instructions to operating personnel.
   e. System shall be guaranteed for a period of one year for parts and labor under normal operating conditions.

6. Provide UL and NSF listed Aerowerks model SBC-10 Slat Belt Tray Return Conveyor as shown on plan, designed to deliver the tray from the deposit window to the scrapping table in the dish room.
   a. SBC Belting shall be Aerowerks K10SF-AD. Belting shall have a tensile strength of 6,100 lbs and shall "side-flex" to a minimum of 19" centerline radius at corners where required. There shall be no sliding friction at corners between belt and groove or guide rail. Both slide bed groove and return track shall be self-cleaning by the action of the belt. Belt take-up shall be accomplished by the natural catenary sag of the belt in the wash chamber.
   b. Drive frame shall be all-welded stainless steel angle with 1-5/8" Ø, 6" high stainless steel legs and adjustable s/s flanged feet.
   c. Drive housing: Drive frame shall be fitted with 18 ga. stainless steel housing to enclose drive frame on all sides. Access provided by 18 ga. stainless steel double wall hinged insulated doors. Where side or end panels are fitted to frame, they shall be sealed with silicone. Drive cabinet to house all necessary plumbing and detergent injection pump for the belt wash system.

d. Drive Tank: Provide all welded 14 ga. stainless steel wash chamber equipped with lift-off access panels and removable scrap tray.
e. Drive Shaft: Provide 1" stainless steel drive shaft mounted within wash chamber on dual-type sealed bearings (Aerowerks grease-filled sealed cartridge inside chamber; precision ball bearing flange cartridge outside chamber).
f. Belt Wash: Provide wash system consisting of stainless steel manifolds inside wash chamber. Spray manifolds shall be located to effectively clean the belt on both sides, and shall be easily removable without tools.
g. Drive Motor: Provide variable speed 3/4 hp AC Motor and gear reducer. Speed to be changed by turning a knob located on the control panel.
h. Slide Bed: Provide 14 ga. stainless steel bed formed with vertical and horizontal corners coved to a 3/4" radius. Unit shall be reinforced with channel mounted on 1-5/8" Ø tubular stainless-steel legs with adjustable s/s flanged feet and rails.
i. Main Control System: Provide UL Listed Main Control Center as shown on the plan containing start-stop button, belt wash, speed control and disconnect circuit breaker for slat belt tray return conveyor. All components shall be neatly contained in a stainless steel watertight enclosure. All wiring shall conform to the latest UL standards. The electrical contractor shall bring 208V/1phase/15A to the panel, but wiring from the equipment to this panel shall be done by Aerowerks, and all wiring shall be carried in liquid-tight conduits, including conveyor motors and controls. All electrical controls shall be approved for wet conditions and shall comply with all applicable codes. All enclosures for electrical components must be watertight.

7. Soiled Dish Table:

a. Provide NSF Listed SDT Soiled Dish Table, 14 ga. stainless steel top as shown on plan. Table shall be formed with vertical and horizontal corners covered to a 3/4" radius.

b. Provide one (1) pre rinse sink with rack guides and one (1) disposer control panel bracket as shown on the plan.

c. Table to be supported on 1-5/8" Ø stainless steel legs with adjustable s/s bullet feet's. Legs shall be positioned to align up front-to-back for maximum access for cleaning. Legs shall be supported with 12 ga. stainless steel leg channels. All cross rails shall be fully welded to legs with all welds polished and ground smooth.

d. Provide one (1) light and housing per Professional drawings.

e. Provide light switch for light mounted on item #75 sight and sound baffle.

8. Shop drawing required

ITEM #76 GLASS RACK OVERSHELF

Quantity: One (1)
Manufacturer: Aeroworks Manufacturing
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (No alternates available)
Model: CUSTOM
Remarks:

If fabricated, refer to HFS Detail 3.30

1. Model CUSTOM See Aeroworks Drawing #P211581
2. Provide stainless steel overhead tubular rack and storage shelf above table.
3. Shop drawing required

ITEM #77 CONVEYOR DISHWASHER & POWER SCRAPPER

Quantity: One (1)
Manufacturer: Hobart
Alternate MFG. #1: Champion
Alternate MFG. #2: Stero
Model: CL64EN-ADV+BUILDUP
Remarks:

1. Model CL64EN-ADV+BUILDUP Conveyor Dishwasher, Advansys model, (2) tank, (342) racks/hour, insulated hinged doors, .39 gallon/rack, stainless steel enclosure panels, microprocessor controls with low temperature & dirty water indicators, NSF Pot & Pan mode, programable de-lime notification, 30 kW stainless booster, energy recovery (DWER), automatic soil removal (ASR), drain water tempering kit, ENERGY STAR®, Free factory startup for installations within a 100 mile radius of a Hobart service office; installation beyond 100 miles will be charged at the quoted rate by the local Hobart service office
2. Oversized units with crated shipping dimensions greater or equal to 72" in length and/or 90" in height. If delivery is to a facility without a standard height dock, additional shipping charges will apply depending on the service requested. consult Factory.
3. Standard warranty - 1-Year parts, labor & travel time during normal working hours within the USA
4. Model CL64EN-ADVHTE15K Electric tank heat 15kW wash/10kW rinse
5. Model CL64EN-ADVERH30K 30kW electric booster; separate connection
6. Model CL64EN-ADVELE0CD 480v/60/3-ph
7. Single Point (1) service connection standard (Field convertible options available)
8. Model CL64EN-ADVHGTSTD Standard height
9. Model CL64EN-ADVDIRVER Verify direction of operation
10. Model CL64EN-ADVFETSTD Standard feet
11. Submit water quality report.
12. Hot water supply via Superior Water Conditioner RTK-1000 installed by Plumbing contractor per MFG. instructions and 3 feet or more away from three phase current.
13. Model VNTHD/E-ADJ E-series vent hood domestic (adjustable)
14. Blower Dryer
15. Shop drawing required

ITEM #78 CLEAN DISHTABLE

Quantity: One (1)
Manufacturer: Aeroworks Manufacturing
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (No alternates available)
Model: CUSTOM
Remarks:

If fabricated, refer to HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.06, 1.07, 3.20, 3.22

1. Model CUSTOM See Aeroworks Drawing #P211581
2. Provide NSF Listed Clean Dish Roller Table, 14 ga. stainless steel formed with vertical and horizontal corners coved to a 3/4” radius. Table shall be equipped with turned up sides with box edge on front and at rear. Table shall be connected to exit end of the dishwasher. Unloader to provide a drip-proof connection. Slope table to drain and show slope on shop drawings. Table shall be designed to accept a gravity roller conveyor to carry dish racks.

3. Gravity roller conveyor shall be in accordance with the following:
   a. Rollers shall be 1.9” Ø blue PVC, fitted with polypropylene bearings with stainless steel balls.
   b. Rollers shall be spaced at approximately 5-1/2” centers.
   c. Shafts shall be 7/16” hexagon aluminum securely bolted to side rails.
   d. Side rails shall be 1/8” x 2” stainless steel resting on support pins welded to side of conveyor bed to keep rollers elevated above bottom of bed for effective draining of water from dish racks.
4. Table to be supported on 1-5/8” Ø stainless steel legs with adjustable s/s flanged feet. Legs would be supported on 12 ga. stainless steel leg channels.
5. All cross rails to be fully welded to legs with all welds polished and ground smooth.
6. Provide a pre-wired accumulation switch at end of clean table integrated with dish machine to shut machine off when a rack reaches the end of the table.
7. Shop drawing required

ITEM #79 MOBILE DISHTABLE SORTING TABLE

Quantity: One (1)
Manufacturer: Caddy
Alternate MFG. #1: John Boos
Alternate MFG. #2: Steril-Sil
Model: T-239
Remarks:

1. Model T-239 Silver Sorting Caddy, mobile, 42"W x 26-1/2"D x 35-7/8"H, three sides turned up 2", trough 4"D x 4-1/2"W, holds (3) 20" x 20" racks, stainless steel construction, 5" heavy duty swivel polyurethane tired polymer horn Microban casters, UL, NSF

ITEM #80 MOBILE CUP/GLASS RACK DOLLY

Quantity: Three (3)
Manufacturer: Channel Manufacturing
Alternate MFG. #1: Advance
Alternate MFG. #2: Eagle Group
Model: GRD
Remarks:

1. Model GRD Dolly, Glass Rack, single stack, aluminum construction, 5" plate casters, NSF
2. Model 052 Caster Set, Heavy Duty, 5"x2", 2000 lb weight capacity

ITEM #81 DISHWASHER PANT LEG VENT

Quantity: Two (2)
Manufacturer: Fabricator
Alternate MFG. #1: (No alternates available)
Alternate MFG. #2: (No alternates available)
Model: CUSTOM
Remarks:

Refer to HFS Detail 5.40

1. Refer to #77 Dishwasher and #77.1 Blower/Dryer for sizing
2. Mechanical Contractor to manifold ducts after vents are above finished ceiling
3. Shop drawing required

ITEM #82 SPARE NO.

ITEM #83 MOBILE DISH CARRIER

Quantity: Six (6)
Manufacturer: Cambro
Alternate MFG. #1: Metro
Alternate MFG. #2: Carlisle
Model: ADCS110
Remarks:

1. Model ADCS110 Dish Cart, adjustable, 6 towers, minimum dish size 4-1/2", maximum dish size 13", includes vinyl dust cover, polyethylene construction, 28-5/8"W x 37-7/8"L x 31-7/8"H, black, NSF
2. General Contractor to issue RFI to the Department to verify plate size

ITEM #84 MOBILE TRAY & FLATWARE CART

Quantity: Four (4)
Manufacturer: Lakeside Manufacturing
Alternate MFG. #1: Caddy
Alternate MFG. #2: Steril-Sil
Model: 213
Remarks:

1. Model 213 Tray & Silver Cart, accepts (10) flatware cylinders (not included), (130) 16" x 22" trays, stainless steel shelf, stainless steel angle frame with push handle, 500 lb. load capacity, 5" non-marking cushion tread casters, Made in USA
2. S/s finish
3. Polyurethane casters, 5", cushion tread, all swivel, standard

ITEM #85 HAND SINK/ABAAS

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: Eagle Group
Alternate MFG. #2: Aero
Model: 7-PS-41
Remarks:

1. Model 7-PS-41 ADA Compliant Hand Sink, wall mounted, 14" wide x 16" front-to-back x 5" deep bowl, 18 gauge 304 stainless steel, electronic faucet (battery & 110v options both supplied), deck mounted soap dispenser (pump), undermounted paper towel dispenser, basket drain, wall brackets, NSF, cCSAus
2. Model K-08 Low-flow aerator 0.5gpm, fits 55/64-27 male or 15/16-27 female thread on spout, conforms to California AB 1953
3. Model 7-PS-10 P-trap, heavy duty, 1-1/2", 17 gauge

ITEM #85.1 SOAP & TOWEL DISPENSER

Quantity: One (1)
Remarks:

Refer to Specification Section 102813 Toilet Accessories

ITEM #86 MOBILE POT/PAN SHELVING RACK

Quantity: Nine (9)
Manufacturer: IMC/Teddy
Alternate MFG. #1: Fabricator
Alternate MFG. #2: Sammons
Model: SSS-4824-4L
Remarks:

1. Four (4) shelves per unit, louvered embossed, 48"W x 24"D, 16 gauge shelves, stainless steel
2. Four (4) post per unit, 61”H, for use with stem casters, stainless steel finish
3. Four (4) stainless Steel Cart-Washable Stem Caster, swivel, 5" diameter, 1-1/4" wide face, corrosion resistant, polyurethane wheel tread, with donut bumpers, 300 lb. capacity
4. Welded construction

ITEM #87 THREE COMPARTMENT POWERWASH SINK

Quantity: One (1)
Basis of Design: Power Soak 200PSD-210L CUSTOM
Remarks:

(Performance specifications for all manufacturers)
See Powersoak drawing #2133884-2

1. Model 200PSD - 210L CUSTOM
2. 208/60/3,29.9 AMPS (40 amp service required)
3. Self-draining pump housing and impeller
4. 7000 Watt Heater located in wash tank, Povye:red
5. Punch for #20 Pre-Rinse Spray Assembly
6. Rear-Exit S/S Ball Valve Drains
7. P250 Solid State Controller And Control Components, Including High And Low Water Sensors,
8. Conforms To ANSI/NSF Standard 2 For Food Equipment
9. Wash Tanks Supported By 1-5/8" s/s Diameter Legs With s/s Cross Members and adjustable s/s Bullet Feet
10. 10 slot and 14 slot sheet pan system.
11. Sheet pan insert which is fully covered with water and does not require flipping during wash cycle
12. Integrated chemical dispenser
13. 18”L stainless steel chemical under shelf on right end
14. 24”H stainless steel back splash extensions above standard 9.5”H rear splash

15. Fisher Model 2267 Pot Filler Faucet, 8" adjustable centers, splash-mounted, with double-joint spout, 20", with insulated off-on control valve at outlet, 3/4" inlet with Fisher 5 year warranty against defects in materials or workmanship
16. Fisher Model 24805 Lever Waste Valve, with overflow assembly, 3-1/2" industry standard sink opening, 2" drain outlet, flat strainer, 12 GPM drain rate, stainless steel, CSA with Fisher 5 year warranty against defects in materials or workmanship
17. 4”L scupper drain between wash tank and pre-rinse tank
18. T&S Brass Model B-0455-M Syphon breaker standard, 1/2"
19. Welded joints
20. 100% 14 gauge 304 S/S Construction, tanks, drain boards, splashes and channel rims
21. PS6 utensil basket
22. Sound deadening
23. Wash tank water flow front to back
24. 21” deep wash tank with effective water height of 18” to overflow
25. Sanitizer tank time with a high and low water level sensor with sanitizer meter
26. Flow of drains through drain manifold for prevention of drain blockage before water recharging
27. Shop drawing required

ITEM #88 FLOOR TROUGH - DISHWASH

Quantity: Two (2)
Manufacturer: IMC/Teddy
Alternate MFG. #1: Advance Tabco
Alternate MFG. #2: Fabricator
Model: FWR-120-SG-CUSTOM
Remarks:
If fabricated, refer to HFS Detail 6.03

1. Model FWR-120-SG-CUSTOM FWR Floor Water Receptacle
2. 120"W x 7-1/2"D, 4" deep receptacle
3. (2) 4" OD tailpieces
4. Two (2) stainless steel beehive strainer
5. 16/304 stainless steel construction, brushed satin finish
6. (SG) subway grating
7. NSF
8. Made in USA
9. Shop drawing required

ITEM #89 MOBILE WORK TABLE

Quantity: Two (2)
Manufacturer: Advance Tabco
Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: KMS-308 CUSTOM
Remarks:
If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02A, 1.03A, 1.06, 2.01C

1. Model KMS-308 Work Table
2. 96"W x 30"D
3. 14 gauge 304 stainless steel top
4. 14 gauge stainless steel fixed undershelf
5. Stainless steel legs & adjustable bullet feet
6. Model TA-31 Closed Splash, 5" high on rear
7. Provide legs to provide gap in undershelf for clearance for #38
8. Three (3) stem casters, brake (foot operated), 5" diameter, 1-1/4" face, corrosion resistant, polyurethane horn and wheel tread, with donut bumpers, 300 lb. capacity with brakes
9. Three (3) stem caster, brake (foot operated), 5" diameter, 1-1/4" face, corrosion resistant, polyurethane horn and wheel tread, with donut bumpers, 300 lb. capacity
10. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
11. Stainless steel gussets welded to die-embossed reinforcing channel
12. 1-5/8” diameter tubular stainless steel legs
13. Undershelf turned up on left, rear and right ends
14. Fully welded
15. NSF
16. Shop drawing required

ITEM #90 S/S CORNER GUARD

Quantity: Twelve (12)
Manufacturer: Fabricator
Model: CUSTOM
Remarks:
Refer to HFS Detail 1.10
Mount to wall with construction adhesive and without screws

ITEM #91 FOOD CUTTER

Quantity: One (1)
Manufacturer: Hobart
Alternate MFG. #1: Omcan
Alternate MFG. #2: Sirman
Model: 84145-1
Remarks:

1. Model 84145-1 Food Cutter with #12 attachment hub, 14" diameter stainless steel bowl 22 RPM, double stainless steel knives 1725 RPM, bowl cover with safety interlock, push/pull on/off switch, one-piece burnished aluminum housing, 3" legs, 115v/60/1-ph, 1/2 HP
2. Standard warranty - 1-Year parts
3. 4” legs

ITEM #92 SPARE NO.

ITEM #93 MOBILE HEATED CABINET

Quantity: Three (3)
Basis of Design: Winston HL4022-AL
Remarks:

(Performance specifications for all manufacturers)

1 Low wattage hot food holding cabinet
2. Full-size, insulated cabinet and doors, without fan
3. Adjustable universal wire slides, 3-1/2" OC, accommodates (14) 18" x 26" or (28) 12" x 20" or (14) 2/1 GN pans
4. Most, soft moist, firm moist and crisp temperature and texture settings
5. Air heater and water heater
6. Capacity: 14 18” x 26” sheet pans OR 28 12” x 20” x 2.5” steam table pans OR 14 Gastronorm 2/1 pans
7. Even heat distribution of air flow
8. (2) hinged solid dutch doors with magnetic latches
9. Electronic differential controls with altitude algorithm for automatic altitude adjustment for vapor pressure
10. Adjustable 3.5” O.C. wire racks 65 lbs. capacity per rack
11. Cord wrap with 84”L power cord and plug
12. Drain ball valve with custom s/s valve protection stop
13. Digital display
14. Automatic water fill with mobile water removal system
15. BK WSL-2572-WLK1 flexible self-coiling water connector with quick disconnect on cabinet end
16. Stainless steel interior
17. Custom stainless steel exterior
18. CE, UL EPH ANSI/NSF4, cUL, UL-Sanitation
19. 1 year limited warranty is standard (excluding gaskets, lamps, hoses, power cords, glass panels & evaporators) - for equipment operated in the US & Canada
20. 120v/60/1-ph, 1685 watts, 14.0 amps, (US) NEMA 5-15P
21. Recessed wall electrical receptacle by Electrical Contractor
22. Door hinging per plan
23. 5" swivel casters (2) with locking horn
24. Transport package
25. 90°F to 180°F temperature range

ITEM #94 MOBILE COOK / HOLD CABINET

Quantity: Two (2)
Basis of Design: Winston CHV5-14UV
Remarks:

(Performance specifications for all manufacturers)

1. Cook & Hold Oven, electric, full-size
2. HACCP temperature downloads
3. Processor uses calibration-free thermistors to adjust evaporator and air temperatures in 1’F increments for accurate +/- 2’F
4. Minimum 8 programmable & lockable USB channels for temperature monitoring and convection fan with audio port

5. Commercial grade s/s interior and exterior
6. Capability for slow cooking, bake, braise, poach, sous vide or low temperature steam
7. Full-size, insulated cabinet and doors
8. (2) hinged solid dutch doors with magnetic latches
9. Automatic water fill using ¼" NPT. May be used as manual fill, which includes low water detection.
10. BK WSL-2572-WLK1 flexible self-coiling water connector with quick disconnect on cabinet end
11. Adjustable universal wire slides, 3-1/2" OC, accommodates (14) 18" x 26" or (28) 12" x 20" or (14) 2/1 GN pans
12. Capacity: 14 18" x 26" sheet pans OR 28 12" x 20" x 2.5" steam table pans
13. Even heat distribution of air flow
14. Electronic differential controls with altitude algorithm for automatic altitude adjustment for vapor pressure
15. Wire racks 65 lbs. capacity per rack
16. Cord wrap with 84"L power cord and plug
17. Digital display
18. Stainless steel interior and exterior
19. CE, UL EPH ANSI/NSF4, cUL, UL-Sanitation
20. 1 year limited warranty
21. Each unit with a 208v/60/1-ph, 39.1 amps
22. Recessed wall electrical receptacle by Electrical Contractor
23. Door hinging per plan
24. 5" swivel casters (2) with locking horn
25. Transport package

ITEM #95 WORK TABLE W/ SINK

Quantity: Two (2)
Manufacturer: Advance Tabco
Alternate MFG. #1:
Alternate MFG. #2:
Model: KMS-2411 CUSTOM
Remarks:

If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02C, 1.03A, 1.06, 1.09, 1.09.1, 2.01, 2.21, 2.21.1, 3.02

1. Model KMS-3611-CUSTOM Work Table
2. 132"W x 36"D
3. 14 gauge 304 stainless steel top,
4. 14 gauge stainless steel fixed undershelf
5. stainless steel legs & adjustable bullet feet
6. 4"W common splash with Item #96
7. Utility Sink on right, 1-compartment, 18" long x 14" W x 12" deep bowl, 20 gauge 304 stainless steel
8. Sink bowl with 12"H water level and 15"H flood level
9. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
10. Fisher #53872 zero lead, all stainless steel gooseneck faucet with Fisher 5 year warranty against defects in materials or workmanship
11. Stainless steel gussets welded to die-embossed reinforcing channel
12. 1-5/8" diameter tubular stainless steel legs

13. S/s 108”L x 12”W two-tier overshelf over #95 and #96 with 14” clear space on each shelf with lower shelf 14” off work top; single shelf support through splash support to leg frame per HFS Detail 2.21; edge of lower shelf per HFS Detail 1.01.F.
14. 108”L check minder mounted on lower shelf of overshelf on exhaust hood side only
15. ½” faucet holes for faucet 4” on center
16. Punch hole in sink bowl for overflow of drain
17. One (1) Fisher #24872 rotary waste with overflow and support bracket for waste drain handle with Fisher 5 year warranty
18. Skirted front @ sink
19. Fully welded
20. NSF
21. 18”L x 6”W 16 gauge s/s chase common with #95 from work top to finished ceiling for utility sink and #26 Hand Sink water and vent supply lines
22. 108”L undershelf turned up 2” on left, rear and right ends
23. Terminate undershelf 24” from right end
24. One (1) drawer per HFS Detail 1.09, 1.09.1
25. Mounting provision for #26 Hand Sink
26. Shop drawing required

ITEM #96 WORK TABLE W/ POT RACK

Quantity: Two (2)
Manufacturer: Advance Tabco
Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: KMS-2411 CUSTOM
Remarks:

If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02C, 1.03A, 1.06, 1.09, 1.09.1, 1.12B, 2.01, 2.21, 2.21.1, 3.02

1. Model KMS-2411 Work Table
2. 132"W x 24"D, 14 gauge 304 stainless steel top
    a. 5"H backsplash
    b. Common splash with Item #95
3. 132”L undershelf turned up 2” on left, rear and right ends
    a. 14 gauge stainless steel
    b. fixed undershelf.
4. Stainless steel legs
5. Fully welded NSF construction
6. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
7. Stainless steel gussets welded to die-embossed reinforcing channel
8. 1-5/8” diameter tubular stainless steel legs & adjustable bullet feet
9. Pot Rack, table-mounted above two-tier overshelf
    a. 108"L x 2"W x ¼” thick stainless steel pot rack, includes:
        i. (9) plated double pot hooks
        ii. Model TA-89 Pot Hooks, plated, double sided (package of 4).
        iii. Integral with overshelf specified under #95
10. S/s 108”L x 12”W two-tier overshelf over #95 and #96
    a. 14” clear space on each shelf with lower shelf 14” off work top;

b. single shelf support through splash support to leg frame per HFS Detail 2.21 with support through table top to cross rails of #95 and #96
c. edge of lower shelf per HFS Detail 1.01.F.
d. 108”L check minder mounted on lower shelf of overshelf on exhaust hood side only

11. One (1) drawer per HFS Detail 1.09, 1.09.1
12. Mounting provision for #26 Hand Sink
    a. 18”L x 6”W 16 gauge s/s chase
    b. common with #95/#96 from work top to finished ceiling for utility sink and #26 Hand Sink water and vent supply lines
13. Shop drawing required

ITEM #97 EXHAUST HOOD

Quantity: One (1)
Basis of Design: Halton KVE, Halton Drawing #U21-689_R1
Remarks:
(Performance specifications for all manufacturers)
See HFS Detail 6.10 S/s Wall Panel and Gasket

Features:

1. Three hood sections: #97A/#97B/#97C Sections comprised of: #98.1 Variable speed exhaust control panel, #99 Variable speed exhaust hood VFD fan controller, #100 Variable speed VFD room thermostat, #101 Exhaust hood remote control switch
2. Dimensions:
    a. Section A: 136” L x 63” W (plus 24” W supply plenum) x 24” H;
    b. Section B: 136” L x 63” W (plus 24” W supply plenum) x 24” H;
    c. Section C: 136” L x 63” W (plus 24” W supply plenum) x 24” H;
3. Air Flows:
    a. Section A: 1698 Exhaust CFM, 12” x 12” duct collar, 0.24” S.P.; 1257 Supply CFM, 14” x 12” duct collar, 0.15” S.P.
    b. Section B: 2060 Exhaust CFM, 14” x 12” duct collar, 0.31” S.P.; 1470 Supply CFM, 18” x 12” duct collar, 0.20” S.P.
    c. Section C: 2923 Exhaust CFM, 20” x 12” duct collar, 0.50” S.P.; 1700 Supply CFM, 20” x 12” duct collar, 0.27” S.P.
4. Weight:
    a. Section A: Exhaust- 1020 lbs. Supply: 227 lbs.
    b. Section B: Exhaust- 1020 lbs. Supply: 227 lbs.
    c. Section C: Exhaust- 1020 lbs. Supply: 227 lbs.
5. LIR2 Sensor, relay box in each section
6. 18 gauge s/s construction
7. Use of Capture Walls to create a seal between cooking equipment and wall shall not be used as they require cooking equipment to be located further from wall reducing isle space.
8. Chamfered front shall not be allowed as they reduce front overhang and jeopardize capture and containment over tall cooking equipment.
9. Internal endcaps must be cut out to create a continuous capture within the hood.
10. T.A.B. ports in each air screen supply and exhaust plenum section for balancing.
11. Continuous hanging channels front and rear; structural engineer to verify local requirements. Hanging requirements are the responsibility of the installing contractor; local codes must be followed
12. Grease cup in #98A exhaust hood section
13. Mount hood @ 78” AFF
14. 4”H supply plenum with 10% perforations

15. Twelve (12) Culinary LED lights; Light switch mounted on #98A exhaust hood section and inter-wired to three hood sections
16. S/s wall panel from floor cove to underside of hood, full length of hood per HFS Detail 6.10
17. Automated variable-speed modulating dampers with access panels in each exhaust duct collar
18. Finished ceiling height in kitchen is: Maximum 18" high 16 gauge s/s enclosure panels field installed; coordinate with mechanical Professional
19. Exhaust hood listed for 0" clearance
20. Variable-speed fan controllers and 6"H ETL 18 gauge s/s automatic balancing dampers w/ 1" wide flanged inlet and outlet connection (sleeved connection which will cause damper blades to bind are not permitted), manual adjustment device, Belimo actuator. Connections to meet NFPA96 requirements.
21. Grease sensor in main duct; perimeter auxiliary air curtain fan in each hood section with pressure transducer, SCR and access panel
22. Pirhana pre-piped s/s manifold and s/s or chrome plated drops and fittings
23. BacNet control interface to BMS; Mechanical Engineer to verify language
24. Perimeter air curtain air supply to be via room; see Mechanical drawings
25. Eighteen (18) 20"L x 13"H grease extractors and three (3) 11"L x 13"H grease extractors; provide UL1046 approved file # ; Effective area = 1.25 sf per full extractor and 0.75 SF per half extractor; Extraction of contaminants from the exhaust air is provided by the multi-cyclone grease extractors. Efficient grease extraction is achieved by forcing the exhaust air to spiral continuously in the same direction in the multiple chambers of the extractor, thus separating the grease particles from the air flow centrifugally. High extraction efficiency and low pressure loss over the filter remain practically constant.
26. Include grease filtration performance data (micron size versus extraction efficiency) and air flow calculations based on the convective heat load of cooking equipment beneath the hood.
27. Efficiency comparison data to be performed in accordance with the most current ASTM standard F1704 and include results for the required capture and containment exhaust air flow in accordance with the "Test method to determine the threshold of capture and containment". Data must include thermal imaging results validating conformance to ASTM F1704 and supply air temperature of 74'F. Make-up air will be calculated so that the same amount of air will be taken from the zone as is required by the specified system. An additional load cannot be placed on the kitchen HVAC system.
28. Provide a written guarantee of performance, ensuring the specifying manufacturer's engineer that the system will perform to the engineer's satisfaction when installed and balanced according to design air flows and results of ASTM standard F1704 test (as determined by TAB ports and pressure versus air flow curves). Professional reserves the right to reject any system which, when installed, does not provide capture and containment at the threshold flow rate determined in ASTM F1704. Rejected system must be replaced with the specified system, with all replacement costs paid by manufacturer of rejected system. Any changes in the specified sizing of power wiring, fan size, horsepower requirements, or gas lines due to the use of any system other than which is specified is the responsibility of the alternate hood manufacturer, and must be coordinated by the hood manufacturer and the contractors involved.
29. Extractor removal tool
30. Submit independent certification of hood construction and design per NFPA 96 and UL710 standard
31. Submit independent certification of Hood construction and design per NSF and ETL listed
32. Submit published third-party certified independent lab test and certification of extractors and hood construction and design
33. Installation by qualified persons and in accordance with state and local building code requirements
34. The installation shall be in accordance with NFPA 96, Removal of Smoke and Grease-Laden Vapors From Commercial Cooking Equipment

35. All exhaust ductwork and transitions are to be provided and installed by the Mechanical Contractor
36. Clearance from hood and ducts to combustible material shall per applicable building codes
37. For proper operation of the hood system, it is the responsibility of the General Contractor to have the hood balanced and tested to ensure that the exhaust and supply requirements of the hood are met.
38. Perimeter air curtain fan with air jets improve capture and containment of heat and grease emissions. Leave air space above and around the three air curtain fans intake cover on top of the hood.
39. Provide minimum of 2” clearance on the top and sides of the perforated air curtain fan intake cover to allow unimpeded entrance of air into the air curtain fans.
40. Provide approved shop drawings to appropriate trades referencing utility service and coordinate final connection.
41. Deliver, assemble and install system per approved system shop drawing.
42. Furnish wiring and plumbing diagrams to end use
43. Shop drawing required of air curtain fan schematic wiring, exhaust volume air damper schedule and installation notes.
44. Note: all field wiring and connection points are based on manufacturer’s requirements at the time of design and are subject to change due to electrical component(s) update or obsolescence. Contractor to verify and request current electrical diagrams at time of preparation of shop drawings and make changes to wiring as required.
45. Note: maximum length of cables between any controllers (control panel, hoods etc.) in series is 328 feet. If greater length is needed between controllers, in in-line Ethernet booster must be specified and used.
46. Electrical Contractor to supply and run 7 wire STP plenum-rated cable (9 wire STP cable if VFD is provided with bypass) from Exhaust Hood Control Panel to exhaust fan(s).
47. Shop drawing required

ITEM #98 FIRE SUPPRESSION SYSTEM

Quantity: One (1)
Manufacturer: Ansul
Alternate MFG. #1: AMEREX
Alternate MFG. #2: EQUIPEX
Model: Piranha 27
Remarks:

1. Model Piranha chemical fire suppression with water sprinkler continuation after discharge
2. Pre-Engineered Hybrid System per UL 300
3. Four gallon tank system (Piranha 27); serves #97 & #148
4. 3/8” concealed s/s piping and fittings with 3/8” s/s appliance drops
5. Mechanical engineer to advise on gas line size for mechanical gas valve supplied with unit
6. Mechanical gas valve shipped loose for installation by Plumbing Contractor
7. See plumbing drawings for size of mechanical gas valve
8. Remote mounted Piranha 13 regulated release
9. Remote mounted Piranha 7 regulated actuator
10. Lockable water valve by Plumbing Contractor
11. Remote pull station located per code 42-48” AFF
12. Single or multiple tank system enclosed in S/s box
13. All chrome plated or chrome sleeved piping and nozzles

14. Fire Marshal approval of submittal after Professional review of submittal
15. Shunt trip breakers and field wiring by Contractor
16. Shop drawing required

ITEM #98.1 EXHAUST HOOD CONTROL PANEL

Quantity: One (1)
Basis of Design: Halton Marvel 2
Remarks:
(Performance specifications for all manufacturers)
Provide same manufacturer as the manufacturer of #98

1. Serves #97 and #148 Exhaust Hoods
2. Automated regulation of ventilation exhaust levels
3. Demand control
4. Monitors indoor air quality in the kitchen space.
5. Reduce energy costs by scheduling and adjusting airflow based on hours of operation and appliance use.
6. Hood exhaust airflow adjustment depending on cooking activities
7. Touch screen interface
8. Control of common VFD exhaust fan for minimum energy consumption at all times
9. Automatic or on schedule start/stops
10. Automatic modulation via #98 balancing dampers which adjusts the airflow with motorized balancing dampers attached to the duct collar of each hood. Damper shall be controlled by a 0-10V DC position reference signal generated by a controller. Upon power failure, the automatic balancing damper fully opens.
11. For ease of field balancing of hoods, the DCV control panel shall include a push button on the touch screen for air balancing purposes. Pushing the button will bring all hoods to design air flow with CFM measured and verified. It is to also confirm Automated Balancing Damper operation, Make up air signal output and all sensor reporting.
12. Early fire warning signals
13. Internet monitory and programming
14. One to 3 thermal imaging sensors (depending on length of hood) per hood, used to measure the rate of change of the cooking surface temperature, the sensor acquires a “heat signature” of the equipment positioned below each sensor used to detect when one or more pieces of cooking equipment are turned on and is necessary to start the hood exhaust fan in idle mode and calculates an index which averages the temperature radiation over the sensor’s field-of-view. The thermal imaging device is placed in the hood ceiling and is used to measure a rapid change in temperature of cooking surfaces (for example, cooking activities) and adjust the airflow in the hood to the required level.
15. One to 3 thermal imaging sensors in combination with temperature sensor to measure the risk of fire in the hood and provide an early fire detection alarm. The alarm shall consist of a hood light changing from the standard white color to a blinking red color.
16. The early detection fire alarm shall also provide the ability to shut off the electrical or gas energy input to the appliances.
17. Controller to provide inputs/outputs and is designed to collect real time information and to implement various automation control algorithms. The controller to respond to the infrared sensor(s) and duct temperature sensor to measure changes in cooking status.
18. Differential Pressure Transducer used in conjunction with the value from the temperature sensor and thermal imaging sensor to measure the airflow in real time and control the airflow through each hood.

19. Duct Temperature Sensor to be located in the hood collar, the temperature sensor measures the temperature of the exhaust air is used in conjunction with the pressure transducer value and a thermal imaging sensor to detect the event of cooking equipment start-up to control the airflow. Duct temperature is often a better indicator of start-up when certain types of cooking equipment, such as fryers, are used. A system consisting of the duct temperature sensor in combination with thermal imaging sensors shall be used to activate the early fire detection alarm, activated before the fire system is triggered.
20. Alarm light status on a touch screen is activated when any alarm condition (i.e., extractor missing, extractor clogged, fire suppression activated, early fire detection alarm sensor failure, VFD in default) is detected. Reason for alarm can be diagnosed by the integral remote diagnostic software.
21. An IEQ Sensor shall monitor temperature, relative humidity, atmospheric pressure, VOC's, CO2, and particulate matter at levels of PM10, PM 2.5, and PM1 in the kitchen space. When safe levels of CO2, VOC's, and particulate matter are exceeded the system shall increase the exhaust airflow to decrease the contaminant levels in the kitchen space.
22. Provide permanent RJ45 CAT5E Ethernet connection (unless prohibited by Contracting Officer, when a temporary Ethernet service connection or USB B serial connection shall be provided) and inter-connection to Exhaust Hood VFD Thermostat and Exhaust Hood(s).
23. Electrical Contractor to supply and run RJ45 CAT5 cable from Exhaust Hood Control Panel to VFD, for communication language as verified by Mechanical Contractor.
24. Submit a sequence of Operation documenting procedures which occur during start-up, shut-down, idle, cooking, over-ride, fire, off, airflow reporting and replacement air control, alarm, and fault modes.
25. Refer to air curtain and VFD exhaust and supply installation manuals, exhaust hood submittal details and wiring schematics.
26. Mount at 48" AFF or in compliance with local code and ADA recommended mounting/position location must be taken into account by installing contractor.
27. Grease sensor installed vertically in main exhaust duct with field wiring to control panel consist with approved shop drawing and with access for future maintenance
28. Grease sensor must be installed with a duct access door and within 300 feet of control panel
29. Shop drawing required

ITEM #99 EXHAUST HOOD VFD FAN CONTROLLER

Quantity: One (1)
Basis of Design: Halton
Remarks:
(Performance specifications for all manufacturers)
Provide same manufacturer as the manufacturer of #98

1. Shall control the speed of a three-phase fan motor by changing the frequency of the current supplied to the exhaust/MUA fan motors. Provide inter-connection between Exhaust Hood VFD Fan Controller in separate conduits.
2. 0-10V DC position reference signal
3. Controller physical dimensions to be determined by motor horsepower and voltage
4. Install wiring in separate conduits for incoming and outgoing wiring from each VFD
5. Controller must be located within maximum of 150 feet of fan motor location
6. Controller is supplied and programmed by hood manufacturer and wired by the applicable trade other than hood manufacturer
7. Controller cabinet supplied and installed by Mechanical Contractor
8. Mount at 48" AFF with 6" clearance on left and right of controller cabinet

9. All fan motors must be compatible with variable frequency controller drives (VFD's)
10. All wiring and cabling to be provided by Electrical Contractor unless otherwise stated on shop drawing.
11. Shop drawing required

ITEM #100 EXHAUST HOOD VFD FAN THERMOSTAT (ROOM IEQ SENSOR)

Quantity: One (1)
Basis of Design: Halton Marvel 2
Remarks:
(Performance specifications for all manufacturers)
Provide same manufacturer as the manufacturer of #98

1. Mount on kitchen wall as shown on plan, near a HVAC room thermostat away from heat sources.
2. The sensor shall monitor space temperature, relative humidity, atmospheric pressure, VOC's, CO2, and particulate matter levels including PM10, PM 2.5, and PM1.
3. If safety thresholds are exceeded for the pollutants then the exhaust hood control panel (see #98.1) shall increase the exhaust airflows accordingly.
4. Shop drawing required

ITEM #101 REMOTE EXHAUST HOOD FAN OVERRIDE SWITCH

Quantity: Four (4)
Remarks:
(Performance specifications)
Provide same manufacturer as the manufacturer of #97 & #148
Three (3) integrated into #97 Exhaust Hood and one (1) integrated into #148 Exhaust Hood

1. Ability to override pre-programmed operation using one of two possible modes; a push button shall be illuminated when activated.
2. Mode #1: Ability to press and hold for 1 second to accelerate the exhaust rate to 100% of the design airflow for a pre-programmed period of time (default is 5 minutes).
3. Mode #2: Ability to press and hold for 3 seconds to accelerate the exhaust rate to 100% of the design airflow for a pre-programmed period of time (default 1 hour. This shall start the hood if it has been overridden by a schedule or an "off" state.
4. Shop drawing required

ITEM #102 MOBILE DOUBLE STACK 6 PAN CONVECTION STEAMER W/ STAND

Quantity: One (1)
Manufacturer: AccuTemp
Alternate MFG. #1: Cleveland
Alternate MFG. #2: Market Forge
Model: N61201D060 DBL
Remarks:

1. Model N61201D060 DBL Two compartment, Connectionless Evolution™ Boilerless, Convection Steamers featuring Steam Vector Technology, natural gas, holds (6) 12" x 20" x 2-1/2" deep pans in each compartment, Digital Controls, NO water & drain connection required, warranty NOT voided by water quality, no water filtration required, 60,000BTU natural gas, 120/60/1ph, (2) 5' cords & NEMA 5-15P, cULus, UL EPH Classified, Made in USA, ENERGY STAR® (Includes stand in configuration of choice)
2. 1 year parts & labor warranty, standard
3. Lifetime service and support guarantee
4. Door hinged on left
5. Manual water fill
6. SNH-21-06 - Support Stand, for double stacked Gas Evolution, Ergo-low mounting height: 8-7/8" lowest unit height, stainless steel, with 5" casters (in lieu of standard)
7. Two (2) model AT1A-3809-1 Drain kit allows a drain to be plumbed to the Evolution™ Steamer or Connectionless Steamer for draining into a floor drain (plumbing from steamer drain to floor drain by Plumbing Contractor)
8. 3 gallons potable water per hour for each section
9. T&S HG-2C-36-PS gas connector

ITEM #103 S/S WALL PANEL WITH GASKET

Quantity: One (1)
Manufacturer: Halton
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (No alternates available)
Model: HOPKINS WALL PANEL
Remarks:
If fabricated, refer to HFS Detail 6.10

1. Wall panel to match length of Item 97, Kitchen Exhaust Hood; Installation by GC with high temperature silicone and without screws or exposed fasteners
2. 18 gauge type 304 s/s; Lengths over 8 feet shall have a hemmed edge between sheets
3. Provide cantilevered flange @ 45° down from wall, to cover area behind equipment to the wall above utility connections
4. 6" deep horizontal
5. Turn down front edge and hem edge underneath
6. Hang at 45" A.F.F.
7. Flange runs full length of wall panel
8. “L” shaped wall panel along length of hood and width of exhaust canopy.
9. Shop drawing required

ITEM #104 MOBILE FRYER W/ FILTER

Quantity: Four (4)
Manufacturer: Pitco Frialator
Alternate MFG. #1: Frymaster
Alternate MFG. #2: KEATING
Model: SSHLV14C-4/FD
Remarks:

1. Model SSHLV14C-3/FD Solstice Supreme™ Reduced Oil Volume Fryer System, gas, (4) fryers, (1) 32 lb. oil capacity full tank per fryer, computer controls with push button top off, built-in Solstice™ Filter Drawer System, stainless steel tank, front, door & sides, (4) 72,500 BTU, ENERGY STAR®, CSA Flame, CSA Star, NSF, CE
2. 1 year parts and labor warranty from the date of installation up to a maximum of 15 months from the date of manufacture
3. 115v/50/60/1-ph, 0.7 amps, standard (fryer)
4. 115v/50/60/1-ph, 6.7 amps, standard (filter)
5. Natural gas
6. Model B2101519 Tank Cover, 18 gauge light duty
7. Filter flush hose
8. Paperless filter assembly
9. Model B3901504 Casters, 9" adjustable swivel non-lock rear & lock front casters, for battery of (4) Solstice gas and electric fryers, batteries and retherms
10. Model B2101519 Tank Cover, 18 gauge light duty
11. Model B3901504 Casters, 9" adjustable swivel (set of 4) non-lock rear & lock front casters,
12. Battery of Solstice Gas fryers
13. Auto Filtration - Full Pot
14. Hands-free automatic fry pot oil level control

ITEM #105 SPARE NO.

ITEM #106 PORTABLE OIL CADDY

Quantity: One (1)
Manufacturer: BKI
Alternate MFG. #1: Pitco
Alternate MFG. #2: Frymaster
Model: OC-90
Remarks:

1. Model OC-90 Oil Caddy, portable waste oil pick up & disposal unit, 150lb. oil capacity, 54" long high temp hose, bi-directional vane pump, fluoro-elastomer pump shaft, stainless steel removable tank, 8" wheels, dual handles

ITEM #107 40 GAL - TILT SKILLET

Quantity: One (1)
Manufacturer: Groen
Alternate MFG. #1: Cleveland
Alternate MFG. #2: Legion
Model: BPM-40GA
Remarks:

1. Model BPM-40GA Braising Pan, gas, 40-gallon capacity, 10" deep pan, 38" pan height, IPX6 water rated electronic Advanced controls with digital display, 1 minute to 10 hour timer, 175° - 400°F preset temperatures along with manual setting capability, manual tilt, standard etch marks,

faucet bracket, round tubular open leg base, stainless steel construction, bullet feet, electric spark ignition, 144,000 BTU/hr, cCSAus, NSF, IPX6, Made in USA
2. (1) year parts & labor, (10) year pan warranty, standard
3. 115v/60/1-ph, 5.0 amps, standard
4. T&S HG-2C-36-PS gas connector
5. T&S HW-2C-36 water connector

6. Natural gas

ITEM #108 FLOOR TROUGH - BRAISING PAN

Quantity: One (1)
Manufacturer: IMC/Teddy
Model: ASFT-3024-SG
Alternate MFG. #1: Advance Tabco
Alternate MFG. #2: Fabricator
Remarks:
If fabricated, refer to HFS Detail 6.03.1

1. Model ASFT-3024-SG ASFT Anti-Spill Floor Trough, 24"W x 30"D, 6" deep receptacle, (1) 4" OD tailpiece, stainless steel beehive strainer, 14/304 stainless steel, brushed satin finish, (SG) subway grating, NSF, Made in USA
2. Shop drawing required

ITEM #109.1 COMBI OVEN - ELECTRIC, UPPER

Quantity: Two (2)
Manufacturer: Convotherm
Model: C4 ED 6.10EB
Alternate MFG. #1: UNOX
Alternate MFG. #2: Rational
Remarks:

1. Model C4 ED 6.10EB Convotherm Combi Oven/Steamer, electric, steam generator, (6) half size sheet pan or (6) 12" x 20" x 1" hotel pan capacity, easyDial control panel with digital display 9-stage & 99 cooking recipes storage, (4) cooking modes: hot air, steam, combi-steam & retherm, multi-point core temperature probe, five-speed auto reversing fan, anti-microbial hygienic door handle, pull-out spray hose, ConvoClean+ fully automatic hands-free cleaning system, stainless steel construction, UL-Listed ventless (no hood required - local codes prevail)
2. 12 month parts and labor warranty and second 12 month parts only warranty, standard
3. 480v/60/3-ph, 13.1 amps
4. Model CACK ConvoClean "Hands Free" automatic cleaning system, comes with: (1) 10 liter ConvoClean, (1) 1 liter ConvoCare and set of connectors and hoses, standard
5. Model CCARE ConvoCARE Solution, (2) 10 liter containers
6. Model CCLEAN ConvoClean Solution, (2) 10 liter containers
7. Model DISSOLVE Descaling Solution, (6) one-gallon containers with quart markings
8. Model CCAREC ConvoCARE Concentrate, (2) 1-liter bottles
9. Model DD-TT Disappearing Door, for EasyDial 6.10
10. A water analysis is required for the proper selection of a water treatment system. Submit water quality report to MFG. to confirm specification for filter #110.

11. Dormont Manufacturing Model W100B36 Dormont Hi-PSI® Water Connector Hose, 1" dia., 36" long, covered with stainless steel braid, 2-year warranty

ITEM #109.2 COMBI OVEN - ELECTRIC, LOWER

Quantity: Two (2)
Manufacturer: Convotherm
Alternate MFG. #1: UNOX
Alternate MFG. #2: Rational
Model: C4 ED 10.10EB
Remarks:

1. Model C4 ED 10.10EB Convotherm Combi Oven/Steamer, electric, steam generator, (11) half size sheet pan or (11) 12" x 20" x 1" hotel pan capacity, easyDial control panel with digital display 9-stage & 99 cooking recipes storage, (4) cooking modes: hot air, steam, combi-steam & retherm, multi-point core temperature probe, five-speed auto reversing fan, anti-microbial hygienic door handle, pull-out spray hose, ConvoClean+ fully automatic hands-free cleaning system, stainless steel construction, UL-Listed ventless (no hood required - local codes prevail)
2. 12 month parts and labor warranty and second 12 month parts only warranty, standard
3. 480v/60/3-ph, 23.3 amps
4. Model CACK ConvoClean "Hands Free" automatic cleaning system, comes with: (1) 10 liter ConvoClean, (1) 1 liter ConvoCare and set of connectors and hoses, standard
5. Model CCARE ConvoCARE Solution, (2) 10 liter containers
6. Model CCLEAN ConvoClean Solution, (2) 10 liter containers
7. Model DISSOLVE Descaling Solution, (6) one-gallon containers with quart markings
8. Model DD-TT Disappearing Door, for EasyDial 10.10
9. Submit a water quality report MFG. to confirm specification for filter #110.
10. Model 3462275 Stacking Kit, 6" High on Casters, for 6.10 on 6.10 (6.10 on 10.10) (electric models)
11. Dormont Manufacturing Model W100B36 Dormont Hi-PSI® Water Connector Hose, 1" dia., 36" long, covered with stainless steel braid, 2-year warranty

ITEM #110 COMBI OVEN WATER FILTER

Quantity: Four (4)
Manufacturer: Convotherm
Alternate MFG. #1: UNOX
Alternate MFG. #2: Rational
Model: WBT-QT1+CR
Remarks:

1. Model WBT-QT1+CR Optipure Water Treatment System, dual-cartridge, (1) CTO-Q10 cartridge, (1) CTO-QCR cartridge, 2.5 gpm, 0.5 micron sediment and chlorine up to 20,000 gallons, 0.5 chloramine up to 6,000 gallons, pressure gauge, inlet shut-off valve, mounting bracket, for use with steam & combi ovens
2. Model WBT-CTO-Q10 QT Replacement Cartridge, 10" Quick-Twist, Pre-filter protects RO membrane by reducing sediment and chlorine, 1.5 gpm, 15,000 gallon capacity, 0.5 micron particulate, reduces chlorine, taste & odor, NSF (for use with QT10-1, QT10-2, OP-70, OP-70CR, OPS-70, OPS175, OPS175CR, SRO70) (300-05828)
3. Submit a water quality report MFG. to confirm specification for filter #110.

ITEM #111 SPARE NO.

ITEM #112 CONVEYOR TOASTER

Quantity: One (1)
Manufacturer: Hatco
Alternate MFG. #1: (no alternates available)
Alternate MFG. #2: (no alternates available)
Model: TK-100
Remarks:

1. Model TK-100 Toast King® Conveyor Toaster, vertical conveyor, countertop design, bread & bun toaster, approximately 960 units/hour capacity, stainless steel construction, 5.0kW, NSF, CE, UL, UL EPH Classified, CSA, Made in USA
3. Includes 24/7 parts & service assistance, call 800-558-0607
4. One year on-site parts & labor warranty, plus one additional year parts only warranty on all Toast-King metal sheathed elements
5. 208v/60/1-ph, 5038 watts, 24.0 amps, NEMA 6-30P (domestic voltage), standard

ITEM #113 GRIDDLE

Quantity: One (1)
Manufacturer: Vulcan
Alternate MFG. #1: AccuTemp GGF1201B48
Alternate MFG. #2: Keating
Model: 960RX
Remarks:

1. Model 960RX Heavy Duty Griddle, countertop, gas, 60" W x 24" D cooking surface, 1" thick polished steel griddle plate, embedded mechanical snap action thermostat every 12", millivolt pilot safety, electric spark or manual ignition, front manifold gas shut-off valve, low profile, stainless steel front, sides, front grease trough, 4" back & tapered side splashes, 4" adjustable legs, 135,000 BTU, CSA, NSF
2. 1 year limited parts & labor warranty, standard
3. Natural gas
4. 120v/50/60/1-ph, 1.0 amp, NEMA 5-15P, standard
5. T&S Brass Model HG-4D-48-FF Safe-T-Link Gas Connector Hose, 3/4" connection, 48" hose, stainless steel braiding with extruded coating, (1) Quick-Disconnect, gas elbows & nipples, 180,000 BTU / hr. minimum flow capacity
6. Gas regulator

ITEM #114 MOBILE REFRIGERATED EQUIPMENT STAND

Quantity: Two (2)
Manufacturer: Turbo Air
Alternate MFG. #1: Traulsen
Alternate MFG. #2: U-Line
Model: PRCBE-60R-N
Remarks:

1. Model PRCBE-60R-N PRO Series Refrigerated Chef Base, one-section, 60”W, 9.77 cu. ft., (2) stainless steel drawers, accommodates pans up to 6" deep, capacity: (3) full size pans per drawer (NOT included), digital temperature display, stainless steel top, full marine drip guard edge, front-breathing, self-cleaning condenser, hot gas condensate system, side mount self-contained refrigeration, R290 Hydrocarbon refrigerant, 1/4 HP, 115v/60/1-ph, 3.2 amps, NEMA 5-15P, ETL-Sanitation, cETLus
2. 3 year parts & labor warranty, standard
3. 7 year compressor warranty (self-contained only), (updated warranty & spec sheets pending from Turbo Air)
4. Condensing unit on the left, standard
5. Caster Set, swivel, locking front wheels, standard

ITEM #115 CHARBROILER

Quantity: One (1)
Manufacturer: Vulcan
Alternate MFG. #1: Jade
Alternate MFG. #2: Montague
Model: VTEC60
Remarks:

1. Model VTEC60 IRX™ Infrared Charbroiler, gas, countertop, 58-1/2", (5) 22,000 BTU burner, manual control, piezo ignition, crumb tray, stainless steel cooking grids, sides, control panel, top trim, removable heat shield & backsplash, 4" adjustable legs, 110,000 BTU, CSA, NSF
2. 1 year limited parts & labor warranty, standard
3. Natural gas
4. T&S Brass Model HG-4D-48-FF Safe-T-Link Gas Connector Hose, 3/4" connection, 48" hose, stainless steel braiding with extruded coating, (1) Quick-Disconnect, gas elbows & nipples, 180,000 BTU / hr. minimum flow capacity
5. Gas regulator

ITEM #116 TRASH CONTAINER - UNDERCOUNTER

Quantity: Eight (8)
Manufacturer: Rubbermaid Commercial Products
Model: 1971258
Remarks: BY DEPARTMENT

1. Model 1971258 Slim Jim® Container, 16 gallon, 22"L x 11"W x 25"H, with venting channels, molded-in handles, general purpose waste, open type without lid, high-impact plastic construction, gray, Made in USA

ITEM #117 HAND SINK W/ PULL OUT DRAWER AND SOAP & TOWEL DISPENSER

Quantity: Two (2)
Manufacturer: BSI
Alternate MFG. #1: Advance
Alternate MFG. #2: Duke/Countercraft
Model: HSD-ST
Remarks:

1. Model HSD-ST BSI, LLC Drain Tech Hand Sink Drawer with Soap & Towel Dispenser, mount to bottom side of cabinet top, 4" drain, tilt-out towel compartment, soap dispenser, stainless steel hand sink, NSF
2. Fisher zero-lead content faucet

ITEM #118 SERVICE COUNTER W/ LOAD CENTER

Quantity: Two (2)
Manufacturer: Duke/Countercraft Manufacturing
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: CUSTOM
Remarks:

See HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.05, 1.05.1, 1.06, 4.01.3, 4.01.5, 4.02.8, 4.32, 4.40; Duke details govern when deviation.

1. See Countercraft drawing #CC 1 & #CC2
2. 15’-2”L x 3’-0”W x 36”H; 15’-2”L x 8”W x 3-1/2”H tray slide with top of tray slide @ 34”AFF.
3. Silestone top; color by Professional. 4”H splash @ wall.
4. Plastic laminate clad vertical cladding; color by Professional.
5. Perforated s/s hinged perforated ventilation door on utility compartments below #124, #125, #126
6. Removable s/s access panel below #117 Hand Sink; punch base shelf for drain line.
7. Isolated 4-sided s/s trash enclosure (base is @floor level) with hinged s/s cut-off door on server side.
8. Fixed kick plates on ends; magnetic removable kick plates on patron side; omit kick plates on server side.
9. Integrate #116, 117, 119, 120, 123, 124, 125, 126
10. Continuous piece ‘fully enclosed base’ style construction with utility chase within counter. All electrical conduit and plumbing to be located within utility chase as required. Utility chase to be fully accessible from operator side of counter with electrical and plumbing to be located removable stainless steel panels.
11. Fully welded angle iron frame utilizing 1.5" x 1.5” x 1/8" galvanized angle. Welds to be ground smooth and sprayed with silver enamel paint. Angle Iron to be framed around each cutout for drop-in-equipment. Angle iron to run front-to-back and at each mullion. 1/2" sound deadening tape to be applied to top of angle iron frame prior to installation of countertop.
12. All stainless steel fabrication to be fully welded. Butt or knuckle joints will not be accepted. Silestone tops must be arranged for a consistent appearance. All radius edges of turn down to have a minimum 3/8" #8 finish.
13. Stainless steel internal shelving compartments, fully enclosed back, sides, and top. Removable rear access panels, removable top panel, coved corners All internal stainless steel fabrication to be fully welded.
14. All electrical to be interconnected to load center. Electrical to be located in electrical conduit pipe, flex conduit to be kept to a minimum. Exposed flex conduit will not be accepted. All wiring to be numbered at all junctions, per circuit. Wiring diagram to be provided at each load center door. All receptacles mounted in the counter to be recess mounted and labeled.
15. One (1) lot plumbing and load center compartments. Plumbing lines are to be 3/4" copper. All copper lines to be coated to protect from corrosion. All hot food well drains are to be manifolded with unions for ease of maintenance. Unions to utilize compression fittings, no soldering is

permissible. Manifolded drains lead to single 3/4" turn ball valve mounted in full stainless steel housing. Drain valve to be located on operator side for ease of access.

16. Custom control panel containing remote mounted controls for drop-in equipment (i.e. hot food wells, cold pans, etc), custom Duke labeling and switches
17. Duke to provide installation and coordination services. Installation and coordination services to include delivery, uncrating & setting in place, completion of all required field welds and joints, completing all final assembly, leveling, and start up. This includes all necessary site visits prior to and during fabrication including site visits for field dimensions.
18. Labeled light switch for #119, 120 & 123 and labeled controls of #124, 125, 126 mounted in service side apron
19. Hinged perforated ventilated access panel for #124, 125 & 126
20. Remote labeled illuminated on/off switch mounted in service side apron and connected to electrical in counter base serving #124, 125, 126
21. Separate counter section to support #127 Refrigerated Display Case with remote labeled illuminated on/off switch mounted in service side apron and connected to electrical in counter base serving #127. Hinged perforated ventilated access panel for #127. Adjust overall length of #118 as necessary to provide clearance for #127 and main a minimum of three feet clearance from end of counter and wall.
22. Shop drawing required

ITEM #119 FOOD GUARD WITH LIGHTS & HEAT LAMP

Quantity: Two (2)
Manufacturer: Premier Metal & Glass
Alternate MFG. #1: BSI
Alternate MFG. #2: Fabricator
Model: TM2N-A
Remarks:

If fabricated, refer to HFS Detail 4.10A

1. Refer to #118
2. 3/8” Starphire glass
3. Labeled light switch mounted in service-side apron of #118
3. Shop drawing required

ITEM #120 FOOD GUARD WITH LIGHTS

Quantity: Two (2)
Manufacturer: Premier Metal & Glass
Alternate MFG. #1: BSI
Alternate MFG. #2: Fabricator
Model: TM2N-A
Remarks:

If fabricated, refer to HFS Detail 4.10A

1. Refer to #118
2. 3/8” Starphire glass
3. Labeled light switch mounted in service-side apron of #118
4. Shop drawing required

ITEM #121 MOBILE REACH-IN PASS THROUGH FREEZER

Quantity: One (1)
Manufacturer: Victory Refrigeration
Alternate MFG. #1: Traulsen
Alternate MFG. #2: TurboAir
Model: FS-1D-S1-EWPTHDHC
Remarks:

1. Model FS-1D-S1-EWPTHDHC UltraSpec™ Series Freezer, Pass-thru, one-section, self-contained refrigeration, 26.2 cu. ft. capacity, (4) wide half height solid hinged doors, (3) silver freeze (chrome-style) shelves, stainless exterior & interior, standard depth cabinet, TOUCH POINT™ electronic temperature control/indicator, LED lighting, expansion valve technology, Santoprene door gaskets with 2 year warranty, stainless steel breakers, 3/4 HP, UL, cUL, UL EPH Classified, MADE IN USA
2. 3 years parts & labor warranty
3. Self-Contained refrigeration
4. Additional 4 year compressor warranty (part only), standard
5. 115v/60/1-ph, 9.1 amps, cord with NEMA 5-15P
6. Control/Kitchen side door hinging: standard on right
7. Rear/Server side door hinging: on right standard
8. Legs, set of 4, 6" high adjustable stainless steel, standard

ITEM #122 PASS-THRU TWO-DOOR ROLL-IN REFRIGERATOR

Quantity: One (1)
Manufacturer: Traulsen
Alternate MFG. #1: Victory
Alternate MFG. #2: TurboAir
Model: RRI232LPUT-FHS
Remarks:

1. Model RRI232LPUT-FHS Spec-Line Refrigerator, Roll-thru, two-section, self-contained refrigeration, StayClear™ Condenser, stainless steel exterior and interior, standard depth cabinet, full-height doors, accepts 66" high racks (#57) with microprocessor controls, 1/3 HP, cULus, NSF
2. 115v/60/1-ph, 13.4 amps, NEMA 5-20P, standard
3. 3 year service/labor & 5 year compressor warranty, standard
4. Kitchen/Thermometer side: Left door hinged left/right hinged right, standard
5. Rear: Left door hinged left/right hinged right, standard

ITEM #123 FOOD GUARD WITH LIGHTS

Quantity: Two (2)
Manufacturer: Premier Metal & Glass
Alternate MFG. #1: BSI
Alternate MFG. #2: Fabricator
Model: TM2N-A
Remarks:

If fabricated, refer to HFS Detail 4.10A

1. Refer to #118
2. 3/8” Starphire glass
3. Labeled light switch mounted in service-side apron of #118
4. Shop drawing required

ITEM #124 DROP-IN FOUR WELL HOT/COLD FOOD UNIT

Quantity: Two (2)
Manufacturer: Delfield
Alternate MFG. #1: Atlas Metal
Alternate MFG. #2: Duke/Countercraft
Model: N8656P
Remarks:

1. Model N8656P Drop-In Hot/Cold Food Well, 56-1/4", 4-pan size for 12" x 20" pans, 8" deep single tank with drain, remote control panel with single temperature control & three-way toggle switch, stainless steel top & well, galvanized steel exterior housing, self-contained refrigeration, R290 refrigerant, 1/4 HP, (55-1/4" x 25" cutout required), cUL, UL, NSF
2. Model 0460000N 1 year parts & labor warranty, standard
3. Model W00003N 1 year compressor warranty, standard
4. 120/240v/60/1-ph, 21.0 amps, standard
5. Model 000-504-0030 Autofill assembly kit (shipped loose), for N8600 and N8800 series

ITEM #125 DROP-IN THREE WELL COLD PAN

Quantity: Two (2)
Manufacturer: Delfield
Alternate MFG. #1: Atlas Metal
Alternate MFG. #2: Duke/Countercraft
Model: 8145-EFP
Remarks:

1. Model 8145-EFP LiquiTec® Drop-In Cool Food Unit, 3-pan size, 4" or 6" deep pans flush with counter top, insulated pan, stainless steel inner liner & top, galvanized outer liner, self-contained Eutectic fluid refrigerated system, R290 Hydrocarbon refrigerant, 1/4 hp, (44-1/4" x 25" cutout required), cUL, UL, NSF
2. Model 0460000N 1 year parts & labor warranty, standard
3. Model W00003N 1 year compressor warranty, standard
4. 115v/60/1-ph, 3.7 amps, NEMA 5-15P, standard

ITEM #126 DROP-IN FROST TOP

Quantity: Two (2)
Manufacturer: Delfield
Alternate MFG. #1: Atlas Metal
Alternate MFG. #2: Duke/Countercraft

Model: N8245P
Remarks:

1. Model N8245P Drop-In Frost Top, stainless steel 1" elevated top with drain trough & 2" overhang, galvanized steel exterior housing, on/off toggle switch, self-contained refrigeration, R290 refrigerant, 1/5 HP, (44-5/8" x 25" cutout required), cUL, UL, NSF
2. Model 0460000N 1 year parts & labor warranty, standard
3. Model W00003N 1 year compressor warranty, standard
4. 115v/60/1-ph, 2.4 amps, NEMA 5-15P, standard

ITEM #127 DROP-IN REFRIGERATED MERCHANDISER

Quantity: One (1)
Manufacturer: Turbo Air
Alternate MFG. #1: Federal
Alternate MFG. #2: RPI
Model: TOM-48L-UFD-S-3SI-N
Remarks:

1. Model TOM-48L-UFD-S-3SI-N Drop-In Horizontal Open Display Case, low profile, 15.2 cu. ft. capacity, 47-7/8"W x 33"D x 53-1/8"H, self-contained refrigeration with self-cleaning condenser, (2) glass shelves + deck, tempered glass front shield & side walls, rear sliding glass doors, solar digital thermometer, digital electronic thermostat with defrost control, LED interior lighting, stainless steel interior, specify exterior color, front air intake & rear air discharge, includes night cover, R290 Hydrocarbon refrigerant, (2) 3/4 HP, 115v/60/1-v/60/1-ph, 13.6 amp, cord with NEMA 5-20P, CSA Sanitation, cCSAus
2. 2 year parts & labor warranty, standard
3. Additional 3 year compressor warranty (5 year total), standard
4. Counter base by MFG. of #118 with identical standard features
5. Self-cleaning condenser device equipped, standard

ITEM #127.1 MERCHANDISER COUNTER

Quantity: One (1)
Manufacturer: Duke/Countercraft
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: CUSTOM
Remarks:

See HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.05, 1.05.1, 1.06, 4.01.3, 4.01.5, 4.32, 4.40; Duke details govern when deviation.

1. See Countercraft drawing #DM-4
2. 4’-0” +/- L x 3’-0”+/- W x 36” H; field verify clearances prior to fabrication
3. Refer to Professional drawings for finishes
4. Installation by Duke
5. Finished ends adjunct to #84.

6. Provide top of ½” synthetic stone; see GEN-G-104 finish schedule by Professional.

7. Stone top with 5”H eased exposed edge.

8. Toe kick shall be 4” H and set back 3-1/2” from face of the counter.

9. Provide ventilated toe kick on customer side. Provide magnetic s/s toe kicks on customer side of long axis clad with matte black powder coat and held in place with magnets; end toe kicks are fixed; omit toe kick on server side.

10. Provide two (2) ventilated doors on server side; provide fixed panel on ends and customer side.

11. Provide utility compartments where equipment on counter top projects into base compartment; omit base and intermediate shelves.

12. Provide angled door top to serve as a finger reveal the length of the top of each door, with top of doors set at 33.82” AFF with ¾” between the top of door and counter top edge turn down. See Professional detail for finger pull design.

13. Provide Blum hinges on cabinet doors and access panels with magnetic catches.

14. Provide flush door locks at upper right of each pair of storage and utility compartment doors.

15. Clad vertical counter and all exposed faces, ends and edges of counter on patron side cladding; see GEN-G-104 Professional Finish Schedule.

16. Continuous piece ‘fully enclosed base’ style construction with utility chase within counter.
17. Fully welded angle iron frame utilizing 1.5” x 1.5” x 1/8” galvanized angle. Welds to be ground smooth and sprayed with silver enamel paint.

18. Angle iron to be framed around each cutout for drop-in-equipment.

19. Angle iron to run front-to-back and at each mullion.

20. 1/2” sound deadening tape to be applied to top of angle iron frame prior to installation of countertop.

21. All stainless steel fabrication to be fully welded. Butt or knuckle joints will not be accepted.

22. Stone tops must be arranged for a consistent appearance. All radius edges of turn down to have a minimum 3/8” #8 finish.

23. Plumbing compartments: Plumbing lines are to be 3/4” copper. All copper lines to be coated to protect from corrosion. Unions to utilize compression fittings, no soldering is permissible. Manifolded drains lead to single 3/4” turn ball valve mounted in full stainless steel housing. Drain valve to be located on operator side for ease of access.

24. Duke to provide installation and coordination services. Installation and coordination services to include delivery, uncrating & setting in place, completion of all required field welds and joints, completing all final assembly, leveling, and start up. This includes all necessary site visits prior to and during fabrication including site visits for field dimensions.

25. Provide thermal breaks in top for all cold and hot equipment penetrations in top.

26. Shop drawing required

Quantity: Two (2)
Manufacturer: Duke/Countercraft
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: CUSTOM
Remarks:

See HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.05, 1.05.1, 1.06, 4.01.3, 4.01.5, 4.32, 4.40; Duke details govern when deviation.

1. See Countercraft drawing #CC-3
2. #128A 13'-1-1/2" +/- L x 3'-0"+/- W x 36" H; field verify clearances prior to fabrication
3. #128B 15'-1-3/4"L" +/- L x 3'-0"+/- W x 36" H; field verify clearances prior to fabrication
4. Synthetic stone top with 4"H splash @ rear and end wall.
5. Plastic laminate clad vertical cladding; see GEN-G-104 by Professional.
6. Isolated 4-sided s/s trash enclosure (base is @floor level) with hinged s/s cut-off door on server side.
7. Magnetic numbered removable kick plates on patron side; fixed kick plates on exposed end
8. Installation by Duke
9. Scribe toe kick to toe base on left and right building walls to maintain 1" set back from walls.
10. 4" H x 1.18" D splash at open end opposite end where #141 located and rear end. Seal splash to counter top; follow Professional finish schedule for food grade sealant color.
11. Finished end adjunct to #141. Hold niche of 1'-10"L in alcove.
12. Provide top of ½" synthetic stone; see GEN-G-104 by Professional.
13. Stone top with eased exposed edge.
14. Toe kick shall be 4" H and set back 3-1/2" from face of the counter. Scribe toe kick to line curve of wall cove base.
15. Provide magnetic s/s toe kicks on long axis clad with matte black powder coat and held in place with magnets; end toe kicks are fixed.
16. #118A: Provide eight (8) equal width hinged locking door panels of base cabinet on patron side.
    #118B: Provide eight (8) equal width hinged locking door panels of base cabinet on patron side.
17. Provide storage compartments with base and intermediate shelf where equipment on counter top does not project into base compartment. Provide utility compartments where equipment on counter top projects into base compartment; omit base and intermediate shelves.
18. Provide clearance in base and reinforce top for #133 Ice/Soda Dispenser. Coordinate location and if required for clearance, provide cut out in base shelf if for soda conduit stub-up. Cap conduit.
19. Coordinate and provide cut outs in base shelf for access to drain fixtures.
20. Mount one (1) cup dispenser #130.2 on rear wall of each counter.
21. Provide angled door top to serve as a finger reveal the length of the top of each door, with top of doors set at 33.82" AFF with ¾" between the top of door and counter top edge turn down. See Professional drawings for detail for finder pull.

22. Provide Blum hinges on cabinet doors and access panels with magnetic catches.

23. Provide flush door locks at upper right of each pair of storage and utility compartment doors.

24. Clad vertical counter and all exposed faces, ends and edges of counter on patron side. See GEN-G-104 by Professional.

25. Provide space in counter base for electrical outlet mounting of electrical outlets and switches to serve #133, 134, 131, 46.1, 146.

26. Continuous piece 'fully enclosed base' style construction with utility chase within counter.
27. All electrical conduit and plumbing to be located within utility chase as required. Utility chase to be fully accessible from operator side of counter with electrical and plumbing to be located removable stainless steel panels.
28. Fully welded angle iron frame utilizing 1.5" x 1.5" x 1/8" galvanized angle. Welds to be ground smooth and sprayed with silver enamel paint.

29. Angle iron to be framed around each cutout for drop-in-equipment.

30. Angle iron to run front-to-back and at each mullion.

31. 1/2" sound deadening tape to be applied to top of angle iron frame prior to installation of countertop.

32. All stainless steel fabrication to be fully welded. Butt or knuckle joints will not be accepted.

33. Stone tops must be arranged for a consistent appearance. All radius edges of turn down to have a minimum 3/8" #8 finish.

34. Stainless steel internal shelving compartments shall be fully enclosed on back, sides, and top. All internal stainless steel fabrication to be fully welded.

35. All electrical to be interconnected to load center. Electrical to be located in electrical conduit pipe, flex conduit to be kept to a minimum. Exposed flex conduit will not be accepted.

36. All electrical to be interconnected to load center concealed behind hinged door. All wiring to be numbered at all junctions, per circuit. Wiring diagram to be provided at each load center door. All receptacles and controls mounted in the counter to be labeled with engraved labels.

37. Plumbing compartments: Plumbing lines are to be 3/4" copper. All copper lines to be coated to protect from corrosion. Unions to utilize compression fittings, no soldering is permissible. Manifolded drains lead to single 3/4" turn ball valve mounted in full stainless steel housing. Drain valve to be located on operator side for ease of access.

38. Custom control panel containing remote mounted controls for drop-in equipment (i.e. hot food wells, cold pans, etc.), custom Duke labeling and switches.

39. Duke to provide installation and coordination services. Installation and coordination services to include delivery, uncrating & setting in place, completion of all required field welds and joints, completing all final assembly, leveling, and start up. This includes all necessary site visits prior to and during fabrication including site visits for field dimensions.

40. Three (3) BK Resources WL-3848-WLK3 water connector hose.
41. Counter top holes with black grommets as required for all exposed power, drain and water lines.
42. Shop drawing required

ITEM #128.1 ISLAND BEVERAGE COUNTER W/ LOAD CENTER

Quantity: One (1)
Manufacturer: Duke/Countercraft
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: CUSTOM
Remarks:

See HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.05, 1.05.1, 1.06, 4.01.3, 4.01.5, 4.32, 4.40; Duke details govern when deviation.

1. See Countercraft drawing #CC-4
2. 18'-8"+/-L x 6'-2"+/-W x 36"H; field verify clearances prior to fabrication
3. Synthetic stone top; see GEN-G-104 by Professional.
4. Plastic laminate clad vertical cladding; color by Professional.
5. Two (2) isolated 4-sided s/s trash enclosure (base is @floor level) with hinged s/s cut-off door on server side.
6. Refer to Professional drawings for finishes
7. Installation by Duke
8. Follow Professional finish schedule for food grade sealant color.
9. Finished ends.
10. Provide top of ½" synthetic stone; see GEN-G-104 by Professional.
11. Stone top with 5"H eased exposed edge.
12. Toe kick shall be 4" H and set back 3-1/2" from face of the counter.
13. Provide magnetic numbered s/s toe kicks on long axis clad with matte black powder coat and held in place with magnets; end toe kicks are fixed.
14. Provide nine (9) equal width hinged locking door panels of base cabinet on both long axis of counter.
15. Provide storage compartments with base and intermediate shelf where equipment on counter top does not project into base compartment. Provide utility compartments where equipment on counter top projects into base compartment; omit base and intermediate shelves.
16. Provide removable base shelf and adjustable intermediate shelves.
17. Provide clearance in base and reinforce top for #133 Ice/Soda Dispenser. Coordinate location and if required for clearance, provide cut out in base shelf if for soda conduit stub-up. Cap conduit.
18. Coordinate and provide cut outs in base shelf for access to drain fixtures.
19. Provide angled door top to serve as a finger reveal the length of the top of each door, with top of doors set at 33.82" AFF with ¾" between the top of door and counter top edge turn down. See Professional drawings for door pull detail.
20. Provide space on counter for two (2) #130.1 Cup Dispenser.
21. Provide Blum hinges on cabinet doors and access panels with magnetic catches.

22. Provide flush door locks at upper right of each pair of storage and utility compartment doors.

23. Clad vertical counter and all exposed faces, ends and edges of counter on patron side cladding; see GEN-G-104 finish schedule by Professional.

24. Integrate #129, 130, 133, 147. Provide infrastructure and clearance for #40, 42, 45, 46.1, 116, 131, 134
25. Continuous piece 'fully enclosed base' style construction with utility chase within counter.
26. All electrical conduit and plumbing to be located within utility chase as required. Utility chase to be fully accessible from operator side of counter with electrical and plumbing to be located removable stainless steel panels.
27. Fully welded angle iron frame utilizing 1.5" x 1.5" x 1/8" galvanized angle. Welds to be ground smooth and sprayed with silver enamel paint. Angle Iron to be framed around each cutout for drop-in-equipment. Angle iron to run front-to-back and at each mullion. 1/2" sound deadening tape to be applied to top of angle iron frame prior to installation of countertop.
28. All stainless steel fabrication to be fully welded. Butt or knuckle joints will not be accepted.
29. Stone tops must be arranged for a consistent appearance. All radius edges of turn down to have a minimum 3/8" #8 finish.
30. Stainless steel internal shelving compartments, fully enclosed back, sides, and top. Removable rear access panels, removable top panel, coved corners All internal stainless steel fabrication to be fully welded.
31. All electrical to be interconnected to load center. Electrical to be located in electrical conduit pipe, flex conduit to be kept to a minimum. Exposed flex conduit will not be accepted. All wiring to be numbered at all junctions, per circuit. Wiring diagram to be provided at each load center door. All receptacles mounted in the counter to be recess mounted and labeled.
32. One (1) lot plumbing and load center compartments. Plumbing lines are to be 3/4" copper. All copper lines to be coated to protect from corrosion. All hot food well drains are to be manifolded with unions for ease of maintenance. Unions to utilize compression fittings, no soldering is permissible. Manifolded drains lead to single 3/4" turn ball valve mounted in full stainless steel housing. Drain valve to be located on operator side for ease of access.
33. Custom control panel containing remote mounted controls for drop-in equipment (i.e. hot food wells, cold pans, etc), custom Duke labeling and switches
34. Duke to provide installation and coordination services. Installation and coordination services to include delivery, uncrating & setting in place, completion of all required field welds and joints, completing all final assembly, leveling, and start up. This includes all necessary site visits prior to and during fabrication including site visits for field dimensions.
35. Provide thermal breaks in top for all cold and hot equipment penetrations in top.
43. Six (6) BK Resources WL-3848-WLK3 water connector hose.
44. Counter top holes with black grommets as required for all exposed power, drain and water lines.
36. Shop drawing required

ITEM #129 DROP-IN DRIP TRAY

Quantity: Four (4)
Manufacturer: Advance Tabco
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: DP-1842
Remarks:

1. Model DP-1842 Drain pan, countertop, drop-in style, 18" x 42", 16 gauge 300 series stainless steel, with removable perforated stainless steel drip tray, 1/2" NPT drain

ITEM #130 CUP DISPENSER

Quantity: One (1)
Manufacturer: Antunes
Alternate MFG. #1: Vollrath
Alternate MFG. #2: Dispense-rite
Model: LS-20
Remarks:

1. Model LS-20 Cup Dispenser, counter style, 15”L x 24”W x 21.5”H, accommodates two (2) 8 oz to 64 oz, includes: s/s, adjustable gaskets, black, NSF, Made in USA
2. Three caddy compartments
3. Contractor to issue RFI to the Department to confirm cup size.
4. Set on counter #153.

ITEM #130.1 CUP DISPENSER

Quantity: Two (2)
Manufacturer: Antunes
Alternate MFG. #1: Vollrath
Alternate MFG. #2: Dispense-rite
Model: DACS-20
Remarks:

1. Model DACS-20 Cup Dispenser, counter top style, 9.25” dia. x 24”D, accommodates cup rim diameters 2-3/4" – 4-1/4”, includes: (2) adjustable gaskets, black, NSF, Made in USA
2. Contractor to issue RFI to the Department to confirm cup size.
3. Set on counter #128.1

ITEM #130.2 CUP DISPENSER

Quantity: Two (2)
Manufacturer: Antunes
Alternate MFG. #1: Vollrath
Alternate MFG. #2: Dispense-rite
Model: DAC-10
Remarks:

1. Model DAC-10 Cup Dispenser, wall mount, 5” dia. x 22.75”D, accommodates cup rim diameters 2-3/4" – 4-1/4”, includes: (1) adjustable gasket, black, NSF, Made in USA
2. Mounting bracket
3. Contractor to issue RFI to the Department to confirm cup size.
4. Mount on wall behind #128 Beverage Counter

Quantity: Two (2)
Manufacturer: Antunes
Alternate MFG. #1: Vollrath
Alternate MFG. #2: Dispense-rite
Model: DACS-30
Remarks:

1. Model DACS-30 Cup Dispenser, counter style, 9.25”L x 24”W x 29.75”H, accommodates three (3) 8 oz to 64 oz, includes: s/s, adjustable gaskets, black, NSF, Made in USA
2. Set on counter #128
3. Contractor to issue RFI to the Department to confirm cup size.

ITEM #131 JUICE DISPENSER

Quantity: Four (4)
Manufacturer: BUNN
Model: 37300.0000
Remarks: BY VENDOR

1. Model 37300.0000 37300.0000 JDF-4S Silver Series® 4-Flavor Cold Beverage System, (3) 12 oz. drinks/min capacity, 2-modular dispense decks, 18 lb. ice bank, 7" cup clearance, dispense 1.0 to 1.5 ounces per second flow rate, pumps & mixes 2+1 to 11+1 concentrated beverages, 4+1 high viscosity & 5+1 juices, dispenses frozen and ambient products, High Intensity™ mixing technology, push button and portion control, door lock, juice display, 120v/60/1-ph, 6 amps, NEMA 5-15P, NSF, ETL

ITEM #132 SPARE NO.

ITEM #133 ICE & BEVERAGE DISPENSER

Quantity: Four (4)
Manufacturer: Multiplex
Alternate MFG. #1: Cornelius
Alternate MFG. #2: Lancer
Model: 2706100
Remarks:

1. Model 2706100 MDH-302 Ice & Beverage Dispenser, countertop, internal carbonation unit, 300 lbs. ice capacity, (2) ice chutes, (12) Flomatic® 464GP sanitary lever valves, 12" lighted merchandiser with "Quench Your Thirst" graphics, drain kit, 120v/60/1-ph, 2.8 amps, cUL, UL, NSF
2. 2 year limited parts & 1 year limited labor warranty
3. See Detail 5.10

ITEM #134 ICE MAKER

Quantity: Four (4)
Manufacturer: Manitowoc
Alternate MFG. #1: Ice-O-Matic
Alternate MFG. #2: Hoshizaki
Model: IYT0750A
Remarks:

1. Model IYT0750A Indigo NXT™ Series Ice Maker, cube-style, air-cooled, self-contained condenser, 30"W x 24"D x 21-1/2"H, production capacity up to 715 lb/24 hours at 70°/50° (575 lb AHRI certified at 90°/70°), easyTouch display with 13 different language options, date/time stamp display, automatic reminder/alert icon, one touch asset information, automatic detection of accessories, continuous operating status, programmable production options (time, weight, day or night), one touch cleaning with displayed instructions, Alpha-San anti-microbial protection, acoustical ice sensing probe, self-diagnostic technology, DuraTech™ exterior, half-dice size cubes, R410A refrigerant, NSF, cULus, CE, ENERGY STAR®
2. Model WARRANTY-ICE-SC 3 year parts & labor (Machine), 5 year parts & labor (Evaporator), 5 year parts & 3 years labor (Compressor), standard
3. Top air discharge kit
4. 208-230v/60/1-ph, 11.1 amps

ITEM #135 SPARE NO.

ITEM #136 SPARE NO.

ITEM #137 SALAD/TOPPINGS ISLAND W/ LOAD CENTER

Quantity: One (1)
Manufacturer: Duke/Countercraft
Model: CUSTOM
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Remarks:
See HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.05, 1.05.1, 1.06, 4.01.3, 4.01.5, 4.32, 4.40; Duke details govern when deviation.

1. See Countercraft drawing #CC-3
2. 21’-5-3/16” +/-L x 4’-9” W x 36” H; Field verify clearances prior to fabrication
3. Silestone top; color by Professional.
4. Plastic laminate clad vertical cladding; color by Professional.
5. Refer to quote # CCXX
6. Finished ends.
7. Provide top of ½” synthetic stone; see GEN-G-104 by Professional.
8. Stone top with 5”H eased exposed edge.
9. Toe kick shall be 4” H and set back 3-1/2” from face of the counter.
10. Provide magnetic numbered s/s toe kicks on long axis clad with matte black powder coat and held in place with magnets; end toe kicks are fixed.

11. Provide ten (10) equal width hinged door panels of base cabinet on either side; no visible gap at top and bottom of door panels.

12. Provide storage compartments with base and intermediate shelf where equipment on counter top does not project into base compartment. Provide utility compartments where equipment on counter top projects into base compartment; omit base and intermediate shelves.

13. Provide removable base shelf and adjustable intermediate shelves.

14. Integrate food guards, with engraved on/off switches for lights. Food shields shipped to Duke and installed in counters by Duke. Under-mount #139 food guards with thin black post trim at counter top penetrations.

15. Coordinate and provide cut outs in base shelf for access to drain fixtures.

16. Provide angled door top to serve as a finger reveal the length of the top of each door, with top of doors set at 33.82” AFF with ¾” between the top of door and counter top edge turn down.

17. Provide Blum hinges on cabinet doors and access panels with magnetic catches.

18. Provide flush door locks at upper right of each pair of storage and utility compartment doors.

19. Clad vertical counter and all exposed faces, ends and edges of counter on patron side with cladding; see GEN-G-104 by Professional.

20. Integrate #138, 139, 140, 147. Provide infrastructure and clearance for #144
21. Continuous piece ‘fully enclosed base’ style construction.

22. All electrical conduit and plumbing to be located within utility chase as required. Utility chase to be fully accessible from operator side of counter with electrical and plumbing to be located removable stainless steel panels.
23. Fully welded angle iron frame utilizing 1.5” x 1.5” x 1/8” galvanized angle. Welds to be ground smooth and sprayed with silver enamel paint. Angle Iron to be framed around each cutout for drop-in-equipment. Angle iron to run front-to-back and at each mullion. 1/2” sound deadening tape to be applied to top of angle iron frame prior to installation of countertop.

24. All stainless steel fabrication to be fully welded. Butt or knuckle joints will not be accepted.

25. Stone tops must be arranged for a consistent appearance. All radius edges of turn down to have a minimum 3/8" #8 finish.
26. Stainless steel internal shelving compartments shall be fully enclosed on back, sides, and top. All internal stainless steel fabrication to be fully welded.

27. All electrical to be interconnected to load center. Electrical to be located in electrical conduit pipe, flex conduit to be kept to a minimum. Exposed flex conduit will not be accepted. All wiring to be numbered at all junctions, per circuit. Wiring diagram to be provided at each load center door. All receptacles mounted in the counter to be recess mounted and labeled.
28. One (1) lot plumbing and load center compartments. Plumbing lines are to be 3/4" copper. All copper lines to be coated to protect from corrosion. All hot food well drains are to be manifolded with unions for ease of maintenance. Unions to utilize compression fittings, no soldering is permissible. Manifolded drains lead to single 3/4" turn ball valve mounted in full stainless steel housing. Drain valve to be located on operator side for ease of access.
29. Custom control panel containing remote mounted controls for drop-in equipment (i.e. hot food wells, cold pans, etc), custom Duke labeling and switches
30. Duke to provide installation and coordination services. Installation and coordination services to include delivery, uncrating & setting in place, completion of all required field welds and joints,

completing all final assembly, leveling, and start up. This includes all necessary site visits prior to and during fabrication including site visits for field dimensions.

31. Provide thermal breaks in top for all cold and hot equipment penetrations in top.
32. Continuous slot toe kick fresh air supply and counter top warm air exhaust ventilation slot.
33. Provide air gap at toe kick and below top in 6” H apron for ventilation in area of #140 Drop-In Cold Wells.
34. Provide space in counter base for electrical outlet mounting of electrical outlets and switches to serve #138, 139,140.
35. Shop drawing required

ITEM #138 DROP-IN TWO-WELL COLD UNIT

Quantity: One (1)
Manufacturer: Delfield
Alternate MFG. #1: Atlas Metal
Alternate MFG. #2: Duke/Countercraft
Model: 8132-EF
Remarks:

1. Model 8132-EF LiquiTec® Drop-In Cool Food Unit, 2-pan size, 4" or 6" deep pans flush with counter top, insulated pan, stainless steel inner liner & top, galvanized outer liner, self-contained Eutectic fluid refrigerated system, 1/4 hp, (30-3/4" x 25" cutout required), cUL, UL, NSF 7
2. 115v/60/1-ph, 7.5 amps, NEMA 5-15P, standard
3. 1 year parts & labor warranty, standard
4. Integral to #137
5. Angled pan, 2" product tilt

ITEM #139 DOUBLE SIDED SALAD FOOD GUARD WITH LIGHTS

Quantity: One (1)
Manufacturer: Premier Metal & Glass
Alternate MFG. #1: BSI
Alternate MFG. #2: Fabricator
Model: TMIR-A
Remarks:
If fabricated, refer to HFS Detail 4.10A
Integral to #137 counter

1. Refer to #137
2. 3/8” Starphire glass
3. Labeled light switch mounted behind door of #137
4. Shop drawing required

ITEM #140 DROP-IN FOUR WELL COLD WELL

Quantity: Three (3)
Manufacturer: Delfield
Alternate MFG. #1: Atlas Metal
Alternate MFG. #2: Duke/Countercraft
Model: N8157-FAP
Remarks:
Integral to #137 counter

1. Model N8157-FAP Drop-In Mechanically Cooled Pan, forced air, 4-pan size, accommodates 4" deep pans, insulated pan, stainless steel inner liner & top, galvanized steel outer liner, includes adapter bars, self-contained refrigeration, R290 refrigerant, 1/2 hp, (55-3/4" x 25-1/2" cutout required), cUL, UL, NSF
2. Model 0460000N 1 year parts & labor warranty, standard
3. Model W00003N 1 year compressor warranty, standard
4. 115v/60/1-ph, 8.9 amps, NEMA 5-15P, standard

ITEM #141 MOBILE CUP DOLLY

Quantity: Six (6)
Manufacturer: Lakeside Manufacturing
Alternate MFG. #1: Advance Tabco
Alternate MFG. #2: Sammons
Model: 450
Remarks:

1. Model 450 Rack Dolly, platform design with push handle, single stack, designed for 20" x 20" racks, stainless steel construction, 200 lb. capacity, (4) 4" swivel casters, Made in USA
2. Casters, 4", all swivel, standard

ITEM #142 SPARE NO.

ITEM #143 DROP-IN SOUP WELL

Quantity: One (1)
Manufacturer: Vollrath
Alternate MFG. #1: Cook Tek
Alternate MFG. #2: (no alternates available)
Model: 741101D
Remarks:
Integral to Staff Dining Area counter; see Professional drawings

1. Model 741101D Mirage® Induction Rethermalizer, drop-in, dry operation, 11 quart, inset with hinged cover, 13-7/8"W x 12-7/16"D x 12-5/16"H, (4) soup presets, stir indicator, locking controls function, LED push button controls, temperature control in °F or °C, cabinet mount controls with leads (6-1/2"W x 3"D x 2-1/2"H), includes: induction ready inset, inset cover, mounting hardware & cord with Nema 5-15P, 800 watt, 6.7 amp, 120v/60/1-ph, cULus, NSF, FCC (cover not NSF)
2. Requires use of included Vollrath induction-ready inset - failure to use these insets may damage the unit & will void the warranty
3. Model 88204NS Inset, 11 quart, induction ready, SteelCoat x3™ non-stick interior, for Mirage induction rethermalizers, NSF

4. Model 47490 Kool-Touch Hinged Cover, stainless with black phenolic knob, fits 78204 Inset & 77110 Double Boiler, imported
5. Model 4980422 Ergo Grip® One-Piece Ladle, equipped with all-natural antimicrobial, 4 oz., stainless steel, 13-1/8" OA length, one-piece construction with black Kool-Touch™ offset handle, shorter overall length for easy serving under low profile breath guards, integrated handle stopper prevents ladle from sliding into containers, Jacob's Pride® Collection, Limited Lifetime Warranty
6. Model 47492 Decorative Ring, for 11 qt. induction soup drop in units, 22 gauge stainless steel

ITEM #144 FLATWARE HOLDER

Quantity: Two (2)
Manufacturer: Dispense-Rite
Alternate MFG. #1: Alegacy
Alternate MFG. #2: Caddy
Model: CTSH-6BT
Remarks:

1. Model CTSH-6BT Silverware Organizer, 13"H x 10-1/8"W x 15-3/8"D, countertop, with inserts, (6) compartment, polystyrene, black
2. 1 year limited warranty, standard

ITEM #145 MOBILE SOAK SINK

Quantity: One (1)
Manufacturer: Aeroworks Manufacturing
Alternate MFG. #1: Advance
Alternate MFG. #2: Eagle
Model: SS2323
Remarks:

1. Model CUSTOM See Aeroworks drawing #P211581
2. Provide one (1) Mobile Soak Sink where shown on plan.
3. Unit shall measure 23” x 23” x 24” high x 8” deep sink and shall be mounted on 1-5/8” Ø stainless steel legs and 5” heavy-duty casters.
4. Sink shall be formed of 14 ga. stainless steel with all corners coved to 5/8” radius.
5. Provide boxed edge on all top edges and lever-operated 1-1/2” waste with open drain.

ITEM #146 COUNTERTOP REFRIGERATOR

Quantity: Seven (7)
Manufacturer: Excellence
Alternate MFG. #1: (no alternates available)
Alternate MFG. #2: (no alternates available)
Model: EMM-4HC
Remarks:

1. 4”H legs
2. Door hinging per plan

ITEM #147 DROP-IN UTILITY SINK

Quantity: Five (5)
Manufacturer: Advance
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: DI-1-255 CUSTOM
Remarks:

1. Drop in #138
2. 9”L x 9”W x 10”D
3. Basket drain
4. Fisher gooseneck faucet #53872 with all stainless steel construction with zero lead content and Fisher 5 year warranty against defects in materials or workmanship
5. Shop drawing required

ITEM #148 EXHAUST HOOD

Quantity: One (1)
Basis of Design: Halton KVE, Halton Drawing #U21-689_R1
Remarks:
(Performance specifications for all manufacturers)
See HFS Detail 6.10 S/s Wall Panel and Gasket

Features:
1. #101 Exhaust hood remote control switch
2. Dimensions:
   a. 148” L x 63” W x 24” H;
3. Air Flows:
   a. 1571 Exhaust CFM, 12” x 11” duct collar, 0.22” S.P.
4. Weight:
   a. Exhaust- 320 lbs.
5. LIR2 Sensor, relay box in each section
6. 18 gauge s/s construction
7. Use of Capture Walls to create a seal between cooking equipment and wall shall not be used as they require cooking equipment to be located further from wall reducing isle space.
8. Chamfered front shall not be allowed as they reduce front overhang and jeopardize capture and containment over tall cooking equipment.
9. T.A.B. ports in each air screen supply and exhaust plenum section for balancing
10. Continuous hanging channels front and rear; structural engineer to verify local requirements. Hanging requirements are the responsibility of the installing contractor; local codes must be followed
11. Grease cup in exhaust hood section
12. Mount hood @ 78” AFF
13. N/A
14. Two (2) Culinary LED lights; Light switch mounted on #148 exhaust hood section
15. S/s wall panel from floor cove to underside of hood, full length of hood per HFS Detail 6.10
16. Variable speed dampers with access panels in each exhaust duct collar

17. Finished ceiling height in kitchen is: Maximum 18” high 16 gauge s/s enclosure panels field installed; coordinate with mechanical engineer and Professional
18. Exhaust hood listed for 0” clearance
19. Variable speed fan controllers and 6”H ETL 18 gauge s/s automatic balancing dampers w/ 1” wide flanged inlet and outlet connection (sleeved connection which will cause damper blades to bind are not permitted), manual adjustment device, Belimo actuator. Connections to meet NFPA96 requirements.
20. Grease sensor in main duct; perimeter auxiliary air curtain fan in each hood section with pressure transducer, SCR and access panel
21. Piranha pre-piped s/s manifold and s/s or chrome plated drops and fittings
22. BacNet control interface to BMS; Mechanical Engineer to verify language
23. Perimeter air curtain air supply to be via room; see Mechanical drawings
24. Two (2) 20”L x 13”H grease extractors; provide UL1046 approved file # ; Effective area = 1.25 sf per full extractor and 0.75 SF per half extractor; Extraction of contaminants from the exhaust air is provided by the multi-cyclone grease extractors. Efficient grease extraction is achieved by forcing the exhaust air to spiral continuously in the same direction in the multiple chambers of the extractor, thus separating the grease particles from the air flow centrifugally. High extraction efficiency and low pressure loss over the filter remain practically constant.
25. Include grease filtration performance data (micron size versus extraction efficiency) and air flow calculations based on the convective heat load of cooking equipment beneath the hood.
26. Efficiency comparison data to be performed in accordance with the most current ASTM standard F1704 and include results for the required capture and containment exhaust air flow in accordance with the “Test method to determine the threshold of capture and containment”. Data must include thermal imaging results validating conformance to ASTM F1704 and supply air temperature of 74’F. Make-up air will be calculated so that the same amount of air will be taken from the zone as is required by the specified system. An additional load cannot be placed on the kitchen HVAC system.
27. Provide a written guarantee of performance, ensuring the specifying manufacturer’s engineer that the system will perform to the engineer’s satisfaction when installed and balanced according to design air flows and results of ASTM standard F1704 test (as determined by TAB ports and pressure versus air flow curves). Professional reserves the right to reject any system which, when installed, does not provide capture and containment at the threshold flow rate determined in ASTM F1704. Rejected system must be replaced with the specified system, with all replacement costs paid by manufacturer of rejected system. Any changes in the specified sizing of power wiring, fan size, horsepower requirements, or gas lines due to the use of any system other than which is specified is the responsibility of the alternate hood manufacturer, and must be coordinated by the hood manufacturer and the contractors involved.
28. Extractor removal tool
29. Submit independent certification of hood construction and design per NFPA 96 and UL710 standard
30. Submit independent certification of Hood construction and design per NSF and ETL listed
31. Submit published third-party certified independent lab test and certification of extractors and hood construction and design
32. Installation by qualified persons and in accordance with state and local building code requirements
33. The installation shall be in accordance with NFPA 96, Removal of Smoke and Grease-Laden Vapors From Commercial Cooking Equipment
34. All exhaust ductwork and transitions are to be provided and installed by the Mechanical Contractor
35. Clearance from hood and ducts to combustible material shall per applicable building codes

36. For proper operation of the hood system, it is the responsibility of the General Contractor to have the hood balanced and tested to ensure that the exhaust and supply requirements of the hood are met.
37. Perimeter air curtain fan with air jets improve capture and containment of heat and grease emissions. Leave air space above and around the three air curtain fans intake cover on top of the hood.
38. Provide minimum of 2” clearance on the top and sides of the perforated air curtain fan intake cover to allow unimpeded entrance of air into the air curtain fans.
39. Provide approved shop drawings to appropriate trades referencing utility service and coordinate final connection.
40. Deliver, assemble and install system per approved system shop drawing.
41. Furnish wiring and plumbing diagrams to end use
42. Shop drawing required of air curtain fan schematic wiring, exhaust volume air damper schedule and installation notes;
43. Note: all field wiring and connection points are based on manufacturer’s requirements at the time of design and are subject to change due to electrical component(s) update or obsolescence. Contractor to verify and request current electrical diagrams at time of preparation of shop drawings and make changes to wiring as required.
44. Note: maximum length of cables between any controllers (control panel, hoods etc.) in series is 328 feet. If greater length is needed between controllers, in in-line Ethernet booster must be specified and used.
45. Electrical Contractor to supply and run 7 wire STP plenum-rated cable (9 wire STP cable if VFD is provided with bypass) from Exhaust Hood Control Panel to exhaust fan(s).
46. Shop drawing required

ITEM #149 MOBILE 4-BURNER RANGE

Quantity: One (1)
Manufacturer: Vulcan
Alternate MFG. #1: Montague
Alternate MFG. #2: Jade
Model: EMM-4HC
Remarks: V4B36B

1. T&S Brass quick disconnect model HG-2D-36K
2. Rear 3/4” gas connection’ and cover front manifold
3. Polyurethane casters, two w/brakes
4. Cabinet base
5. S/s finish on exterior
6. Finished back
7. 34”H back riser

ITEM #150 S/S WALL PANEL WITH GASKET

Quantity: One (1)
Manufacturer: Halton
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (No alternates available)

Model: HOPKINS WALL PANEL
Remarks:
If fabricated, refer to HFS Detail 6.10

1. Wall panel to match length of Item 148, Kitchen Exhaust Hood; Installation by GC with high temperature silicone and without screws or exposed fasteners
2. 18 gauge type 304 s/s; Lengths over 8 feet shall have a hemmed edge between sheets
3. Provide cantilevered flange @ 45° down from wall, to cover area behind equipment to the wall above utility connections
4. 6" deep horizontal
5. Turn down front edge and hem edge underneath
6. Hang at 45" A.F.F.
7. Flange runs full length of wall panel
8. Shop drawing required

ITEM #152 DROP-IN DRIP TRAY

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: DP-1842
Remarks:

1. Model DP-1824 Drain pan, countertop, drop-in style, 18" x 24", 16 gauge 300 series stainless steel, with removable perforated stainless steel drip tray, 1/2" NPT drain

ITEM #153 BEVERAGE COUNTER

Quantity: One (1)
Manufacturer: Duke/Countercraft
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: CUSTOM
Remarks:
See HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.05, 1.05.1, 1.06, 4.01.3, 4.01.5, 4.32, 4.40; Duke details govern when deviation.

1. See Countercraft drawing #CC 6
2. 8’-4” +/- L x 3’-0”+/- W x 36” H; field verify clearances prior to fabrication
3. Synthetic stone top; see GEN-G-104 finish schedule color by Professional.
4. 4”H splash @ rear, left and right end wall.
5. Plastic laminate clad vertical cladding; see GEN-G-104 finish schedule by Professional.
6. Isolated 4-sided s/s trash enclosure (base is @floor level) with hinged s/s cut-off door on server side with bezel in counter top.
7. Magnetic numbered removable kick plates on patron side; fixed kick plates on exposed end
8. Installation by Duke
9. Scribe toe kick to toe base on left and right building walls to maintain 1” set back from walls.

10. Seal splash to counter top; follow Professional finish schedule for food grade sealant color.
11. Finished left end.
12. Provide top of ½" synthetic stone; see GEN-G-104 finish schedule by Professional.
13. Stone top with eased exposed edge.
14. Toe kick shall be 4" H and set back 3-1/2" from face of the counter. Scribe toe kick to line curve of wall cove base.
15. Provide magnetic numbered s/s toe kicks on long axis clad with matte black powder coat and held in place with magnets; end toe kicks are fixed.
16. Provide six (6) equal width hinged locking door panels of base cabinet on patron side.
17. Provide storage compartments with base and intermediate shelf where equipment on counter top does not project into base compartment. Provide utility compartments where equipment on counter top projects into base compartment; omit base and intermediate shelves.
18. Coordinate and provide cut outs in base shelf for access to drain fixtures.
19. Provide angled door top to serve as a finger reveal the length of the top of each door, with top of doors set at 33.82" AFF with ¾" between the top of door and counter top edge turn down. See Professional drawings for door pull detail.
20. Provide Blum hinges on cabinet doors and access panels with magnetic catches.
21. Provide space on counter for one (1) #130 Cup Dispenser.
22. Provide flush door locks at upper right of each pair of storage and utility compartment doors.
23. Clad vertical counter and all exposed faces, ends and edges of counter on patron side; see GEN-G-104 finish schedule by Professional.
24. Continuous piece 'fully enclosed base' style construction with utility chase within counter.
25. All electrical conduit and plumbing to be located within utility chase as required. Utility chase to be fully accessible from operator side of counter with electrical and plumbing to be located removable stainless steel panels.
26. Fully welded angle iron frame utilizing 1.5" x 1.5" x 1/8" galvanized angle. Welds to be ground smooth and sprayed with silver enamel paint.
27. Angle iron to be framed around each cutout for drop-in-equipment.
28. Angle iron to run front-to-back and at each mullion.
29. 1/2" sound deadening tape to be applied to top of angle iron frame prior to installation of countertop.
30. All stainless steel fabrication to be fully welded. Butt or knuckle joints will not be accepted.
31. Stone tops must be arranged for a consistent appearance. All radius edges of turn down to have a minimum 3/8" #8 finish.
32. Stainless steel internal shelving compartments shall be fully enclosed on back, sides, and top. All internal stainless steel fabrication to be fully welded.
33. Duke to provide installation and coordination services. Installation and coordination services to include delivery, uncrating & setting in place, completion of all required field welds and joints,

completing all final assembly, leveling, and start up. This includes all necessary site visits prior to and during fabrication including site visits for field dimensions.

45. One (1) BK Resources WL-3848-WLK3 water connector hose.
46. Counter top holes with black grommets as required for all exposed power, drain and water lines.
34. Shop drawing required

2.2 PERFORMANCE AND DESIGN CRITERIA

A. Performance Criteria:

2.3 BEVERAGE CONDUITS

A. The KEC shall coordinate with the Contractor and Professional for installation of above grade floor slab. The Contractor shall provide and install the conduit below or above grade floor slab. Four (4) runs of 2 inch (50mm) I.D. PVC shall be used where conduit runs below slab in soil or concrete and or aluminum EMT conduit where conduit runs above ground and exposed. Where conduit changes 90 degrees in direction, elbows with minimum radius sweeps are referred with a minimum 24 inch (600mm) radius; multiple smaller I.D. conduits are permitted after coordination with the KEC and if approved by the Professional. Minimize the number of bends. Plumbing style short radius elbows are not acceptable. “Tee” fittings are not acceptable.

1. All joints shall be watertight. A pull box shall be provided every 100 feet (30m) or every three bends, whichever occurs first. Stub up the conduit a minimum of 6 inches (150mm) above the finished floor. The Contractor will provide and install conduit hangars.

2. Contractor shall wrap conduit with electric heat strip when conduit is exposed to below freezing temperatures. Install pull-line in all conduits. Tape conduit ends closed during construction to prevent debris from entering conduit, which may later contaminate or degrade beverage lines. Beverage syrup product lines are furnished and installed in the conduit by the Soda Vendor.

3. After the product lines are installed, the Contractor is to fill open conduit ends flush with polyurethane foam insulation and fit conduit end with PVC or aluminum end cap. The end caps are to be drilled to minimum diameter to accept the appropriate number of product lines.

2.4 DISPENSERS (SELF-LEVELING)

A. KEC to verify make of ware, dimensions, and weight and submit to the dispenser manufacturer so that units may be properly calibrated and sized as required. Cup dispensers which are self-leveling also require spring weights according to style of cup customer uses. Coordinate with operator and manufacturer.

2.5 FIRE SUPPRESSION

A. General: Provide surface, hood, and duct fire suppression system as required for compliance with NFPA guidelines and local codes and ordinances. Include certification of compliance by a manufacturer's licensed installer. System(s) shall be complete, including, but not limited to, requirements of the following:

B. Furnish & Connect Fire Suppression System: Furnish fire suppression system piping and detector and install in ventilator or hood. Include with submittal a certification of compliance with NFPA Bulletins 13, 17, 17A, 96, and UL300, Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment by a manufacturer's licensed installer.

C. All exposed piping, brackets, fasteners, etc. shall be chrome plated or sleeved with chrome sleeves. Piping shall be installed unexposed where possible. Coordinate with Work of other trades to enable concealing piping in a timely manner.

D. The mechanical gas fuel shut off valve sized as required shall be provided to the Gas System Contractor for installation in a timely manner by the Fire Suppression Contractor.

E. The Fire Suppression Contractor's fire suppression system cabinet shall include the electric control switch at system control head with normally open contacts and terminals for interconnection to building fire annunciator panel, shunt trip breaker control, as specified under the Electrical Section, and/or other Sections, as specified.

F. The fire extinguishing agent shall be manually released in the vicinity of the cooking equipment as required by NFPA 96.The fire suppression cabinet shall be located to be readily accessible for maintenance.

G. Agent piping and detection devices may be partially built into hood or ventilator at hood manufacturer's factory and assembled in the field by Fire Suppression Contractor contracted by the ventilator manufacturer.

H. All exposed conduit and fittings shall be chrome sleeved or s/s. Pull stations shall be flush mounted into partitions so junction box is not exposed. Stations shall not be located in crash zone of walkways. Locate pull stations on Fire Suppression Submittal for approval.

2.6 EXHAUST HOODS

A. Size and Location: KEC shall verify size and location of all duct connections required in this Contract before fabrication.

B. Duct Collars: Provide stainless steel formed duct collars at ceiling or wall duct connections, where exposed to worker or public view. Provide galvanized or black iron material where not exposed as specified by the Mechanical Drawings.Exposed Ducts: Provide all exposed ducts to walls or ceiling in stainless steel.

C. Verify Conditions: Verify all buildings conditions prior to fabrication or purchase.

D. Filters/Cartridges: Provide stainless steel removable baffle type filters or cartridges on conventional hoods. Filters/Cartridges shall be manufactured of Type 304, 18-8 stainless steel. Provide performance data on filters with submittals.

E. All multiple hood systems tied to one fan assembly shall be provided with balancing dampers. Dampers may be preinstalled in the exhaust plenum or shipped loose for field installation.

F. Stainless Steel Wall Panels: Provide 18 gauge stainless steel sheet behind cooking battery where shown on plan and elevation. Steel shall be extended the full length of the hood, including the fire suppression cabinet, if applicable, to 2 inches (50mm) above the hood line and extend down to the floor. Lengths over 8 feet (2.4m) shall have a hemmed edge between the sheets.

G. Condensate Gutter: Hood shall be fabricated so as to form a condensate gutter 3 inch (75mm) wide by 1 inch (25mm) high at perimeter and shall be provided with a condensate drain terminating at a floor sink location

2.7 INSERT PANS & TOPS

A. All cut-outs, openings, drawers, or equipment specified, sized or detailed to hold stainless steel insert pans shall be provided with a full complement of pans.

B. Pan size to be as follows:

1. One (1) stainless steel, 20 gauge minimum, solid insert pan and top for each space, sized per plans, details, or specifications.

2. Where pan and top sizes are not indicated in plans, details, or specifications, provide one pan and top sized for the size of the pan holder for each opening.

3. Provide maximum depth pan to suit application and space.

4. Provide 18 gauge removable stainless steel adapter bars where applicable.

5. All shallow cold pans shall be provided with 1 inch (25mm) perforated false bottoms when specified. All deep cold pans shall be provided with both 1 inch (25mm) and 7-1/2 inch (190mm) perforated false bottoms when specified unless established by the KEC with the Professional. Combination hot/cold pans shall be provided with 1 inch (25mm) perforated false bottoms when specified.

2.8 QUIETNESS OF OPERATIONS

A. Quietness of operation of food service and related equipment is a requirement. Remove or repair any equipment producing objectionable noise or vibration as determined by the Professional. This also includes providing and installing bumpers and/or gaskets for doors/drawers on fabricated and/or standard manufactured items.

2.9 SERVICEABILITY

A. All components of equipment which may require periodic service or lubrication as a part of normal operation shall be accessible without the use of tools, disassembling or removing major components of the unit or adjacent units. Louvers and access panels shall be coordinated on items of standard manufacture and custom fabrication to ensure access is provided and maintained as shown on Food Service and Professional Drawings.

2.10 TRAY SLIDES

A. Before fabrication of counters with tray slides or extended tops, verify with the Professional:

1. Configuration of all corners, turns, and shape of tray slides for slides for proper support and safe guidance of trays.

2. Size and shape of tray.

2.11 UTILITY QUICK DISCONNECT DEVICES

A. General:

1. Provide quick disconnect gas connector assemblies for the connection of movable or castered equipment as listed in the Item Specifications.

2. Provide for mobile or portable equipment, assemblies to match equipment inlet size, and of a length to permit equipment movement for disconnect access and cleaning. KEC to indicate and coordinate wall backing locations for restraining device of quick disconnect devices.

3. Gas:

   a. Provide T&S Safe-T-Link HG series with K model installation kit for gas equipment. Assure installation per manufacturer's direction and sized according to BTU requirements of equipment.Provide quick disconnect gas connector assembly consisting of hydro formed #321 stainless steel corrugated tubing, constant 360^{O} rotating brass quick disconnect couplings with restraining cable, gas ball valve, Type 304 stainless steel hose and braid connector with extruded yellow flexible plastic coating, all necessary fittings and related appurtenances required for the proper operation of the assembly. Assemblies shall be NSF, NFPA, and AGA certified and comply with applicable ANSI Z21.69, AGA, CGA, and NSF standard.

4. Water:

   a. Provide T&S Safe-T-Link HW series for cold water services; counter top beverage equipment shall use T&S CW series fitting sized to equipment inlet with AW quick disconnect.

   b. Provide a master faucet repair kit for each manufacturer of faucet specified.

2.12 WATER FILTERS

A. Provide In Line Filters:

1. Furnish in-line water filters-purifiers to remove materials, taste, and odor for beverage systems, coffee urns, and ice makers as point of use or central point as specified.

2. All equipment manufacturers requiring water filters for extended warranty coverage to be effective, shall be provided with manufacturer specified filter.

3. Everpure is a preferred manufacturer.

4. Cartridges shall be accessible, easily replaceable, and of standard manufacture.

B. Provide Combi Oven Water Filters:

1. Submit a Water Quality Report identifying all the combi oven manufacturer wwater components.

2. Submit Water Quality Report to combi oven manufacturer to request confirmation of specified water filter is sufficient to maintain combi oven warranty. If an alternate water filter is recommended, provide the recommended water filter in lieu of the specified water filter.

2.13 WATER CONDITIONERS

A. For all steam generators, hot water boilers or quick recovery compartment steamers, provide water conditioners by Superior/Kemtune (or approved equal). Cartridges shall be provided by the KEC to the plumber for installation, accessible, easily replaceable, and of standard manufacture.

B. All steamers using packaged boilers up to and including 15 PSI (103 kPa) operating pressure and containing two compartments and one kettle (up to 250,000 BTUs, or 36 KW) shall use the Superior Water Conditioner model RT-500-K (or approved equal).

C. All larger steamer-kettle combinations containing up to three compartments and two kettles (300,000 BTUs, or 48 KW) shall use the Superior Water Conditioner model RT-750-K (or approved equal).

D. On small table top steamers shall use the Superior Water Conditioner model C-50 (or approved equal) when 1/4 inch tubing feeds the boiler and model C-100 on all units with a 3/8 inch feed.

E. See Detail 5.80 for further information.

2.14 FOOD GUARDS

A. Stainless steel tubing shall be 1 inch (25mm) O.D. x minimum .050 wall, square cut shall fit solid stainless steel fittings. Fittings shall be uniformly machined to accept internal welding to tubing inside neck of fitting adjusted to accommodate thickness of final finish combinations. Exposed screws, bolt heads or rivets are not acceptable. Soldered joints on connections of tubing and fittings are not acceptable. Tubing and related metal components shall be finished with NSF listed, high temperature, thermosetting clear 2 ml powder coatings. Surfaces receiving powder coating shall be treated for maximum adhesion and free of all visual defects including fabrication marks. Coated surfaces shall be smooth with no evidence of bubbles, dust, flux or orange peel.

B. All electrical supply conduit to light fixtures shall be concealed and run inside tubular components. Light transformer/ballast shall be concealed in cabinet base. Light fixture ends shall be equipped with uniform cap at each end. Light fixture housings shall be finished to same specifications as tubing. Lamps shall be full range per Section 114000. Lamps and shatterproof covers shall be removable without tools. Light fixtures shall be sized and provided as required to provide a five to one (5-1) ratio of light level at counter height under food guard and area room illumination at counter height.

C. All glass shall be tempered 3/8” thick Starphire, iron-free glass.

D. Frame shall be equipped with welded brackets to support light fixtures, heat lamps and pass shelf.

E. Stainless steel tubing shall be 1 inch (25mm) O.D. x 16 gauge with all joints fully welded, ground smooth and polished. All channels, escutcheon trim, glass channel edging, mounting pins, stops and light fixture cover shall be stainless steel, polished where exposed.

2.15 CUSTOM FABRICATED EQUIPMENT

A. General: All fabrication shall conform to applicable standards of NSF, latest editions and revisions.

B. Workmanship:

1. General: Items of specially fabricated equipment must be, in the judgment of the Professional fabricated by one manufacturer who is acceptable and of consistent high quality, and be suitable for sustained commercial use.

2. Finished in an approved and satisfactory manner.

3. Structurally sound, without rattle, wobble, buckles or warp.

4. Closures: Where ends of fixtures, splash backs, shelves, etc. are open, fill by forming the metal, or welding sections, if necessary, to close entire opening flush to walls or adjoining fixtures.

5. Controls and Switches: Controls and switches should be located out of heat zones, easily accessible, securely mounted, and in locations that preclude accidental contact by employees.

6. Coved Corners: All stainless steel foodservice equipment shall have 1/4 inch (6 mm) or larger radius coves in all horizontal and vertical corners and intersections per NSF standards. Sinks shall have 3/4 inch (20 mm) coves in compartments.

7. Fasteners and Joints:

    a. The following will not be accepted:

        1) Exposed screw or bolt heads; exposed threads, including those which may come in contact during cleaning. Rivets of any type.

        2) Butt joints made by riveting scraps under seams and then filling with solder.

        3) Overlapping materials, including all mitered or filleted corners.

8. Finishing:

    a. Break bends shall be smooth and unblemished.

    b. Sheared edges shall be finished without burrs or sharp projections.

    c. Butt joints shall be close-fitting, maximum 1/32 inch (1mm) gap, requiring no filler.

    d. The grain of polishing shall be consistent.

    e. Fasteners shall generally be of the same material as the materials being fastened. With dissimilar materials, the higher grade prevails. On all sinks and exposed lock nuts on shelves, tables, etc. lock nuts and lock washers shall be stainless steel.

    f. Turn Down Edges: Turn down edges shall be standard, or other NSF approved shape as specified, with corners filleted, ground and polished.

    g. Welding and Soldering:

    h. Materials 18 gauge, or heavier, shall be welded.

i. Welding shall be of the Heliarc method with rod of the same composition as the material being welded.

j. Welds must be complete, ground smooth, and polished to match original finish.

k. Where galvanizing has been burned off, the weld shall be cleared and touched up with high-grade aluminum paint.

l. Spot welding, for other than temporary alignment, is unacceptable.

m. Tack welds shall be a minimum of 1/4 inch (6mm) long and 6 inches (150mm) apart.

n. Soldering is not acceptable as a means of fastening, and is to be used only as a filler.

C. Materials:

1. Aluminum: ASTM B 209 sheet and plate, ASTM B 221 extrusions, 0.40-mil clear anodized finish where exposed, unless otherwise noted.

2. Castings: Shall be corrosion-resisting metal containing not less than 30 percent nickel. All castings shall be rough ground, polished, and buffed to a bright luster and free from pit marks, runs, checks, burrs and other imperfections. In lieu of corrosion-resisting metal castings, die-stamped or cast 18-8 stainless steel will be acceptable.

3. Galvanized Steel:

a. Galvanizing shall be applied to rolled shapes in conformance with ASTM A 123, coating designation G-90, and to sheets in conformance with ASTM A 526, zinc coating designation G-90, chemical treatment, except ASTM A 527 for extensive forming.

b. Galvanized steel sheets shall be cold-rolled, stretcher leveled, bonderized and rerolled to ensure a smooth surface. Framework of galvanized steel shall be of welded construction.

c. Framework constructed of galvanized steel shall be of welded construction.

4. Gaskets:

a. Solid or hollow (not cellular) neoprene or PVC gaskets shall be used, light gray, minimum 40 Shore A hardness, self-adhesive or prepared for either adhesive application or mechanical anchorage.

5. Insulation:

a. For low-temperature applications, such as ice bins, cold pans, or fabricated under counter freezers, use urethane rigid board, foam, or foamed-in-place, not less than 2 inch (50mm) thick, except vertical surfaces of cold pans and ice bins may be 1 inch (25mm) thick. Insulation shall be bonded at joints to prevent condensation on exterior.

b. For normal temperature applications, such as fabricated under counter refrigerators, use urethane material 1 inch thick, bonded at all joints.

c. For heated-type applications, such as warming cabinets, use block-type rock wool, minimum 1 inch (25mm) thick Johns-Manville marinate 36 (or equal), to insulate underside of top.At counter tops, subject to heat from cooking equipment and/or refrigeration compressors, use 1 inch (25mm) thick Johns-Manville Marinite 36, (or equal).

d. All temperature-controlled areas of equipment shall be isolated from adjacent construction. Marinite or other breaker strip material shall be added.

e. For walk-in freezer drain line insulation, provide insulation as made by Rubatex or equal.

6. Plastic Materials and Components: Except for plastic laminate, provide plastic materials and components that comply with NSF 51.

7. Sealant: ASTM C 920; Type S, Grade NS, Class 25, Use NT. Provide sealant that when fully cured and washed meets requirements of Food and Drug Administration Regulation 21 CFR 177.2600 for use in areas where it comes in contact with food. Sealant shall be Dow-Corning #790 or General Electric “Silastic”, (or approved equal).

8. Sheet Steel: ASTM A 569 hot-rolled carbon steel.

9. Stainless Steel:

a. Stainless steel sheets shall conform to ASTM A 240, Type 304 Condition A, 18-8, having a No. 4 finish. A No. 2B finish shall be acceptable on surfaces of equipment not exposed to view of public or workers. All sheets shall be non-magnetic, uniform throughout in color, finish and appearance and free from buckles, waves or surface imperfections.

b. Stainless steel tubing and pipe shall be Type 304, 18-8, having a No. 4 finish, and shall conform to either ASTM A 213 if seamless or ASTM A 36 if welded.

c. Rolled shapes shall be of the cold-rolled type conforming to ASTM A 36.

D. Metal Top Construction:

1. Metal tops shall be 14-gauge stainless steel of one-piece welded construction, including field joints. Secure to a full perimeter 14 gauge galvanized steel channel frame cross-braced not farther than 30 inches (762mm) on center. Fasten top with stud bolts and stainless steel cap nuts with lock washers. Enclose channel ends where exposed. Framing for drain boards and dish tables shall be all stainless steel.

2. Properly designed draw fastening, trim strip, or commercial joint material to suit requirement shall be used only if specified.

3. Coat underside of tops with a minimum 1/8 inch (3mm) thick, NSF approved, hard-drying, sound-deadening, mastic material. Apply by spreading after top has been secured to frame, such that top and frame are covered and sealed.

4. Provide additional bracing under legs of counter-top equipment.

5. Backsplashes shall be integral with top, turned up 4 inch (100mm) and back on a 45 degrees angle for an additional 2 inch (50mm) in height and then down 1 inch (25mm), secured to adjacent walls with "Z" clips, and be fully closed where exposed to view on sides or rear.

E. Shelves:

1. Under Shelves: All under shelves shall be 14-gauge stainless steel. Extend bottom and fixed intermediate shelves forward and turn down at front so as to be flush with front facing of cabinet. Channel adjustable shelves on all four (4) sides, weld corners, and mount on removable stainless steel standards.

2. 2 inch (50mm) Turn Up In Enclosed Bases: In fixtures with enclosed bases, turn up shelves 2 inch (50mm) on back and sides with 1/4 inch (6mm) (minimum) radius and feather slightly to ensure a tight fit to enclosure panels.

3. 2 inch (50mm) Turn Up In Open Bases: In fixtures with open bases, turn up shelves 2 inch (50mm) on back and sides with 1/4 inch (6mm) radius, notch shelves around legs, continuously weld to leg, and polish all welds.

4. Reinforcement: Under shelves exceeding 4 feet 6 inches (7315mm) length to have 14 gauge stainless steel channel reinforcement full length of shelf.

5. Over Shelves: Fixture over shelves shall be 16 gauge stainless steel construction supported by 1-1/4 inch (32mm) O.D. 16 gauge stainless steel tubing, secured to framework. Provide suitable 14-gauge stainless steel support brackets, fully welded to uprights and bolted to shelf. Over shelves exceeding 15 inch (381mm) depth to be reinforced with longitudinal channel.

6. Wall Shelves: Wall Shelves shall be 16-gauge stainless steel, turned up 2 inch (50mm) at rear and inaccessible ends with 16 gauge stainless steel brackets to wall. Provide 2 inch (50mm) spacing all around to facilitate cleaning. Shelf support brackets shall be 14-gauge stainless steel, be triangular, and have a horizontal to vertical ratio of 10/6.

F. Enclosed Cabinet Bases:

1. Bases shall be made of 16 gauge steel sheets reinforced by forming the metal.

2. Ends, partitions, and shelves are stainless steel.

3. Unexposed backs and structural members are galvanized. Vertical ends and partitions is single wall, with a 2 inch (50mm) face.

4. Sides and through partitions are flush with bottom rail, welded at intersections.

5. Shelves are removable, except bottom shelf of cabinet mounted on legs. Maximum shelf depth equals 20 inch (508mm). All shelves are 16-gauge stainless steel.

6. Bottom front rail of bases set on masonry platform shall be continuously open, and framing between each section shall clear platform. Provide sealed base with front rail closure section.

7. Unit supported with channel framework, below. Weld legs to framing.

G. Sinks and Bain Maries:

1. Compartment Partitions: Partitions between compartments shall be double thickness, continuously welded where sheets join at top.

H. Components:

1. Stainless Steel Gusset: Gussets to be Component Hardware A20-0206 (or approved equal) with set screws for securing legs. Fully weld gussets to channels or gusset plates.

2. Stainless Steel Counter Legs: Shall be Component Hardware Al8-0202 (or approved equal).Stainless Steel Adjustable Foot: Shall be Component Hardware A10-0852 Bullet Foot (or approved equal).

3. Drawers: Provide for lift-out type drawer body, one piece 20 inch (508mm) x 20 inch (508mm) by 5 inch (127mm) (or as specified), die stamped of 18 gauge stainless steel, with inside radiused corners. Construct front of double-pan stainless steel, 16-gauge exterior and 16-gauge interior. Provide lock for each drawer. Fasten drawer suspension guides to 18-gauge stainless steel housing suspended from angle framing under fixed top.

4. Legs and Cross Rails:

a. Equipment legs and cross rails shall be 1-5/8 inch (42mm), 16-gauge stainless steel tubing polished to a No. 4 finish.

b. All welds at cross rails shall be continuous and ground smooth. Tack welds not acceptable.

c. Bottom of legs shall be wedged inward and fitted with a stainless steel bullet-type foot with not less than 2 inch (50mm) adjustment.

d. Free-standing legs shall be pegged to floor with 1/4 inch (6mm) stainless steel rod where specified.

e. Where specified, flanged feet to be securely bolted to floor in a waterproof and sanitary manner with two stainless steel bolts.

f. Legs shall be fastened to equipment with gussets, as follows:

1) Sinks: Gusset welded to 14-gauge stainless steel triangular plate, fully welded to underside of sink bowl.

2) Sink drainboards and dishtables welded to stainless steel channels, 14 gauge or heavier, anchored to top with welded studs through slotted holes.

3) Metal top tables: welded to framework.

5. Disher Wells: Disher Wells shown on drawings or specified shall be Kenco Products Corp. Model W-5 with Model F-10 faucet.

6. Casters: Casters shall be stainless steel, heavy-duty type, ball-bearing, solid or disc wheel with polyurethane tire.

   a. Wheels to be 5 inch (127mm) diameter, minimum width of tread 1-3/16 inch (30mm), minimum capacity per caster 250 pounds (113kg).

   b. Solid material wheels to be provided with stainless steel rotating wheel guard.

   c. Shall be sanitary, have sealed wheel and swivel bearings and polished plated finish per NSF.

7. Doors:

   a. Construction:

      1) Shall be solid, heavy-duty type; chrome plated brass or stainless steel.

      2) Door Hardware: Door hardware shall provide for locks of brass, 5-pin cabinet-type lock, two keys per lock and keyed separately when not indicated; master keyed when indicated.

      3) Refrigeration hinges shall be edge mounted, self-closing type.

      4) Door slides shall be equipped with stainless steel slides with minimum load capacity of 100 pounds per pair, and with positive door stop. Provide ball bearing rollers. Hinges shall be stainless steel, continuous type or butt type as indicated.

      5) For hinged doors, provide permanent magnetic catch of sufficient strength to hold door shut.

   b. Adjustable Shelf Support: Provide stainless steel shelf supports, snap-in type, and stainless steel brackets with countersunk mounting hole.

   c. Door Pulls: Pulls on sliding doors shall be Standard-Keil 1262-1014-1283, or equal, stainless steel, with No. 4 finish, recessed rectangular type, with beveled edge frame.

   d. Identification: Doors and hardware shall be identified with manufacturer's name and number so that broken or worn parts may be replaces.

I. Electrical:

1. General:

   a. Confirm Service: Before ordering equipment, confirm with the serving electric utility and all pertinent electrical requirements such as actual voltages available, number of phases and number of wires in the system.

   b. UL Approved: Components and assemblies shall bear the UL label or be approved by the prevailing authority.

   c. Wiring and Labeling: Electrical work for fabricated equipment shall be completely wired by KEC to a junction or pull box, wholly accessible,

mounted on the equipment. Wiring shall be labeled for outlet or item served. Each switch and pilot light on counters shall be labeled with the appliance it serves.

d. Convenience and Power Outlets:

1) Make cutouts and install appropriate boxes or outlets in fabricated fixtures complete with wiring, conduit, outlet, and cover plate.

2) All outlets and plugs shall conform to NEMA standards.

3) All electrical outlets and devices shall be first quality “Specified Grade.”

e. Electric Heating Equipment:

1) Electric and heating equipment shall be so installed as to be readily cleanable or removable for cleaning.

f. Internal Wiring of Fixtures:

1) Scope of Work: Provide internal wiring of electrical devices, built into or forming an integral part of fabricated equipment items. Wiring to be in metal conduit to a pull box tagged for intended use. Refer to Section 16120 for color coding.

2) Dishwashers and Conveyors: Provide dishwashers and conveyors internally wired to junction box or distribution panel as specified, including push button switches, motors, immersion heaters, solenoids, and similar items.

g. Exposed Conduit:

1) Exposed flexible steel conduit on kitchen equipment shall be neoprene-jacketed “Seal-Tite” conduit equal to Anaconda type “UA”, UL approved, complete with approved liquid-tight connectors on each end, designed to provide electrical grounding continuity. Conduit shall be set ¾” (19mm) away from walls or if set against wall, it shall be caulked and sealed.

2) Exposed electrical conduit used in kitchen wet area applications, except for flexible connections, shall be rigid galvanized steel. Thin wall conduit (EMT) will not be permitted for wet areas. Exposed outlet boxes shall be liquid-tight with threaded hubs. Exposed conduit and fittings for electrical and fire suppression systems shall be chrome plated, stainless steel or chrome sleeved.

h. Heated Equipment: All electrically heated equipment shall be wired to a thermostatic control with on/off switch and indicator light.

i. Light Fixtures: Light fixtures specified or detailed as part of exhaust hoods in servery counters or cases of fixtures, light fixtures and lamps shall be provided and installed by KEC. When LED lights are specified, full range 3100k for hot food counters shall be provided and 3400K for cold food counters. All lamps in food service areas shall be equipped with protective devices to guard against lamp breakage and contamination.

j. Refrigerator and Freezer Cabinets: Wiring for fabricated refrigerator and freezer cabinets shall be UL approved, insulated, cable from exterior junction box to internal components within insulation, unless code requires metallic conduit.

1) Conduit shall be electrical metallic tubing, rigid or flexible (Greenfield). For freezer applications, Seal-Tite Flex (or approved equal) shall be used.

2) Internal wiring shall be UL approved, rubber-covered, 600-volt rated conductor except door heaters, which shall be nichrome wire with silicone braided jacket having resistance of 10.4 (30.0) watts per lineal foot (meter).

3) Convenience outlets, lighting receptacles (rubber or porcelain), and door switches shall be mounted in UL approved boxes. Convenience outlets for evaporators shall be twist-lock type. Solid connections as for freezer evaporators shall be made vapor-tight.

k. Refrigerator Lights: Custom fabricated and standard refrigerator units shall be provided with vapor-tight light fixtures, shatterproof lamps and automatic switches. All wiring shall be concealed.

l. Ship in Sections: Each standard item shipped in sections shall be properly connected internally and verified by KEC. For example: exhaust hoods, ovens, dishwashers, conveyors, broilers.

m. Strip and Immersion Heaters: Wiring for built-in strip heaters or immersion-type elements shall be provided as follows:

1) In heat zone, shall have UL approved insulation (250º F, 121º C) and be not less than 300-volt rated mineral-covered with nickel wire.

2) Connection wiring extended in raceway or conduit to junction or pull box shall be not less than 600 volt rated AVA insulation-covered wire, UL approved, (or approved equal).

n. Walk-in Coolers: All wiring for walk-in box lights, switches, heaters, coils, etc. shall be run on the exterior of the box with the shortest possible run inside to the actual connection.

o. Plugs and Cords:

1) Provide cords and plugs in accordance with the specifications and/or the spot connection drawings. Where a receptacle is shown or noted as the connection point, provide a cord and plug of suitable size as required to be furnished by the KEC.

2) Where cords and plugs are required, they shall be provided to comply with NEMA requirements.

p. Starters, Switches and Controls:

1) Furnish all starters, motor controls, remote controls, and transformers as noted in Item Specifications.

2) All switches shall be located out of heat zone.

J. Refrigeration:

1. Additional Guarantee:

a. Refrigeration systems shall include start-up and one-year service and maintenance contract in addition to the regular one-year guarantee as stated in Section 01, plus additional four-year guarantee on compressors from the Date of Substantial Completion. This includes refrigerators, ice cream cabinets, ice makers, freezers, dispensers, or any other refrigerated item.

b. Submit written warranty, signed by manufacturer, agreeing to replace/repair, within warranty period, refrigeration compressors with inadequate and defective materials and workmanship, including leakage, breakage, improper manufacturer assembly, or failure to perform as required, providing manufacturer's instructions for handling, installing, protecting, and maintaining units have been adhered to during warranty period. This warranty shall be in addition to, and not a limitation of, the rights of the Department may have against the KEC under Contract Documents.

K. Cold Pans:

1. Mechanical Cold Pans:

a. All mechanically refrigerated cold pans, refrigerated bases, or similar devices shall have a normally closed liquid line electric solenoid valve installed before the expansion valve and wired to a silent-type toggle switch complete with an "on/off" red neon light indicator and both mounted in a terminal box on a removable access panel. This switch shall be fed by a separate control circuit and shall not be wired into the compressor circuit so that it shall stop the flow of refrigerant to the cold pan and not turn off the compressor. The compressor shall then pump down and turn off through the action of the pressure control.

b. Refrigeration system for cold pans shall be capable of providing a surface temperature of 35º F – 38º F (1.6º C – 3.3º C) when measured one half way between the bottom of the cold pan and the top of the cold pan frame. Entire surface must be refrigerated using pre-manufactured evaporator plates or by soldering 1/2 inch (13mm) O.D. type L refrigeration tubing to outside and pan, maximum 3 inches (150mm) on center in loops or coils. Embed the tubing in thermal mastic and apply waterproof membrane under insulation.

L. Components:

1. All custom refrigeration systems shall be equipped with a refrigerant in-line sight glass.

2. Coils for standard and fabricated refrigerators shall have vinyl plastic coatings, housings and shall be installed in such a manner as to be replaceable. Condensate shall be piped to the exterior of the walk-in to an indirect drain. All exposed piping shall be chrome plated.

3. Standard reach-in refrigerators and freezers for remote refrigeration system shall be complete with thermostatic expansion valves at the evaporator.

4. Thermometers:

   a. Refrigerated compartments, fabricated and standard, shall be fitted with flush dial-type thermometers with chrome-plated bezels.

   b. Thermometers shall be adjustable and shall be calibrated after installation and have an accuracy of 12º F.Thermometer sensing bulbs shall be located in the air stream entering the coil for accurate reading.

5. Hardware:

   a. Refrigerator hardware for standard and fabricated refrigerator compartments shall be heavy-duty components.

   b. Hinges shall be self-closing.

   c. Latches to be magnetic edge-mount-type unless specified or detailed otherwise.

   d. Doors and drawers for reach-in refrigerated compartments, both fabricated and standard, shall be fitted with cylinder locking type latches, and provided with master keys.

   e. Custom fabricated reach-in refrigerator and freezer to have shelving of plastic-coated or stainless steel wire.

   f. Door Stops and Bumpers: Door stops shall be provided and pinned into floor material where door swings may impact other equipment or drain lines as approved by the Professional. Where a floor door stop is not provided, door bumpers shall be affixed to walk-in cooler to protect panel from opening door hardware.

M. Refrigeration Systems:

1. Alarm Systems: High-low temperature alarms as specified, alarms shall be mounted in the walk-in panel 72 inches (1829mm) above Finished Floor.

2. Walk-In Drain Lines: Hard tempered copper, type L line shall be provided and installed by the Plumber from evaporator to exterior of walk-in with a P-trap to the drain. Exposed drain line shall be painted by the Plumber with silver epoxy paint. The Kitchen Equipment Contractor's refrigeration contractor shall provide and install heat tape on freezer drain line. Electrical connection is by the Kitchen Equipment Contractor's refrigeration contractor.

3. Defrost System: An evaporation coil defrost system shall be provided and installed by the specified supplier of the coil on all refrigeration systems designed to operate at an evaporator coil temperature of less than 35º F (1.6º C). Evaporator coil units provided without electric defrost feature shall be installed with a solenoid valve in the liquid line, controlled by the time clock so as to shut off the flow of refrigerant, and allow the compressor to pump down and shut off by activation of the pressure control switch.

4. Furnish Operating System:

a. All refrigeration systems shall be complete, charged, started, and operating properly, including, but not limited to: Condensing units including low ambient controls and weather enclosures as applicable, racks, evaporator coils, vibration eliminators, sight glasses (moisture indicating type), expansion valves, filters, oil separators, thermostats, defrost time clocks, all controls and control wiring, liquid line driers, and piping. Liquid and suction lines and supports shall be provided and installed by the KEC with a minimum of 1/2 inch (13mm) pre-molded foamed plastic insulation, “Armaflex”, (or approved equal) with UV resistant PVC insulation covers where exposed to outdoors.

b. Evaporators furnished under this Section shall be furnished with proper thermal expansion valve (size and refrigerant), thermostat and solenoid valve, internally pre-piped and pre-wired. All piping is to be placed under dry nitrogen pressure of 125 P.S.I.G. and stubbed to outside fixture for a single point connection by Refrigeration Contractor. Thermostat and solenoid valve shall be pre-wired to evaporator fan motor for single point connection by job site electrician. All color-coded freezer defrost control wiring shall be properly connected to evaporator and terminate outside fixture, with each wire being clearly identified.

c. Hard tempered copper, type ACR line is to be provided and installed by the plumbing contractor from evaporator to exterior of walk-in through a P-trap to the drain. Exposed drain line shall be painted by the refrigeration contractor with epoxy silver paint. The Kitchen Equipment Contractor’s refrigeration contractor shall provide and install heat tape on freezer drain line and then insulate freezer drain lines with Rubatex or equal flexible insulation.

d. Leak-Proof and Reclaim Capability: In the interest of protecting our environment, all refrigeration systems under this specification shall be guaranteed leak-proof, including the following criteria:

    1) Refrigerant piping shall be in refrigerant-grade, Type L hard tempered copper tubing, with wrought fittings and as few joints as possible.

    2) All fittings and joints shall be silver-soldered. No flare nuts will be acceptable, including, for example, at expansion valves and coils.

    3) Each system shall be fitted with professional testing/recovery ports suitable for standard portable instrumentation and/or CFC reclamation devices.

e. Manufacturer’s Certificate: KEC to verify and provide to the Professional, Manufacturer’s Certification (or certification by manufacturer’s authorized agent) that “the equipment selection specified for each refrigeration system is properly sized and shall meet the operating requirements, conditions, and locations set forth for each system regarding maintaining specified operating temperature, hours of compressor running time, and system pressures and velocities as recommended by the equipment manufacturer(s)”. Provide any additional components and/or specialties recommended by the manufacturer.

f. Operating Range: Each refrigeration Item Specification is written to provide minimum Specifications and Scope of Work. All refrigeration

equipment shall be designed and installed to maintain the following general temperatures unless otherwise specified.

Type	Refrigerators	Freezers		
Walk-in	35°F	-10°F	(1.6°C	-23.3°C)
Reach-in	35°F	-10°F	(1.6°C	-23.3°C)
Undercounter	35°F	-10°F	(1.6°C	-23.3°C)
Fabricated	35°F	-10°F	(1.6°C	-23.3°C)
Cold-Pans	35°F	0°F	(1.6°C	-17.8°C)

g. Wiring Routing:

1) All refrigeration systems shall be installed and wired in strict conformance with the manufacturer's instructions and recommendations. Wiring for coils, controls, lights, e.g., shall be run outside of the refrigerated compartment wherever possible.

h. Refrigerants: The following refrigerants will not be utilized on this Project: R-22, CFC-11, CFC-12, CFC-3, CFC-113, CFC-114, CFC-115, R134A, R404, R-500, R-503.

5. Ventilation of Refrigeration Equipment:

a. Adequate air supply and exhaust shall be provided for self-contained refrigeration condensing units, both fabricated and standard, as required for proper operation.

b. If, in the opinion of the KEC, additional ventilation is required to ensure correct operating temperatures, KEC shall so state in a letter to the Professional for evaluation and decision before installation.

N. Plumbing:

1. General: All exposed piping in the walk-ins, dish room, kitchen and servery shall be chrome plated, chrome sleeved or stainless steel unless a waiver in writing is obtained from the Professional. Unexposed piping (surfaces behind cabinet doors when doors are open or behind equipment, and piping not visible while standing at any point in the room) shall not be plated, chrome sleeved or stainless steel.

O. Miscellaneous Materials:

1. Installation Accessories, General: NSF certified for end-use application indicated.

2. Elastomeric Joint Sealant: ASTM C 920; [**silicone**] [**urethane**]. Type S (single component), Grade NS (non-sag), Class 25, Use NT (non-traffic) related to exposure, and Use M, G, A, or O as applicable to joint substrates indicated.

3. Public Health and Safety Requirements:

a. Sealant is certified for compliance with NSF standards for end-use application indicated.

b. Washed and cured sealant complies with the FDA's regulations for use in areas that come in contact with food.

4. Cylindrical Sealant Backing: ASTM C 1330, Type C, closed-cell polyethylene, in diameter greater than joint width.

P. Finishes:

1. Stainless-Steel Finishes:

a. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.

b. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.

c. Run grain of directional finishes with long dimension of each piece.

d. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

2. Powder-Coat Finishes: Immediately after cleaning and pre-treating, electrostatically apply manufacturer's standard, baked-polymer, thermosetting powder finish. Comply with resin manufacturer's written instructions for application, baking, and minimum dry film thickness.

2.16 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide 114000 Foodservice Equipment products of the specified quantity of the either the basis of design manufacturer and model listed or the specified quantity of the either the first alternate manufacturer listed or second listed alternate manufacturer and appropriate model and custom modifications deemed by the Professional equal to the basis of design.

B. If after award, a manufacturer and model may be submitted for review according to the requirements of Section 01 and reviewed by the Professional for determination of equality.

C. When an item is noted “performance specification, Contractor shall either submit to the basis of design manufacturer and model or submit for review an alternate manufacturer and model which meets all the listed performance item REMARKS.

D. Products of other manufacturers will be considered by the Professional only if evidence is furnished showing compliance with items of standard manufacturer and specified custom modifications or an item of custom manufacturer showing compliance of the minimum design and performance requirements specified.

2.17 PERFORMANCE AND DESIGN CRITERIA

A. Design Criteria: When an item is as an alternate of Fabricator, or the model of an item of standard manufacture with suffix of CUSTOM, the item shall additionally comply with the design criteria of the referenced custom Details listed.

B. Performance Criteria: When an item is noted “performance specification, Contractor shall either submit to the basis of design manufacturer and model or submit for review an alternate manufacturer and model which meets all the listed performance item REMARKS.

PART 3 - EXECUTION

3.1 GENERAL

A. Manufacturer's Instructions: Provide equipment and install the Work of this Section; including components, accessories in accordance with the manufacturer's instructions, except where more stringent requirements are shown or specified, and where project conditions, require extra precautions or provisions to ensure satisfactory performance of the Work.

3.2 EXAMINATION

A. Verification of Conditions: Examine the areas to receive the Work and the conditions under which the Work would be performed. Remedy conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

B. Supervision and Sequence:

1. KEC shall provide full time, competent on-site installation supervision to accomplish the Work.

2. KEC shall attend on site Project Coordination Meetings with the Professional and Contractor and work with Contractor to accomplish over-all goals of the Project.

3. KEC shall inspect Project prior to start of installation and provide a written list of deficiencies to the Professional and Contractor so as to ensure all corrections may be made prior to start of installation.

4. KEC shall coordinate and schedule setting in place items requiring final connection by others first, and then miscellaneous items later so connections may be accomplished while KEC is on site.

3.3 PREPARATION

A. Cutting, Fitting, and Penetrations:

1. The KEC shall provide all cutting and fitting required on the KEC equipment by other trades to make their work fit. All building penetrations shall be by the Contractor.

2. Should any repairs to food service equipment be required due to neglect of other Contractors, all extra charges must be approved by the Professional and all repairs must be approved, and noted in writing before Work is performed, stipulating the price and by whom the extra expense is to be paid. In case the KEC does not secure such approved extra order, the expense shall be borne by KEC.

3. No cutting, notching, drilling, or altering of any kind shall be done to the building by the KEC.

3.4 ERECTION / INSTALLATION / APPLICATION / USER-DEFINED PROCESS

A. Orientation:

1. All equipment exposed to public view shall be provided and installed, with operating controls facing the working side, not facing the public, unless approved otherwise by the Professional.

B. Install foodservice equipment level and plumb, according to manufacturer's written instructions in all cases, unless noted in item Specifications or Drawings.

1. Connect equipment to utilities.

2. Retain subparagraph below if equipment items will be modified on-site.

3. Provide cutouts in equipment, neatly formed, where required to run service lines through equipment to make final connections.

C. Complete equipment assembly where field assembly is required.

1. Provide closed butt and contact joints that do not require a filler.

2. Grind field welds on stainless-steel equipment until smooth and polish to match adjacent finish.

D. Trimming and Sealing:

1. Any space between equipment and walls, ceilings, floors and adjoining units, not portable, shall be completely sealed against entrance of food particles or vermin by means of trim strips, appropriately welded and finished, or commercial sealant, suitable to the nature of the equipment.

2. Sealant, when not exposed to extreme heat, shall be Food Grade Silicone Sealant in an appropriate color. Sealant shall not span more than 1/4 inch (6mm) and shall be finished smooth and be easily cleanable. Larger voids shall be spanned with s/s trim and fastened and sealed to neighboring surfaces.

3. Ends of hollow sections shall be closed.

4. Enclosed fixtures without legs as specified to be mounted on masonry bases or floor shall be sealed watertight to base or floor.

E. Verify equipment access- and maintenance-clearance requirements of authorities having jurisdiction and of local sanitation and health codes; reflect minimum clearances on Drawings.

F. Install equipment with access and maintenance clearances that comply with manufacturer's written installation instructions and with requirements of authorities having jurisdiction.

G. Install cabinets and similar equipment on bases in a bed of sealant.

H. Install closure-trim strips and similar items requiring fasteners in a bed of sealant.

I. Install joint sealant in joints between equipment and abutting surfaces with continuous joint backing unless otherwise indicated. Produce airtight, watertight, vermin-proof, sanitary joints.

J. Schedule, attend, and coordinate Health Authorities' inspections and requirements.

K. Verify make of ware, dimensions, and weight and submit to the dispenser manufacturer so that units may be properly calibrated and sized as required.

3.5 FIELD QUALITY CONTROL

A. The KEC will coordinate with the Contractor for installation of beverage conduit above grade floor slab.

B. Coordinate delivery of gas fuel shut off valve will be provided to the gas system contractor for installation in a timely manner.

C. Verify size, location and all building conditions of all exhaust hood duct connections required in this Contract prior to fabrication or purchase.

D. Before ordering equipment, KEC shall coordinate with the Electrical Contractor to confirm with the serving electric utility and the Professional, all pertinent electrical requirements such as actual voltages available, number of phases and number of wires in the system. Refer to Section 16120 for color coding.

E. Coordinate foodservice equipment layout and installation with other work, including layout and installation of lighting fixtures, HVAC equipment, and fire-suppression system components.

3.6 SYSTEM STARTUP

A. Ventilator factory technicians, when specified, will be available for onsite coordination with the Contractor and KEC.

B. Coordinate the start-up of food service equipment when lines have been tested, sanitized, balanced and adjusted for pressure, voltage, and similar considerations.

C. Before testing, lubricate each piece of equipment item in accordance with manufacturers' recommendations.

3.7 ADJUSTING

A. Upon completion of the Work repair surfaces that have been permanently stained, marred, or otherwise damaged. Replace Work which is damaged or cannot be adequately cleaned as directed.

B. Adjust equipment as required to produce ready-for-use condition.

C. Restore exposed and semi-exposed finishes to remove abrasions and other damages; polish exposed metal surfaces and touch up painted surfaces.

D. Replace Work that cannot be successfully restored at no cost to the Department.

3.8 CLEANING & PROTECTING

A. Upon completion of the Work, remove unused materials, debris, containers and equipment from the project site. In addition to the initial cleaning procedure required, and not more than two (2) days before occupancy, clean the Work as recommended by the manufacturer.

B. After completion of installation and other major work in food, service areas, remove protective coverings and clean food service equipment internally and externally.

C. Prior to Date of Substantial Completion on food service equipment work, buff exposed stainless steel finishes lightly, using power buffer and polishing rouge or grit of No. 400 or finer.

D. Clean and prepare equipment for operation as specified in Section 01, prior to the Final Acceptance by the Professional.

3.9 CLOSEOUT ACTIVITIES

A. Demonstration:

1. Engage a factory-authorized service representative to train the Department's maintenance personnel to operate foodservice equipment.

   a. Refer to Section 01 requirements.

   b. Food dispensing, processing and cooking equipment shall be demonstrated using edible food provided by the demonstrator.

2. Engage a factory-authorized service representative to train the Department's maintenance personnel to adjust and maintain foodservice equipment.

3.10 PROTECTION

A. Protect the Work during the construction period so that it will be without any indication of use or damage at the time of acceptance.

B. During the progress of the Project, protect equipment against theft and/or damage until Final Acceptance by the Department. All items delivered to the Site prior to Final Acceptance shall be signed for, by the Professional, as delivered.

C. Access to Walk-in Coolers: Pre-fabricated walk-in boxes, on site and installed in advance of the rest of the equipment, are not to be used for general storage by other trades and shall be locked by the KEC before leaving the site. Damaged and/or theft resulting from KEC's failure to secure boxes will be repaired/replaced at KEC's expense. Secure doors open during curing of floors in walk-ins.

3.11 N/A

3.12 N/A

3.13 N/A

3.14 ILLUSTRATIONS

A. Refer to Standard Details for fabrication and installation.

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1.01.1 Edges
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1.05.1 Counter Framework
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2.21.1 Fixture Overshelves

3.00 SINKS AND DISH TABLES

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4.00 CABINETS AND COUNTERS

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5.40 Warewasher Vent Duct
5.60 Electrical Receptacles
5.80 Water Conditioner

6.00 SPECIAL DETAILS

6.03 Floor Trough
6.03.1 Anti-Splash Floor Trough
6.04 Hose Reel Assembly
6.10 S/s Wall Panel with Gasket

3.15 N/A

END OF SECTION

SECTION 114000

FOODSERVICE EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Stipulations:

1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Section 01 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

B. General: Provide 114000 Foodservice Equipment in accordance with requirements of the Contract Documents.

C. Section Includes the Following: Provide labor, materials, and equipment necessary to complete the Work of this Section, including that which is reasonably inferred to provide for the successful completion and operation of the facility, including regulations and rulings of local health authorities or other governing authorities relative to the Work, including but not limited to, the following:

1) Fabricated equipment.

2) Food waste machines.

3) Cooking equipment.

4) Self-contained refrigeration equipment.

5) Walk-in refrigeration equipment.

6) Powered food-preparation equipment.

7) Warewashing equipment.

8) Serving equipment.

9) Utility distribution systems.

10) Uncrating, assembling, rigging setting, leveling, and properly securing fastening devices to walls and floors.

11) Provision of necessary items such as braces, filler pieces and related items according with best approved industry standards.

12) Furnishing, erecting and maintaining staging and scaffolding, including mechanical hoisting equipment, required for the performance of the Kitchen Equipment Contractor’s work.

13) All plumbing, electrical, steam, and general accessories for items specified herein, including, but not limited to: lead-free (zero lead content) faucets, strainers, lever-wastes, tail pieces, control

valves, cords and plugs, and disconnects normally provided as standard accessories to the equipment specified herein. Items shall be furnished to the proper mechanical and electrical trades' final connection of utility services. Each item shall be tagged with the equipment number for easy reference.

14) Additional appurtenances the KEC shall provide are specified in Part 2: Products.

15) Exposed walk-in refrigeration drain lines shall be painted by the refrigeration contractor with silver epoxy paint. All other exposed sanitary and water piping shall be constructed of chrome plated type ACR OR DW hard tempered copper; PVC is not permitted. Gas pipes shall be painted with yellow epoxy paint.

16) The KEC shall submit one (1) approved set of each package of submittals to the Health Department(s) for record.

17) The KEC shall provide one (1) insert pan and adapter bar for each equipment opening designed for insert pans.

b. Fabrication Specification: On all shop-fabricated equipment, the KEC shall provide the exact fabrication methods specified and detailed. If custom fabricated items are submitted and accepted as an alternate to standard manufactured items, these items shall meet the requirements of Part 2 – Products, Article 2.2, Custom Fabrication.

c. Department-Furnished Equipment: Where indicated, the Department will furnish equipment for installation by Contractor.

D. Related Requirements: The following items of Work are not included in the Section and are specified under the following designated Sections/Sections:

1) Section 21, 22, and 23 Sections for supply and exhaust fans; exhaust ductwork; service roughing-ins; hose bibs; vacuum breakers, except for disposer assemblies, soda systems or dispensers, coffee makers, and hose reels which are specified with the equipment as standard accessories; gas pressure regulators, final gas stops, and shut-off valves; plumbing piping and fittings; water stops, shut-off valves and water pressure regulators; atmospheric vents, waste traps and tail pieces; fire-extinguishing systems; installation information for disposer assemblies, soda systems or dispensers, coffee makers, hose reels; trim and other materials required to complete foodservice equipment installation and final connections to the fixtures as specified.

2) Section 23 Section "Commercial-Kitchen Hoods" for coordination of ventilation hoods as specified in 114000.

3) Section 26 Section for connections to fire-alarm systems; wiring, disconnect switches, fan switches; electrical receptacles and other electrical materials required to complete foodservice equipment installation.

4) Section 06 Section for rough carpentry for wall reinforcing or backing required for wall-mounted equipment.

5) Section 260553 Section for color coding

1.2 PRICE AND PAYMENT PROCEDURES

A. Refer to Section 01 for direction regarding Allowances, Unit Prices, Alternates and Measurement and Payment.

1.3 REFERENCES

A. Abbreviations and Acronyms:

1. Definitions:

a. Wherever used in the Contract Documents, the following items shall have the meanings indicated which shall be applicable to both singular and plural thereof. Reference to parties within this Specification are made as if singular in number which is done only for expedience.

b. Approved: Acceptable, in the judgment of, approved by, or acceptable to, or satisfactory to, or in the judgment of the Department.

c. Professional: A special consultant, expert in a specialized field.

d. Exposed: All surfaces that are visible below and in the same plane as the line of sight when same is lowered, from a height of 4 feet 0 inches to the floor. All surfaces that are visible when the line of sight is raised from a height of 4 feet 0 inches to 6 feet 6 inches. All surfaces behind cabinet doors when doors are open and the latter conditions are invoked. This includes both servery and kitchen areas.

e. Fabricated: Custom-made equipment built by the Kitchen Equipment Contractor (KEC) in the KEC's or KEC Sub-contractor's Shop or at the Project Site.

f. Furnish: The term "furnish" means to supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

g. Install: The term "install" describes operation at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

h. Provide: The term "provide" means to furnish and install, complete and ready for the intended use, complete in all respects, set, level and sealed, ready for utility connections; unless otherwise noted.

i. Kitchen Equipment Contractor (KEC): The Kitchen Equipment Contractor is a sub contractor to the Contractor and is the party responsible for furnishing and installing all items included in Specification Section 114000, unless otherwise specified.

j. Standard or Manufactured Equipment: Equipment which is manufactured in other than the KEC's Shop, such equipment being furnished by the specific manufacturer so stated in the Contract Documents.

k. Supplier: Any person or organization who supplies materials or equipment for the Work, including that fabricated to a special design but who does not perform labor at the site.

B. Reference Standards:

1. Jurisdiction: All Work and materials shall comply with all State and Federal laws, municipal ordinances, regulations and directions of inspectors having jurisdiction.

2. Regulations: The Drawings and Specifications shall govern whenever they require larger sizes and higher standards than are required by regulations.

3. The regulations shall govern whenever Drawings and Specifications require something which will violate the regulations. KEC is responsible to be knowledgeable of local requirements and regulations. No extra charge will be paid for furnishing items required by the regulations, but not specified or shown on the Drawings, except where local codes or regulations vary greatly from nationally or normally recognized codes or regulations, at which time the Professional shall determine if extra charge is justified. Rulings and interpretations of the enforcing agencies shall be considered a part of the regulations.

4. Fabrication Standards: SMACNA Standard: Where applicable, fabricate food service equipment to comply with the Sheet Metal and Air Conditioning Contractors National Association's (SMACNA) "Kitchen Equipment Fabrication Guidelines," unless otherwise indicated.

5. ANSI Standards: Comply with applicable ANSI standards for electric-powered and gas burning appliances, for piping to compressed gas cylinders, and for plumbing fittings including vacuum breakers and air gaps to prevent siphonage in water piping.

6. Base Building Standards: All electrical, mechanical, and refrigeration work required under this Section shall be performed in accordance with Section 22, 23 – Mechanical, and Section 26 – Electrical Specifications as applicable.

7. Electric Standards: Electric equipment and components shall be Underwriter's Laboratories (UL) listed and labeled on prime electrical components and "recognized marking" on other items with electrical components, signifying listening by UL, where available and shall conform to the latest standards of National Electric Manufacturer's Association (NEMA) Code as well as local standards. For wiring and devices, comply with the National Electric Code (NEC), and NFPA 70.

8. Exhaust Air Standards: Exhaust hoods/ventilators, ducts, and fans materials, construction, and installation shall conform to the current edition of NFPA-096, UL710 and local standards.

9. Fire Suppression Standards: Fire suppression systems installations and configuration shall conform to NFPA Bulletins 13, 17, 17A, 96, and UL300, Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment.

10. Gas Standards: Gas heated equipment shall be equipped with automatic igniters and automatic safety pilots, to conform to AGA standards, and carry AGA seal and comply NFPA 54 National Fuel Gas Code.

11. Government Agencies: Work and materials shall be in accordance with the latest rules of US Public Health Service; National Board of Fire Underwriters; OSHA; local and state ordinances, State Accident Commission's safety orders, regulations of the State Fire Marshall, and with all prevailing rules and regulations.

12. Health Standards: All applicable items shall conform to latest Standards and Revisions established by the National Sanitation Foundation (NSF), Ann Arbor, Michigan. Provide each principal item of food service equipment with a NSF "Seal of Approval." If items are modified in any way from the model or configuration approved by NSF, the manufacturer shall obtain approval from NSF of the modification and furnish a letter of acceptance by NSF.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Pre-Installation Conditions:

a. Permits and Certificates: The KEC shall arrange, obtain, and pay for all approvals, permits, certificates, and licenses required for the performance of his work and shall post all notices required by the law.

b. Access: Verify conditions at the building, particularly door openings and passages, to assure access for all equipment. Equipment shall be provided in sections as required to ensure passage to installations point at no additional charge to the Department. Any pieces too bulky for existing facilities shall be hoisted or otherwise handled with apparatus as required. Provide all special handling equipment charges at no additional cost to the Department.

2. Final Locations: Exact locations, distances, and levels shall be governed by the confines of the buildings as approved by the Professional. All Drawings by HFS are definitive only and are not to be used for construction or shop details. KEC shall accept this Contract with understanding.

3. The KEC shall confirm the 8" (203mm) water column local gas pressure will be acceptable for gas equipment that can operate in a range of water column pressures. Where fixed water column is required (ovens, fryers, etc.) and the gas regulator is not built into the equipment, the KEC shall provide the appropriate regulator. For site pressures above 8" (203mm) water column, Section 23 shall provide a pressure reducing valve on the gas supply to the kitchen.

4. Vacuum breakers shall not be exposed in public areas.

5. Wall Reinforcing: KEC shall coordinate with Contractor for wall reinforcing or backing required for wall-mounted equipment.

6. Manufactured articles, materials, and equipment shall be applied, connected, erected, used, cleaned, and conditioned as directed by the manufacturer in all

cases unless noted in item Specifications or Drawings and shall be protected from damage until Final Acceptance.

7. Coordinate locations and requirements of utility service connections.

8. Coordinate the following operations that depend on each other for proper installation, connection, operation and related construction.

   a. Vacuum Breaker Part 1, paragraph 1.2, C.1

   b. Appropriate Regulator Part 1, paragraph 1.2, C.1

   c. Beverage Conduit Hangars specified in Part 2, paragraph 2.3. A.

   d. Water Conditioner specified in Part 2,13.

   e. Refrigeration System specified in paragraph 2.15.J and 2.15.M.

   f. Equipment bases.

   g. Floor depressions.

   h. Insulated floors.

   i. Floor areas with positive slopes to drains.

   j. Floor sinks and drains serving foodservice equipment.

   k. Roof curbs, equipment supports, and penetrations.

B. Demonstrations:

1. Provide demonstrations by manufacturer's certified demonstrators. Cost for demonstrations shall be itemized separately from the price of each item on the Bid Form. Schedule with the Department at least seven (7) days in advance by notifying Professional of demonstration date. Four (4) copies of Service manuals are to be provided to the Professional 30 days in advance of demonstrations.

C. Field Measurements:

1. Verify all measurements at the Site and assume full responsibility for their correctness before proceeding with Work. No extra compensation will be allowed because of differences between Site conditions and those indicated on the Drawings.

2. Any discrepancies between the Drawings, Specifications, and Site Conditions or ambiguities shall immediately be reported to the Contract and Professional, in writing. If the Contract Documents disagree as to quality or quantity of Work required, the better quality or greater quantity shall be supplied, unless otherwise instructed in writing by the Contracting Officer. Any Work performed at locations in question after discovery of discrepancies, inconsistencies, ambiguities, or errors, without securing resolution from Professional, shall be at the KEC's risk.

D. Holes And Escutcheons:

1. Cut holes in equipment for pipes, drains, electric outlets, and similar items, as required for installation. This also includes providing and installing welded sleeves, collars, ferrules, escutcheons and angled escutcheons in equipment. All sleeves and penetrations in building systems shall be prepared by the Contractor.

E. Refrigeration Installation:

1. KEC shall provide a submittal letter to Professional confirming one-point responsibility for refrigeration components and installation.

F. Remove Debris:

1. KEC shall remove all debris resulting from KEC's operations.

G. Repairs:

1. KEC shall repair any damage as a result of KEC's operations.

H. Sealants:

1. Provide empty sealant tubes after application for verification by the Professional that sealants used meet the Specifications.

I. Set In Place:

1. Set each item of non-mobile and non-portable equipment securely in place, level and adjust to the correct height. Anchor to supporting substrate according to manufacturers' recommendations where indicated and where required for sustained operation and use without shifting or dislocation. Conceal anchorages where possible with sanitary covers or filters. Adjust countertops and other work surfaces to level tolerance of 1/16 inch (4mm) maximum offset, and maximum variation from level or indicated slope of 1/6 inch (4mm) per 12 inches (305mm).

J. Stands:

1. Provide stands and required supports for all equipment requiring them.

K. Commissioning:

1. Provide start-ups by manufacturer trained and authorized service agents to start-up equipment. Start-Up Documentation: Include with the equipment brochures submittal, the start-up agent and affiliation for all items specified with start-ups, complete with their telephone numbers.

2. KEC shall provide a competent representative to be present when installation is put into operation for start-up and test each item of operational equipment to demonstrate that it is operating properly and that controls and safety devices are functioning. Repair or replace equipment found to be defective in its operation, including units that are below capacity or operating with excessive noise or vibration.

3. Compensation for Service Agents is the responsibility of the KEC. Service Agents must certify their Work. Start-up shall be performed before turnover to the Department. The Department is not responsible for damage to equipment which has been placed in service before start-up as a result of delay on the part of the KEC to schedule start-ups.

L. Demonstration:

1. Provide demonstrations to instruct the Department's employees in the proper use and maintenance of all items in this Contract. Provide a schedule to the Professional for demonstrations within thirty days of turn-over of the space to the Department. A copy of the schedule shall be sent to the Professional.

M. Wall Reinforcement:

1. Locate wall reinforcement or backing, to be provided by the Contractor. KEC shall coordinate equipment requirement for such supports necessary to complete the Food Service Equipment work.

N. Preinstallation Meetings: Refer to Section 01.

O. Sequencing: Refer to Section 01.

P. Scheduling: Refer to Section 01.

1.5 SUBMITTALS

A. Conformance: Review of Drawings, shops details and equipment brochures by the Professional is provided for design and concept only and does not relieve the KEC of responsibility for full compliance with Original Drawings, Specifications, and Details, or for conformity with location, verification of all dimensions of equipment and building conditions, and reasonable adjustments for construction deviations.

B. The following shall be submitted to the Professional for review and approval to proceed. Submit information in sequence according to following schedule of submittal packages. Resubmission may be required if significant exceptions are taken during the review process.

1. Product Data: For each type of product indicated of standard manufacturer, include the following:

a. Manufacturers' catalog data.

b. Manufacturer's model number.

c. Accessories, specified options and components that will be included for Project.

d. Clearance requirements for access and maintenance.

e. All submittals for custom fabricated or factory-built equipment which contain refrigerated components must indicate refrigerant type.

2. Utility service connections for water, drainage, power, and fuel; include roughing-in dimensions. Equipment Data

3. Drawings:

a. For custom fabricated equipment. Include plans, elevations, sections, roughing-in dimensions, fabrication details, utility service requirements, and attachments to other work.

b. Fire Suppression Plan: Component brochures and installation plans of Ansul System for review shall be submitted. Plan shall show locations of manual releases. Show dimensioned elevation of cabinet(s) which are readily accessible for maintenance. On approval, submit for Fire Marshal approval with record approval copy to be furnished to Professional prior to installation.

c. Rough-Ins:

1) The KEC shall request from the Professional a complete set of Professionalural, mechanical, electrical, and plumbing drawings which show the food service area. The timely submission of this information to the KEC is the responsibility of the Professional. The KEC shall check his Rough-in information against the Contract Drawings for accuracy before submission.

2) KEC shall submit a set of reproducible Rough-in Drawings to Professional for review, by appropriate trades. These Drawings shall be dimensioned and show the location of ducts, stubs, and floor and wall sleeves, for ventilation, plumbing, steam, electrical, and refrigeration lines. Submit concrete or masonry base and curb dimensions required for equipment so supported, if applicable. Rough-in Drawings shall also indicate wall backing locations for equipment and restraining devices of quick disconnect devices, reinforcements, anchorage, and related work required for the complete installation of fixtures. Identify the spot connection numbers identified in the Contract Documents.

3) KEC shall be responsible for the accuracy of all information on Rough-in Drawings.

4) Site-verify mechanical, electrical and ventilating rough-in and sleeve locations in coordination with the Contractor and Professional to establish proper Rough-in locations as shown on Rough-in Drawings prepared by the KEC, installation of floors, walls, columns and ceilings and other conditions under which food service work is to be installed. Check all rough-in connections once installed to ensure that his equipment's service connections are as close to Rough-in locations as possible and notify the Contractor and Professional of unsatisfactory locations and dimensions of other work and of unsatisfactory dimensions and conditions for proper installation of food service equipment. Do not proceed with fabrication and installation until unsatisfactory dimensions and conditions have been corrected.

5) The Rough-in Drawings shall refer to Drawings, by sheet number, for “Supplemental Information and Clarification”. Submit reproducible Shop Drawings for items of custom fabrication included in this Contract. Shop Drawings shall be submitted at 3/4 inch (19mm) scale for plan and elevations, and 1-1/2 inches (37mm) scale for details and sections, and shall show dimensions, materials, gauges, details of construction, installation, and relation of adjoining work requiring cutting or close fitting.

C. Submit reproducible Shop Drawings for items of custom fabrication included in this Contract. Shop Drawings shall be submitted at 3/4 inch (19mm) scale for plan and elevations, and 1-

1/2 inches (37mm) scale for details and sections, and shall show dimensions, materials, gauges, details of construction, installation, and relation of adjoining work requiring cutting or close fitting.

D. The KEC shall submit all required submittals to the Professional for review. Partial submittals received will be held until complete. The Professional's review schedule does not commence until the submittal package is complete. Whenever more than one (1) item is submitted at the same time, each item shall have its own transmittal letter attached.

1. Before proceeding with the fabrication of any item, the KEC shall submit to the Professional prints which reflect verified field dimensions and conditions.

2. After review and approval to proceed, the KEC shall supply to the Professional the specified number of distribution prints for record purposes.

3. Any change in Rough-in of service necessitated by reason of the equipment provided as part of this Contract as delivered varying from the Plans and Shop Drawings furnished for use of other Trades shall be at the expense of the KEC.

E. Schedules:

1. Equipment: Six (6) copies of a Maintenance Schedule for all appropriate equipment items shall be provided before Final Acceptance of installation by the Professional. Two (2) sets of maintenance schedules shall be delivered to the Professional for record copy and coordination purposes.

2. Samples for Initial Selection: For units with factory-applied color finishes.

3. Samples for Verification: For each factory-applied color finish required, in manufacturer's standard sizes. Provide samples of exposed finishes for custom fabricated equipment, 8 inch (200mm) squares of materials and 12 inch (300mm) lengths of running members and trim. Provide 24 inch (600mm) length sample of tray slide if custom fabricated. All edges shall be smooth and free of burrs or ragged edges.

4. All submittals for custom fabricated or factory-built equipment which contain refrigerated components must indicate refrigerant type.

F. Informational Submttals:

1. Coordination Drawings: For foodservice facilities.

a. Indicate locations of foodservice equipment and connections to utilities.

b. Key equipment using same designations as indicated on Drawings.

c. Include plans and elevations; clearance requirements for equipment access and maintenance; details of equipment supports; and utility service characteristics.

d. Include details of seismic bracing for equipment when seismic rating is specified in Section 01.

G. Submittal Sequences:

1. Package No. 1 Submittal Description:

a. Equipment Plan

b. Dimensioned Rough-Ins

c. Buy-Out Equipment Brochures

d. Drawings – Custom Fabrication:

e. Shop Drawings – Walk-Ins

f. Shop Drawings – Exhaust Hoods

g. Shop Drawings: Remote Refrigeration

h. Shop Drawings: Food Shields

i. Shop Drawings: Trough Drains

j. Wall Backing Locations

k. Shop Drawings: Fire Suppression System

l. Refrigerant List

m. Fire Marshal Approved Ansul Installation Plan

n. Samples (when specified)

o. Notice By Manufacturer of Lack of Availability (Where applicable)

p. Confirmation of Suitable Gas Pressure

q. Confirmation of Available Utilities

r. Manufacturer Certification of Refrigeration Capacity

s. Water Quality Report

2. Plumbing Contractor Submittal:

a. Floor Sink, Drain, Funnel Floor Drain Specifications

b. Grease Interceptor Specifications, Locations

3. Electrical Contract Submittal:

a. Disconnect Specifications, Locations

b. Electrical Panel Dimensions, Locations

4. Package No. 2 Submittal Description:

a. Verified Rough-In Installations

b. Verified Field Dimensions

c. Verified Ceiling Heights

d. Notice By KEC of Expected Delay (Where applicable)

e. Notice of Field Deficiencies Prior to Installation

f. Sealant Colors

5. Package No. 3 Submittal Description:

a. Transmittal on Delivery of Gas Valves

b. Transmittal on Delivery of Regulators (Where Applicable)

c. Transmittal on Delivery of Ionizers (Where Applicable)

6. Package No. 4 Submittal Description:

a. Service Agents

b. Service Manuals

c. Manufacturer Extended Refrigeration Certificates

d. Transmittal of Master Faucet Repair Kit

e. Start-Up Agents and Phone Numbers

f. Demonstration Schedule

g. Notice of Inspection of Sealant Tubes

7. Operation and Maintenance Manuals:

a. Service Agents: Include with the service and parts manuals, listing of local service agencies for all included manufacturers, complete with telephone numbers and addresses.

b. Start-Up Data: Include with the equipment brochures, start-up agent for all specified start-ups, complete with telephone numbers.

c. Submit completed start-up certificates for equipment specified to require start-up.

d. Refrigeration Certificates: Include service and parts manuals for items of standard manufacture before start-up and one month prior to first use of the equipment by the Department, or according to requirements of Section 01. List refrigerant type and quantity of all refrigerants.

e. List flow rate of all faucets and pre-rinse assemblies

H. Installation Conditions:

1. General: Manufactured articles, materials, and equipment shall be applied, connected, erected, used, cleaned, and conditioned as directed by the manufacturer and shall be protected from damage until Final Acceptance.

I. Closeout Submittals:

1. In addition to items specified in Section 01 Closeout Procedures and Operation and Maintenance Data divisions include the following:

a. Product Schedule: For each foodservice equipment item, include the following:

1) Designation of item number as indicated on Drawings.

2) Manufacturer's name and model number.

3) List of local factory-authorized service agencies including addresses and telephone numbers for all included manufacturers.

4) Operation and Maintenance Data:

5) Include service and parts manuals for items of standard manufacture before start-up and one month prior to first use of the equipment by the Department, or according to requirements of Section 01.

6) Extended Warranty Refrigeration Certificates:

1.6 MAINTENANCE MATERIAL SUBMITTALS (N/A)

1.7 QUALITY ASSURANCE

A. Contractor's Quality Control Responsibilities: Contractor is solely responsible for quality control of the Work.

B. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of authorities having jurisdiction. Obtain necessary approvals from all such authorities.

C. Qualified Installer:

1. The KEC is able to show that the KEC is now and has been engaged in the supply and installation of foodservice equipment under the Contract as the KEC’s principal business. The KEC shall not sublet any of the equipment in this Section, unless specified to be of other manufacture than the KEC. If a specialized function is requested, KEC shall submit a list of equipment to be sublet and the name and address of Sub-contractor with the Bid.

2. Upon Demand, the KEC shall supply evidence of having executed Contracts of size comparable to this Work and the KEC’s experience and ample financial resources to enable the KEC to perform in a satisfactory manner.

3. The Professional shall at all times have access to the KEC's shop or plants for inspection of construction and materials. The Professional reserves the right to make such investigations as he deems necessary to determine the ability of the KEC to perform the Work, and the KEC shall furnish the Professional all information requested.

4. The KEC represents being is familiar with the requirements of the Bidding Documents and that he has visited the site and has become acquainted with local

conditions affecting execution of the Work. Failure to do so shall not relieve the KEC of the obligation to furnish all materials and labor necessary to carry out the provisions set forth Work. Insofar as possible, the KEC, in carrying out the Work, must employ such methods or means as will not cause any interruption of or interference with the Work of any other Contractor.

5. The KEC is cognizant of all federal, state, and local laws, ordinances, regulations, and guidelines, as interpreted by the authority having jurisdiction, which may affect the Work in any way and that the KEC is satisfied that the Work specified herein is in conformance with same.

6. The KEC shall so state, in writing, prior to bidding, any Work called for in the Contract Documents which cannot be guaranteed. Proceeding with any operations is construed as acceptance of all guarantee conditions.

7. The KEC confirms that such temporary and permanent Work required by the Contract shall be performed by the KEC can be satisfactorily constructed and used for the purpose for which it is intended and that such construction will not injure any person or damage any property.

8. KEC shall confirm that conditions exist and satisfied that the existing openings and access to the foodservice area through which his equipment shall be required to pass is satisfactory and the KEC is cognizant of the fact that required equipment delivered complies in sizes and quantities intended for the space indicated.

D. Pre-Installation Meetings: Refer to Section 01, Division 013100 Project Management and Coordination.

E. Start-Up:

1. KEC shall provide a manufacturer trained and authorized service agent to start-up equipment as specified in the Item Specifications. Coordinate the start-up of food service equipment when lines have been tested, sanitized, balanced and adjusted for pressure, voltage, and similar considerations. Before testing, lubricate each piece of equipment item in accordance with manufacturers' recommendations.

2. KEC shall provide a competent representative to be present when installation is put into operation for start-up and test each item of operational equipment to demonstrate that it is operating properly and that controls and safety devices are functioning. Repair or replace equipment found to be defective in its operation, including units that are below capacity or operating with excessive noise or vibration.

3. Compensation for Service Agents is the responsibility of the KEC. Service Agents must certify their Work. Start-up shall be performed before turnover to the Department. The Department is not responsible for damage to equipment which has been placed in service before start-up as a result of delay on the part of the KEC to schedule start-ups.

4. NSF Standards: Provide equipment that bears NSF Certification Mark or UL Classification Mark certifying compliance with applicable NSF standards.

5. N/A

6. Seismic Restraints: Provide seismic restraints according to code requirements of ASCE 7-05 for food service equipment, chapter 13, if indicated in Section 01.

7. UL Certification: Provide electric and fuel-burning equipment and components that are evaluated by UL for fire, electric shock, and casualty hazards according to applicable safety standards, and that are UL certified for compliance and labeled for intended use.

8. Steam Equipment: Provide steam-generating and direct-steam heating equipment that is fabricated and labeled to comply with ASME Boiler and Pressure Vessel Code.

9. Regulatory Requirements: Install equipment to comply with the following:

   a. ASHRAE 15, "Safety Code for Mechanical Refrigeration."

   b. NFPA 54, "National Fuel Gas Code."

   c. NFPA 70, "National Electrical Code."

   NFPA 96, "Ventilation Control and Fire Protection of Commercial Cooking Operations."

1.8 DELIVERY, STORAGE, AND HANDLING

A. General: Deliver and store materials in manufacturer's original packaging, labeled to show name, brand, type, and grade. Store materials in protected location off ground in accordance with manufacturer's instructions.

B. Deliver food service equipment in containers designed to protect equipment and finish until final installation. Make arrangements to receive equipment at Project Site or to hold in warehouse until delivery can be made to the Project Site.

C. Store food service equipment in original containers and in location to provide adequate protection to equipment while not interfering with other construction operations.

D. Handle equipment carefully to avoid damage to components, enclosures and finish. Do not install damaged food service equipment; replace and return damaged components to equipment manufacturer.

1.9 FIELD / SITE CONDITIONS

A. Field Measurements: Verify actual dimensions of construction contiguous with foodservice equipment by field measurements before fabrication. Indicate measurements on Coordination Drawings.

1.10 WARRANTY

A. General: Warranties and guaranties specified in this Article shall not deprive the Department of other rights the Department may have under other provisions of the Contract Documents and are in addition to and run concurrent with other warranties made by the Contractor w/ KEC as sub; Mechanical Contractor, Plumbing Contractor and Electrical contractor under requirements of the Contract Documents.

B. Special Warranty: Submit for Department's documentation. Furnish 5 year written warranty in form stipulated by Professional, signed by the Contractor and Installer, agreeing to repair or replace Work which has failed as a result of defects in materials or workmanship. Upon

notification of such defects, within the warranty period, make necessary repairs or replacement at the convenience of the Department. Other guarantees or warranties may not be substituted by the Contractor for the terms of this special warranty.

C. Refrigeration Compressor Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace compressors that fail in materials or workmanship within specified warranty period.

1. Failure includes, but is not limited to, inability to maintain set temperature.

2. Warranty Period: Five years from date of Substantial Completion.

3. Refrigeration warranties and other warranties specified shall be obtained through the manufacturer, certified and documentation submitted.

4. Cost for warranties are to be included in the KEC's Base Bid.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

ITEM #1 AIR CURTAIN - HEATED

Quantity: One (1)
Manufacturer: Mars Air Systems
Alternate MFG. #1: (No alternate available)
Alternate MFG. #2: (No alternate available)
Model: PH1072-2EBH-PW
Remarks:

1. Model PH1072-2EBH-PW Phantom 10 Air Door, for 72" wide door, electric heated, aluminum cabinet, pearl white powder coat finish, (2) 1/2 HP motors, 208v/60/1-ph, 6.0kW, ETL
2. 18 month warranty
3. 1 year warranty for all parts (except filters)
4. Water-proof construction designed for and warrantied for installation in 34'F space.
5. Plunger switch installed in door frame

ITEM #2 HOSE REEL

Quantity: Two (2)
Manufacturer: Fisher
Alternate MFG. #1: (No alternates available)
Alternate MFG. #2: (No alternates available)
Model: 29851
Remarks:
One unit integrated into #75 Soiled Dishtable
See Detail 6.04

1. Model 29851 Hose Reel Assembly, closed reel rinse wall mounted with spray valve, powder coated steel construction, 30 feet of 3/8"ID, 3 ply hose, working pressure of 200 psi, withstands 160° F water temperature, ½" NPT Female garden hose inlet

2. All stainless steel construction with zero lead content
3. Fisher 5 year warranty against defects in materials or workmanship

ITEM #3 HOSE REEL CABINET

Quantity: Two (2)
Manufacturer: Fisher
Alternate MFG. #1: (No alternates available)
Alternate MFG. #2: (No alternates available)
Model: 1801
Remarks:

See Detail 6.04

1. Model 1801 Reel Rinse Control Unit, valves, gauges and connections are completely enclosed within a stainless steel cabinet, dual check backflow preventer, water hammer silencer, 90° panel lock, padlock hasp & finger latch, 1/2" NPT female inlets & outlets
2. All stainless steel construction with zero lead content
3. Fisher 5 year warranty against defects in materials or workmanship
4. Recessed mounting

ITEM #4 MOP SINK

Quantity: One (1)
Manufacturer: IMC/Teddy
Alternate MFG. #1: (No alternates available)
Alternate MFG. #2: (No alternates available)
Model: DL20-1
Remarks:

1. Model DL20-1 Combo Sink & Utensil/Can Washer, 16 gauge #304 stainless steel construction., one piece wash basin, 1" OD stainless steel tubing wash supports, fully welded, removable. scrap drawer, integr.12" backsplash, double foot pedal valve, return-mounted faucet, with 48" flexible stainless steel hose & spray head

ITEM #5 AIR TREATMENT SYSTEM

Quantity: Five (5)
Manufacturer: Activtek
Alternate MFG. #1: Hussman
Alternate MFG. #2: Biozone
Model: PUREKOOLER A1027A
Remarks:

1. Water-proof construction designed for and warrantied for installation in 34’F space.

ITEM #6 FLY CONTROL UNIT

Quantity: Four (4)
Manufacturer: Paraclipse Systems,

Alternate MFG. #1: Royal Industries
Alternate MFG. #2: (No alternates available)
Model: TERMINATOR
Remarks:

1. 970 square inches of cartridge surface area
2. 60 day cartridge life
3. Approximately 8 month life of (2) 20W UV lamp
4. Approximately 4000 cartridge capacity
5. High strength aluminum construction

ITEM #7 HOSE BIB

Quantity: One (1)
Manufacturer: Speakman
Alternate MFG. #1: Fisher
Alternate MFG. #2: T&S Brass
Model: SC-5911-IS
Remarks:

1. 1 year warranty against defects in materials or workmanship, standard
2. Polished chrome finish
3. Integral stop, vacuum breaker
4. Wall flange

ITEM #8 SPARE NUMBER

ITEM #9 FLOOR TROUGH - AREA

Quantity: Nine (9)
Manufacturer: IMC/Teddy
Alternate MFG. #1: Fabricator per BOD
Alternate MFG. #2: (No alternates available)
Model: FDSS-1212-SG - CUSTOM
Remarks:

1. Model FDSS-1212-SG - CUSTOM FDSS Floor Drain Sump Sink, 12"W x 12"D x 4" deep, 16/304 stainless steel, with drain & (SG) subway grating
2. Flange, ledge and grating flush with and level to kitchen floor
3. NSF
4. GA-14 14 gauge type 300 s/s construction
5. Coved sides and crease bottom
6. 4” waste outlet
7. WCP perforated drain basket
8. Recessed flange supports for quarry tile floor
9. FSG integral seepage flange with “weep” holes
10. Shop drawing required

ITEM #10 MOBILE DRY/NON-FOOD STORAGE SHELVING UNIT

Quantity: Sixteen (16)
Manufacturer: Metro
Alternate MFG. #1: Advance Tabco
Alternate MFG. #2: Eagle Group
Model: 5N557C
Remarks:

1. Model 5N557C Super Erecta® Starter Shelving Unit, 48"W x 24"D x 74"H, (5) wire shelves, (4) posts, chrome plated finish, KD, NSF
2. Model 5PCM Stem Caster, swivel, 5" diameter, 1-1/4" wide face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included)
3. Model 5PCMB Stem Caster with brake, swivel, 5" diameter, 1-1/4" wide face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, NSF (donut bumpers included)

ITEM #11-12 SPARE NO.

ITEM #13 DUNNAGE RACK

Quantity: (10)
Manufacturer: New Age
Alternate MFG. #1: Lockwood
Alternate MFG. #2: Channel
Model: 1202
Remarks:

1. Model 1202 Dunnage Rack, mobile, 37-3/4"W x 20"D x 8-1/4"H, 1000 lbs. weight capacity, welded aluminum construction, (2) swivel/brake & (2) rigid 5" platform casters, NSF, Made in USA
2. Lifetime warranty against rust & corrosion, 5 year workmanship and material defects warranty, standard

ITEM #14 CENTRAL WATER FILTER ASSEMBLY

Quantity: One (1)
Manufacturer: Everpure
Alternate MFG. #1: (No alternates available)
Alternate MFG. #2: (No alternates available)
Model: EV943732
Remarks:

1. Model EV943732 Everpure® Endurance® High Flow Quad Filter System, used for multiple equipment & combination applications, 200,000 gallon capacity, 15 gpm flow rate, (4) 0.2 micron filter cartridges, 10-100 PSI pressure requirement, 3/4" NPT inlet/outlet, NSF
2. Serves #40, 45, 131, 133, 134

ITEM #15 AIR CURTAIN-HEATED

Quantity: One (1)
Manufacturer: Mars Air Systems
Alternate MFG. #1: Berner
Alternate MFG. #2: Curtron
Model: PH1042-1EBB-PW
Remarks:
Coordinate with door frame specification

1. Model PH1042-1UA-PW Phantom 10 Air Door, for 42" wide door, unheated, aluminum cabinet, pearl white powder coat finish, (1) 1/2 HP motor, 480v/60/3-ph, ETL, 500 watts
2. 5 year warranty
3. 1 year warranty for all parts (except filters)
4. Plunger switch installed in door frame

ITEM #16 CEILING HUNG CORD REEL

Quantity: Nine (9)
Manufacturer: Custom
Model: HOPKINS CORD REEL
Remarks: See Electrical Drawings

1. HBL5369C connector
2. Flat blade
3. Non-locking
4. Coordinate model with voltage and amperage of equipment served by reel

ITEM #17 TWO (2) COMPARTMENT SINK

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (No alternates available)
Model: 94-2-36-24RL CUSTOM
Remarks:
If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02A, 1.03A, 1.06, 3.01, 3.01.1

1. 2-compartment seamless sink, 85”L x 27”W x 45”H
2. Left-hand drainboard with 24”L x 27”W x 14”D sink compartments with 3” radius, with 11”H backsplash on rear and left end, closed 11”H backsplash on right end, stainless steel open frame base, 1” adjustable stainless steel bullet feet, 18 gauge 304 stainless steel on left end, NSF
3. Right-hand drainboard for disposer bowl
4. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
5. Stainless steel gussets welded to die-embossed reinforcing channel
6. 1-5/8” diameter tubular stainless steel legs with legs on left and right drain board ends
7. Front and rear cross brace to secure 1-5/8” stretchers on right drain board
8. Tile edge
9. Recessed bowl surface for cutting boards and sink covers
10. Two (2) vertical cutting board holders on left end drainboard

11. Sink bowls with 14”H water level and 17”H flood level
12. ½” faucet holes for #19 @8” on center;
13. Two (2) Fisher #51295 ¾” zero lead content faucets
12. Punch two holes in sink bowls for overflows of drain
13. Undercoat
14. Two (2) rotary waste support brackets for waste drain handle; (1) support required for each drain
15. Skirted front @ sinks
16. Fully welded
17. NSF
18. Shop drawing required

ITEM #18 FOOD PROCESSOR - COUNTERTOP

Quantity: One (1)
Manufacturer: Hobart
Alternate MFG. #1: Halde
Alternate MFG. #2: Robot Coupe
Model: FP350-1
Remarks:

1. Model FP350-1 Food Processor - Unit Only, angled continuous feed design, full-size hopper, 26 lb per/min production cap., 430 rpm, stainless steel cutting surfaces, planetary gear transmission, triple safety interlocks, aluminum housing, rubber feet, 120/60/1, 1 HP, UL, NSF
2. Standard warranty - 1-Year parts, labor & travel time during normal working hours within the USA
3. Model 3PLATE-6PACK-SSP (6) Plates & Storage Rack, consisting of: (1) 3SLICE-1/16-SS, (1) 3SLICE-5/32-SS, (1) 3SLICE-7/32-SS, (1) 3SLICE-3/8-SS, (1) 3SHRED-5/16-SS, (1) 35DICE-3/8 & (2) WALL-RACK
4. Model WALL-RACK Wall-Rack - Holds 3 Plates
5. Model SST-PAN Product Catch Pan, 12 x 20 x 8, stainless steel, for use with TABLE-FP or PRODUCT-CART accessories

ITEM #19 WALL STORAGE SYSTEM

Quantity: Four (4)
Manufacturer: Metro
Alternate MFG. #1: Eagle Group
Alternate MFG. #2: Quantum
Model: SWK36-1A2-SR
Remarks:

1. Model SWK36-1 SmartWall G3 Medium Duty Task Station Starter Unit, consists of (1) SW40K3 wall track (2) SWU30K3 uprights (2) SWS18K3 shelf supports (1) 1836NK3 wire shelf, & (1) WG1836K3 wire grid, NSF

ITEM #20 PRE-RINSE FAUCET

Quantity: Three (3)
Manufacturer: Fisher
Alternate MFG. #1: (No alternates available)
Alternate MFG. #2: (No alternates available)

Model: 34355
Remarks:

One unit integrated into #75 Soiled Dishtable
One unit integrated into #17 Produce Wash Sink
One unit integrated into #87 Three Compartment Powerwash Sink

1. Model 34355 Pre-Rinse Unit, 8" adjustable wall mount, with spring action flexible gooseneck, wall bracket, Add-On-Faucet with 6" spout
2. All stainless steel construction with zero lead content

ITEM #21 SPARE NO.

ITEM #22 ROLL DOWN SHUTTER

Quantity: One (1)
Manufacturer: Aeroworks Manufacturing
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (No alternates available)
Model: CUSTOM
Remarks:

1. Model CUSTOM See Aeroworks Drawing #P211581
2. One (1) jamb mounted manual security roll down shutter custom built to size of tray drop opening.
3. Door shall be stainless steel construction, manually operated, push up and pull down type.
4. Counter-balance mechanism shall be mounted below lintel and in between jams and concealed with housing.
5. Provide full perimeter window frame manufactured of 16 ga. stainless steel integral with Slat Belt Tray Return Conveyor.
6. Contractor to verify window opening with Professional drawings.
7. Installation by Aeroworks
8. Shop drawing required

ITEM #23 DISPOSER

Quantity: Three (3)
Manufacturer: InSinkErator
Alternate MFG. #1: Red Goat
Alternate MFG. #2: Master
Model: SS-300-18C-AS101
Remarks:

1. Model SS-300-18C-AS101 SS-300™ Complete Disposer Package, with 18" diameter bowl, 6-5/8" diameter inlet, with removable splash baffle & reversible bowl cover, 3 HP motor, stainless steel construction, includes syphon breaker, (2) solenoid valves, (2) flow control valves, wall-mounted programmable AquaSaver® Control Center AS-101 with water-saving technology, automatic water saving function, auto reversing, timed run, post flush
2. (3) years parts & labor warranty from date of installation (standard)
3. Standard height disposer body
4. 480v/60/3-ph, 800 watts

5. T&S Brass Model B-0455-M Syphon breaker standard, 1/2"
6. Type C Bowl Sink assembly
7. #7 collar Adapter Kit
8. Cold water body inlet
9. MSR remote 24V on/off switch mounted on #75 soiled dish table
10. Support leg
11. See Details 5.20 and 5.20.1

ITEM #24 SPARE NO.

ITEM #25 FLOOR TROUGH - PREP

Quantity: One (1)
Manufacturer: IMC/Teddy
Alternate MFG. #1: Advance Tabco
Alternate MFG. #2: Fabricator
Model: FWR-120-SG-CUSTOM
Remarks:
If fabricated, refer to HFS Detail 6.03

1. Model FWR-120-SG-CUSTOM FWR Floor Water Receptacle, 120"W x 7-1/2"D, 4" deep receptacle, (2) 4" OD tailpieces, stainless steel beehive strainer, 16/304 stainless steel construction, brushed satin finish, (SG) subway grating, NSF, Made in USA
2. Shop drawing required

ITEM #26 HAND SINK

Quantity: Six (6)
Manufacturer: Advance Tabco
Alternate MFG. #1: (No alternates available)
Alternate MFG. #2: (No alternates available)
Model: 7-PS-44
Remarks:

1. Model 7-PS-44 Hand Sink, wall mounted, 14" wide x 10" front-to-back x 5" deep bowl, 18 gauge 304 series stainless steel, splash mounted gooseneck faucet, push operated/knee operated push panel with hot & cold adjustment, basket drain, wall bracket, NSF, cCSAus
2. Model K-08 Low-flow aerator 0.5gpm, fits 55/64-27 male or 15/16-27 female thread on spout, conforms to California AB 19533.
3. Floor pedal valves and tab valves not permitted

ITEM #26.1 HAND SINK SOAP & TOWEL DISPENSER

Quantity: Six (6)
Manufacturer: Fabricator
Model: CUSTOM
Remarks: Refer to Specification Section 102813 Toilet Accessories

ITEM #27 MOBILE INGREDIENT BIN

Quantity: Three (3)
Manufacturer: Rubbermaid Commercial Products
Alternate MFG. #1: BK Resources
Alternate MFG. #2: Cambro
Model: FG360288WHT
Remarks:

1. Model FG360288WHT ProSave® Ingredient Bin, 3-1/2 cu. ft., 15-1/2"W x 29-1/2"D x 28"H, mobile, slant front with sliding lid, 32 oz scoop, seamless construction, 3" extra wide casters front fixed & rear swivel, white base/clear lid, USDA, FDA, NSF

ITEM #28 WORK TABLE WITH SINK

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: TKLG-367 CUSTOM
Remarks: If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02A, 1.03A, 1.06, 2.01C, 3.02

1. Model TKLG-367-CUSTOM Work Table, 80"L +/- x 36"W, 14 gauge 304 stainless steel top with 5"H backsplash on left, rear and right ends, open base, stainless steel legs
2. Utility Sink on right, 1-compartment, 10" wide x 14" front-to-back x 10" deep bowl, 20 gauge 304 stainless steel
3. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
4. Fisher #53872 zero lead, all stainless steel gooseneck faucet with Fisher 5 year warranty against defects in materials or workmanship
5. Stainless steel gussets welded to die-embossed reinforcing channel
6. 1-5/8” diameter tubular stainless steel legs
7. Front and rear cross brace to secure 1-5/8” stretchers on left and right
8. Tile edge
9. Sink bowl with 12”H water level and 15”H flood level
10. ½” faucet holes for #28, 4” on center
12. Punch two holes in sink bowls for overflows of drain
13. One (1) Fisher #24872 rotary waste with overflow and support bracket for waste drain handle with Fisher 5 year warranty
14. Skirted front @ sink
15. Fully welded
16. NSF
17. Field verify clearance
18. Shop drawing required

ITEM #29 MOBILE MIXER ACCESSORY SHELF

Quantity: One (1)
Manufacturer: Metro
Alternate MFG. #1: SPG

Alternate MFG. #2: Tarrison
Model: 2424NS
Remarks:

1. Four (4) model 2424NS Super Erecta® Shelf, wire, 24"W x 24"D, stainless steel finish, plastic split sleeves are included in each carton, NSF
2. Model 63UPS Super Erecta® Post, 27-3/4"H, for use with stem casters, type 304 stainless steel
3. Model 5PCM Stem Caster, swivel, 5" diameter, 1-1/4" wide face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included)
4. Model 5PCMB Stem Caster with brake, swivel, 5" diameter, 1-1/4" wide face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, NSF (donut bumpers included)

ITEM #30 60 QT MIXER

Quantity: One (1)
Manufacturer: Hobart
Alternate MFG. #1: Blakeslee
Alternate MFG. #2: Globe
Model: HL600-1
Remarks:

1. Model HL600-1 460v/60/3 Mixer; US/EXP configuration
   Legacy Planetary Mixer - Unit Only, 2.7 HP, 60 quart capacity, (4) fixed speeds, gear-driven transmission, 50-Minute SmartTimer™, #12 taper attachment hub, power bowl lift, stainless steel bowl guard
2. Standard warranty
3. S/s bowl
4. Bowl truck
5. S/s flat beater
6. S/s wire whip
7. S/s dough hook
8. S/s pastry hook
9. SCRAPER-HL60
10. Gear driven

ITEM #31-32 SPARE NO.

ITEM #33 MOBILE UTILITY CART

Quantity: Two (2)
Manufacturer: Lakeside Manufacturing
Alternate MFG. #1: BK Resources
Alternate MFG. #2: Channel
Model: 211
Remarks:

1. Model 211 Utility Cart, 3-shelf with 27"L x 17-1/2"W x 35-3/4"H, shelf size 24"W x 15-1/2"D, stainless steel tubular U-frame, 20 gauge stainless steel shelves with reinforced edges, 500 lb.

capacity, 9-1/2" shelf clearance, push handle on each short side, 4" swivel casters, NSF (ships fully assembled), Made in USA
2. Casters, 4", all swivel, polyurethane

ITEM #34 WORK TABLE WITH SINK

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: KMS-3611 CUSTOM
Remarks:

If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02C, 1.03A, 1.06, 1.09, 1.09.1, 2.01, 2.21, 2.21.1, 3.02

1. Model KMS-3611-CUSTOM Work Table, 132"W x 36"D, 14 gauge 304 stainless steel top with 5"H backsplash, 14 gauge stainless steel fixed undershelf, stainless steel legs & adjustable bullet feet, NSF
2. 4”W common splash with Item #35
3. Mount #37 Can Opener on left end
5. Utility Sink on right, 1-compartment, 14" long x 10" W x 12" deep bowl, 20 gauge 304 stainless steel
6. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
7. Fisher #53872 zero lead, all stainless steel gooseneck faucet with Fisher 5 year warranty against defects in materials or workmanship
8. Stainless steel gussets welded to die-embossed reinforcing channel
9. 1-5/8” diameter tubular stainless steel legs
10. S/s 130”L x 20”W two-tier overshelf over #34 and #35 with 14” clear space on each shelf with lower shelf 14” off work top; single shelf support through splash support to leg frame per HFS Detail 2.21; edge of lower shelf per HFS Detail 1.01.F.
11. 82”L check minder mounted on lower shelf of overshelf
12. Sink bowl with 12”H water level and 15”H flood level
10. ½” faucet holes for faucet 4” on center
12. Punch two holes in sink bowls for overflows of drain
13. One (1) Fisher #24872 rotary waste with overflow and support bracket for waste drain handle with Fisher 5 year warranty
14. Skirted front @ sink
15. Fully welded
16. NSF
17. 18”L x 6”W 16 gauge s/s chase common with #34 from work top to finished ceiling for utility sink and #26 Hand Sink water and vent supply lines
18. 82”L undershelf turned up 2” on left, rear and right ends
19. Mounting provision for #26 Hand Sink
20. Terminate undershelf 50” from right end
21. Clearance provided #38 waste bin
22. One (1) drawer per HFS Detail 1.09, 1.09.1
23. Shop drawing required

ITEM #35 WORK TABLE WITH SINK

Quantity: One (1)
Manufacturer: Advance Tabco

Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: KMS-3611 CUSTOM
Remarks:

If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02C, 1.03A, 1.06, 1.09, 1.09.1, 1.12B, 2.01, 2.21, 2.21.1, 3.02

1. Model KMS-3611-CUSTOM Work Table, 132"W x 36"D, 14 gauge 304 stainless steel top with 5"H backsplash, 14 gauge stainless steel fixed undershelf, stainless steel legs & adjustable bullet feet, NSF
2. 4”W common splash with Item #34; sink integrated in #34
3. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
4. Stainless steel gussets welded to die-embossed reinforcing channel
5. 1-5/8” diameter tubular stainless steel legs
6. S/s 130”L x 20”W two-tier overshelf over #34 and #35 with 14” clear space on each shelf with lower shelf 14” off work top; single shelf support through splash support to leg frame per HFS Detail 2.21; edge of lower shelf per HFS Detail 1.01.F.
7. 82”L check minder mounted on lower shelf of overshelf
8. Fully welded
9. NSF
10. 18”L x 6”W s/s 16 gauge chase common with #34 from work top to finished ceiling for utility sink and #26 Hand Sink water and vent supply lines
11. 82”L undershelf turned up 2” on left, rear and right ends
12. Mounting provision for #26 Hand Sink
13. Terminate undershelf 50” from right end
14. Clearance provided #38 waste bin
15. One (1) drawer per HFS Detail 1.09, 1.09.1
16. Shop drawing required

ITEM #36 CEILING HUNG POT RACK & OVERSHELF

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: CUSTOM
Remarks:

If fabricated, refer to HFS Detail 1.12B; Integral with #34/#35

1. Pot Rack, table-mounted above two-tier overshelf, 82"L x 2"W x ¼” thick stainless steel pot rack, includes: (9) plated double pot hooks, NSF
2. Model TA-89 Pot Hooks, plated, double sided (package of 4)
3. Integral with overshelf specified under #34 and #35
5. Shop drawing required

ITEM #37 CAN OPENER

Quantity: One (1)
Manufacturer: Nemco Food Equipment
Alternate MFG. #1: Edlund
Alternate MFG. #2: Admiral Craft

Model: 56050-1
Remarks:

1. Model 56050-1 CanPRO® Can Opener, compact, permanent, cuts from the side as to leave the circumference and lip of the lid intact, along the lid's outer seam, gearless drive, holds up to #10 cans, stainless steel & aluminum nickel-plated construction, NSF
2. 2 year parts & labor warranty, standard
3. Gearless
4. Cutter which alleviates metal slivers
5. #56050-1 permanent clamp mount

ITEM #38 COMMERCIAL WASTE CONTAINER

Quantity: Eight (8)
Manufacturer: Rubbermaid Commercial Products
Alternate MFG. #1: CAC China
Alternate MFG. #2: Carlisle
Model: FG263200GRAY/1779734
Remarks: BY DEPARTMENT

1. Seven (7) Model FG263200GRAY ProSave® BRUTE® Container, without lid, 32 gallon, 22"D x 27-1/4"H, round, reinforced rims, built in handles, double rimmed base, high-impact plastic construction, gray, NSF, Made in USA

2. One (1) Model 1779734 ProSave® BRUTE® Container, without lid, 20 gallon, 19.5”D x 22-1/8"H, round, reinforced rims, built in handles, double rimmed base, high-impact plastic construction, black, NSF, Made in USA

ITEM #39 MOBILE WORK TABLE

Quantity: Two (2)
Manufacturer: Advance Tabco
Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: VKS-368 CUSTOM
Remarks:

If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02A, 1.03A, 1.06, 2.01C

1. Model VKS-368 Work Table, 96"L x 36"W, 14 gauge 304 stainless steel top with countertop non drip edge, 10" backsplash rear and right ends, 14 gauge adjustable stainless steel welded-fixed undershelf, stainless steel legs, NSF
2. Provide legs to provide gap in undershelf for clearance for #38
3. Closed right end splash
4. Two (2) stem casters, brake (foot operated), 5" diameter, 1-1/4" face, corrosion resistant, polyurethane horn and wheel tread, with donut bumpers, 300 lb. capacity with brakes
5. Two (2) stem caster, brake (foot operated), 5" diameter, 1-1/4" face, corrosion resistant, polyurethane horn and wheel tread, with donut bumpers, 300 lb. capacity

6. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
7. Stainless steel gussets welded to die-embossed reinforcing channel
8. 1-5/8” diameter tubular stainless steel legs
9. Undershelf turned up on left, rear and right ends
10. Fully welded
11. NSF
12. Shop drawing required

ITEM #40 ICED TEA BREWER

Quantity: Three (3)
Manufacturer: BUNN
Model: 36700.0013
Remarks: BY VENDOR

1. Model 36700.0013 36700.0013 TB3Q Iced Tea Brewer, 3-gallon capacity single brewer, 26.7 gallon/hour, SplashGard® funnel, Quickbrew system (dispensers sold separately), 120v/60/1-ph, 1730w, 14.4amps, NEMA 5-15P, cord attached, UL, NSF

ITEM #41 SLICER

Quantity: Two (2)
Manufacturer: Bizerba
Alternate MFG. #1: Hobart HS9-1
Alternate MFG. #2: Globe SG13A-07
Model: GSP HD I 150
Remarks:

1. Model GSP HD I 150 Automatic Heavy Duty Illuminated Safety Slicer, 13" blade, product fence, 3-speeds, 3-strokes, servo assist, 8-safety interlocks, seamless anodized aluminum construction, high carriage 25° incline towards operator, 40° gravity feed, thumb guard 5.8" W, remote sharpener with spring-loaded dial, slice thickness 0-0.94", VFD-motor, 120v/60/1-ph, 2.6 amps, 0.24kW, cord with NEMA 5-15P, ETL-Sanitation, UL-157 gaskets and seals, cETLus, DGUV safety tested
2. Model STANDARD WARRANTY 1 year parts, labor, & travel time during normal Bizerba working hours within the (50) US, standard
3. Model GVRB-13 13" (330 mm) Grooved Vacuum Release Blade, chromium coated hard alloy, 60-62 Rockwell hardness at the edge
4. Model GSP HD-F2PP-1 Product Fence Set, QTY of two (2) 2" H fence and one (1) Fence Remnant Holder Pusher

ITEM #42 COFFEE GRINDER

Quantity: Four (4)
Manufacturer: BUNN
Model: 33700.0000
Remarks: BY VENDOR

1. Model 33700.0000 33700.0000 G9-2T DBC Coffee Grinder, portion control, dual 6 lb. hoppers, 3 batch sizes per hopper, wireless brewer-grinder interface via Smart funnel® & Dual Soft Heat®

DBC brewer, stainless finish, 3/4 HP, 1128 watts, 120v/60/1-ph, 9.4 amps, cord attached, NEMA 5-15P, UL, cULus, ETL

ITEM #43 ICED TEA DISPENSER

Quantity: (10)
Manufacturer: BUNN
Model: 33000.0000
Remarks: BY VENDOR

1. Model 33000.0000 33000.0000 TDS-3 Iced Tea/Coffee Dispenser, cylinder style, 3 gallon capacity (11.4 liters), sump dispense valve, stainless steel lid, faucet handles are labeled sweetened & unsweetened, side handles, NSF

ITEM #44 WORK TABLE

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: VKS-306 CUSTOM
Remarks:
If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02A, 1.03A, 1.06, 2.01C

1. Model VKS-306 Work Table, 66"L x 30"W, 14 gauge 304 stainless steel top with countertop non drip edge, 10" backsplash, 14 gauge fixed stainless steel undershelf, stainless steel legs & adjustable bullet feet, NSF
2 Closed left end splash
3. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
7. Stainless steel gussets welded to die-embossed reinforcing channel
8. 1-5/8” diameter tubular stainless steel legs
9. Fully welded
10. NSF
11. Undershelf turned up on left, rear and right ends
12. S/s utility chase for #48 Ice Maker from ceiling to top of table splash on left end
13. Shop drawing required

ITEM #45 COFFEE BREWER

Quantity: Four (4)
Manufacturer: BUNN
Model: 35900.0010
Remarks: BY VENDOR

1. Model 35900.0010 35900.0010 BrewWISE® Dual GPR DBC® Coffee Brewer, up to 18.9 gal/hr., digital temperature control, large spray head, splashguard funnel, LCD display, programmable warmer control, wireless brewer grinder interface, stores individual coffee recipes, includes (2) GPR servers (20950.0004), UL, NSF

2. Equipment discount category net prices must be rounded to the nearest dollar
3. 3 years parts and labor or 30,000 pounds of coffee (whichever comes first) and on electronic circuit/control boards and 2 years parts and 1 year labor warranty
4. 120-208V/60/1-ph, 26 amps, 5400 watts, standard
5. One unit not shown on foodservice plans; see Level 0 Professional plans
6. Cord and plug by Electrical Contractor.

ITEM #46 COFFEE DISPENSER

Quantity: Eighteen (18)
Manufacturer: BUNN
Model: 20950.0004
Remarks: BY VENDOR

1. Model 20950.0004 20950.0004 1.5GPR-FF Coffee Server, 1.5 gallon, top handles, fast flow faucet, stainless decor, NSF

ITEM #46.1 DUAL COFFEE DISPENSER HEATED STAND

Quantity: Five (5)
Manufacturer: BUNN
Model: 27875.0000
Remarks: BY VENDOR

1. Model 27875.0000 27875.0000 Soft Heat® Serving Stand, dual, for Soft Heat® servers, controlled heat, 4" legs, stainless decor, 120v/60/1-ph, 180w, 1.5 amps, cord attached, UL, NSF

ITEM #47 REACH-IN BLAST CHILLER

Quantity: One (1)
Basis of Design: Irinox ICY LARGE
Remarks:
(Performance specifications for all manufacturers)

1. Blast Chiller/Shock Freezer, reach-in
2. Capacity - (18) 18" x 26" full size sheet pans or (27) 12" x 20" x 2-1/2" steam table pans (pans NOT included),
3. 110 lbs. blast chill capacity 194°F to 37°F/90 minutes or less and 99 lbs. shock freeze capacity 194°F to 0°F/4 hours or less,
4. Door hinged left,
5. Touch pad controls,
6. (4) standard modes for chilling and freezing,
7. Temperature probe, self-contained,
8. Air-cooled condensing unit,
9. Stainless steel adjustable legs,
10. Stainless steel construction,
11. Plug not included,
12. R404a,
13. UL & NSF approved

14. (2) year parts and labor warranty, standard
15. (5) year compressor warranty, standard
16. 208v/60hz/3-ph, 13.4 amps

ITEM #48 ICE MAKER

Quantity: One (1)
Manufacturer: Manitowoc
Alternate MFG. #1: Scotsman
Alternate MFG. #2: Ice-O-Matic
Model: IYT1500A
Remarks:

1. Model IYT1500A Indigo NXT™ Series Ice Maker, cube-style, air-cooled, self-contained condenser, 48"W x 24-1/2"D x 29-1/2"H, production capacity up to 1660 lb/24 hours at 70°/50° (950 lb AHRI certified at 90°/70°), easyTouch display with 13 different language options, date/time stamp display, automatic reminder/alert icon, one touch asset information, automatic detection of accessories, continuous operating status, programmable production options (time, weight, day or night), one touch cleaning with displayed instructions, Alpha-San anti-microbial protection, acoustical ice sensing probe, self-diagnostic technology, DuraTech™ exterior, half-dice size cubes, R410A refrigerant, NSF, cULus, CE
2. Model WARRANTY-ICE-SC 3 year parts & labor (Machine), 5 year parts & labor (Evaporator), 5 year parts & 3 years labor (Compressor), standard
3. 208-230v/60/1-ph, 18.5 amps, standard
4. Luminice II
5. IAuCS control panel
6. Verify existing

ITEM #49 ICE BIN

Quantity: One (1)
Manufacturer: Manitowoc
Alternate MFG. #1: Scotsman
Alternate MFG. #2: Ice-O-Matic
Model: D970
Remarks:

1. Model D970 Ice Bin, 48"W x 34"D x 50"H, with side-hinged front-opening door, side grips, 532 lbs. application capacity, AHRI certified 17.9 cu. ft., for top-mounted ice maker, Duratech exterior, NSF
2. Model WARRANTY-BIN/DISP 3 year parts & labor warranty, standard
3. Legs, 6" adjustable stainless steel, standard
4. Ice Scoop holder
5. Verify existing

ITEM #50 DRAIN TROUGH & PAN (ICE MAKER)

Quantity: One (1)
Manufacturer: BSI
Alternate MFG. #1: Fabricator

Alternate MFG. #2: (No alternate available)
Model: FTDP-CUSTOM
Remarks:

If fabricated, refer to HFS Detail 6.03

1. Model FTDP BSI, LLC Drain Tech Floor Trough with Integral Drain Pan, 4" deep, stainless steel subway grate & removable basket, with drain, stainless steel construction, NSF standard 2 construction
2. 12 gauge brushed finish type 304 stainless frame and splashes
3. Sand blast drain pan
4. 1/8” x 1” type 304 s/s subway grate type with 3/8” welded s/s reinforced rods (minimum of two), maximum gap 13/16” between grate bars and 6” maximum space between reinforcement rods
5. Coved corner pan
6. 3” I.D. x 6”L s/s tailpiece
7. ¼” s/s rod J-anchors around trough exterior
8. Reinforced sloped pan for weight of ice maker and ice bin when full of ice
9. Closed splash on left and right; sloped rear splash ledge
10. Shop drawing required

ITEM #51 SPARE NO.

ITEM #52 ROLL-UP WALK-IN DOOR

Quantity: Two (2)
Basis of Design: Roll Seal RS600
Remarks:

(Performance specifications for all manufacturers)
Integral to #53

1. Automated roll-up door for medium temperature applications
2. Direct drive attached intelli-Drive Operator
3. 208V/60/1
4. 52.4”L x 106.02 for 36”L x 82”H walk-in door
5. Speed: 48 inches per second
6. Patened sealing technology
7. Impact resistant design
8. CSA, NSF, ETL
9. 40 cycles per hour
10. ½ hP drive
11. Soft start/soft stop
12. Programmable control
13. Manual hand crank handle over-ride
14. Safety beams (photo eyes)
15. Lead edge switch
16. Solenoid brake
17. EISA exempt
18. Emergency egress option
19. Egress buzzer (alerts egress is engaged)
20. Frame material: 304 2b s/s
21. Shop drawing required

ITEM #53 WALK-IN COOLER/FREEZER

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: CUSTOM
Remarks:

Refer to Thermo Kool drawing # Q3439887

1. Walk-in set in 5” depression (4” floor panel over 1” leveling compound)
2. 38’-8.5” L x 16’-1” W x 10’-0” H
3. Exposed exterior: 20 gauge stainless steel
4. Unexposed Exterior: 26 gauge stucco galvanized
5. Interior floors: 4” floor panel in 6” floor depression; 2” tile setting bed and coved base quarry tile per Professional drawings; space below kitchen is occupied.
6. 14 ga. Thresholds and anti-sweat heaters
7. Thermal break at door openings by Contractor
8. Interior: White stucco aluminum
9. 17”H tall foam screeds (lock to wall panels)
10. Pilot light and switch assembly, Kason #1806 vapor proof LED light and two (2) 4” dial thermometers on exterior of door panel for general cooler and two (2) 4” dial thermometers on exterior of door panel for produce cooler
11. 45” H x 1/8” aluminum treadplate kickplates on exposed exterior and jamb guards on interior and exterior of door in Catering Cooler and Freezer
12. Two (2) 208V/60/1 Roll Seal RS-600 48” x 82” doors
13. Two (2) 3-hinged 36” x 82”H doors each with heated frame and glass 14” x 24” window, vinyl strip curtain (one by Thermo Kool and Catering Cooler strip curtain by Contractor and Secure-guard latch; in-swinging door to Catering Cooler
14. Two (2) Mars air curtains, model PH1036-1UD-PW
15. Minimum three (3) LED light fixtures with bulbs to achieve 30-foot candles at floor surface in Catering, Produce and Freezer compartments; Minimum six (6) LED light fixtures with bulbs to achieve 30-foot candles at floor surface in General Cooler
16. LED lights shipped loose of installation by Electrical Contractor: conduit shall be run above the ceiling to each light fixture accessed by poke throughs made by and sealed by kitchen contractor; no exposed lighting conduit permitted inside the compartment
17. Four (4) Thermo Kool TK4700 walk-in monitor system with motion detector, battery back-ups, dry contacts and thermostatically controlled heater wires mounted in door frames.
18. 48”H diamond tread panels on exposed exterior walk-in walls
19. S/s vertical trim @ walls; S/s closure panels not required for 9’-6”H finished kitchen ceiling
20. Two (2) pressure relief ports
21. Two (2) column enclosures
22. Shop drawing required

ITEM #54 FLOOR TROUGH - WALK-IN

Quantity: Two (2)
Manufacturer: IMC/Teddy
Alternate MFG. #1: Advance Tabco
Alternate MFG. #2: Fabricator
Model: FWR-36-SG-CUSTOM

Remarks:

If fabricated, refer to HFS Detail 6.03

1. Model FWR-36-SG-CUSTOM FWR Floor Water Receptacle, 36"W x 7-1/2"D, 4" deep receptacle, (1) 4" OD tailpiece, stainless steel beehive strainer, 16/304 stainless steel construction, brushed satin finish, (SG) subway grating, NSF, Made in USA
2. Offset drain location: submit to Profeessional for location of offset after approval of submittal of trough type by 114000.

2. Shop drawing required

ITEM #55 AIR CURTAIN-UNHEATED

Quantity: Two (2)
Manufacturer: Mars Air Systems
Alternate MFG. #1: (No alternate available)
Alternate MFG. #2: (No alternate available)
Model: PH1036-1UD-PW
Remarks:

Integral to #53

1. Model PH1036-1UD-PW Phantom 10 Air Door, for 36" wide door, unheated, aluminum cabinet, pearl white powder coat finish, (1) 1/2 HP motor, 208/230v/60/1-ph, ETL
2. 5 year warranty, standard
3. 1 year warranty for all parts (except filters), standard
4. Water-proof construction designed for and warrantied for installation in 34’F space.
5. Plunger switch installed in door frame

ITEM #56 SPARE NO.

ITEM #57 MOBILE ROLL-IN PAN RACK

Quantity: Eight (8)
Manufacturer: Lakeside Manufacturing
Alternate MFG. #1: Advance Tabco
Alternate MFG. #2: Cres Cor
Model: 138
Remarks:

1. Model 138 Sheet Pan/Tray Rack, narrow opening, full height, open sides, capacity (16) 18" x 26" pans, angle ledge, 3" spacing, welded stainless steel construction, NSF
2. Casters, 5" swivel stem type, standard

ITEM #58 MOBILE WALK-IN SHELVING UNIT

Quantity: Twenty-eight (28)

Manufacturer: Metro
Alternate MFG. #1: Cambro
Alternate MFG. #2: (No alternate available)
Model: Q456BG3-CUSTOM
Remarks:

Each unit to be equipped with:

1. Model Q456BG3-CUSTOM MetroMax Q™ Mobile Shelving Unit, 48"W x 21"D x 74"H, (4) open grid polymer shelves with Microban® antimicrobial protection, (4) posts, (4) swivel resilient rubber casters (2 braked), epoxy coat steel frame, KD, NSF
2. Model 5PCBXM Polymer Stem Caster, swivel, 5" diameter, 1-1/4" wide face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
3. Model 5PCX Polymer Stem Caster, swivel, 5" diameter, 1-1/4" wide face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)

ITEM #59 EVAPORATOR 35'F (PRODUCE COOLER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BEL0105AS6AMA
Remarks:

1. 115V/60/1
2. 10,150 btus
3. Two-speed EC motor with 2 fans
4. ¾” drain

ITEM #60 REMOTE CONDENSER 35'F (PRODUCE COOLER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BCH0010MCACZ
Remarks:

1. 208V/60/3
2. 10,050 btus for 34’F; heat of rejection 13,065 btus
3. 179 lbs.
4. R-448A refrigerant

ITEM #61 SPARE NO.

ITEM #62 WALL-HUNG EQUIPMENT PLATFORM

Quantity: One (1)
Manufacturer: Fabricator
Model: CUSTOM
Remarks: See Refer to Architectural Drawings for equipment platform

ITEM #63 EVAPORATOR 35'F (CATERING COOLER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BEL0115AS6AMA
Remarks:

1. 115V/60/1
2. 14,500 btus
3. Two-speed EC motor with 2 fans
4. ¾" drain

ITEM #64 REMOTE CONDENSER 35'F (CATERING COOLER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BCH0015MCACZ
Remarks:

1. 208V/60/3
2. 14,340 btus for 34'F; heat of rejection 18,642 btus
3. 221 lbs.
4. R448A refrigerant

ITEM #65 EVAPORATOR 35'F (COOLER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BEL0190AS6AMA
Remarks:

1. 115V/60/1
2. 18,600 btus
3. Two-speed EC motor with 3 fans
4. ¾" drain

ITEM #66 REMOTE CONDENSER 35'F (COOLER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BCH0020MCACZ
Remarks:

1. 208/60/3 12.2 RLA Amps

2. 16,950 btus for 34’F; heat of rejection 22,035 btus

3. 221 lbs.

4. R-448A refrigerant

ITEM #67 EVAPORATOR -10'F (FREEZER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BEL0130BS6EEA
Remarks:

1. 208/60/1, 13.7 heater defrost amps
2. 13,500 btus
3. Single speed EC motor with 3 fans
4. ¾” drain

ITEM #68 REMOTE CONDENSER -10'F (FREEZER)

Quantity: One (1)
Manufacturer: Thermo-Kool
Alternate MFG. #1: Bally
Alternate MFG. #2: Koldpak
Model: BCH0035LCACZ
Remarks:

1. 208V/60/3
2. 11,550 btus for -10; heat of rejection 17,903 btus
3. 232 lbs.
4. R448A refrigerant

ITEM #69 CAN RACK

Quantity: Two (2)
Manufacturer: Advance Tabco
Alternate MFG. #1: Channel
Alternate MFG. #2: Eagle Group
Model: CR10-162M
Remarks:

1. Model CR10-162M Can Rack, mobile design with casters, with sloped glides for automatic can retrieval, designed for #10 & #5 cans, aluminum construction, holds (162) #10 cans, or (216) #5 cans

ITEM #70 PORTABLE DUNNAGE RACK

Quantity: Five (5)
Manufacturer: New Age
Alternate MFG. #1: Lockwood
Alternate MFG. #2: Channel
Model: 1204
Remarks:

1. Model 1204 Dunnage Rack, mobile, 37-3/4"W x 24"D x 8-1/4"H, 1000 lbs. weight capacity, welded aluminum construction, (2) swivel/brake & (2) rigid 5" platform casters, NSF
2. Lifetime warranty against rust & corrosion, 5 year construction warranty, standard

ITEM #71 SPARE NO.

ITEM #72 BAG IN BOX RACK

Quantity: One (1)
Manufacturer: Eagle Group
Model: 2B2148C
Remarks: BY VENDOR

1. Model 2B2148C Bag-N-Box System, modular, 48"W x 21"D x 54"H, wire shelves with patented QuadTruss® design, (1) slanted shelf with 1" slanted ledge, (3) flat shelves, NSF

ITEM #73 SPARE NUMBER

ITEM #74 HAND SINK W/ EYE WASH ATTACHMENT

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: Eagle
Alternate MFG. #2: Aero
Model: 7-PS-55
Remarks:

1. Model 7-PS-55 Eye Wash Hand Sink, wall mounted, 14" wide x 10" front-to-back x 5" deep bowl, 20 gauge 304 stainless steel, splash mounted gooseneck faucet with eye wash attachment, basket drain, wall bracket

ITEM #74.1 SOAP & TOWEL DISPENSER

Quantity: One (1)
Remarks: Refer to Specification Section 102813 Toilet Accessories

ITEM #75 SOILED DISHTABLE W/ PRE-RINSE SINK & DISH CONVEYOR

Quantity: One (1)
Manufacturer: Aeroworks Manufacturing
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (No alternates available)
Model: SBC-10 CUSTOM
Remarks:
If fabricated, refer to HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.06, 1.07, 3.20, 3.22

1. General Contractor to issue RFI to the Department to verify tray size
2. See Aeroworks Drawing #P211581
3. Stainless steel insulated sight and sound baffle enclosure with one (1) LED light with switch on #75 control panel for slat belt conveyor
4. Construction of sight & sound baffle enclosure shall be 20 ga. stainless steel double-walls, 2" thick with sound-reducing styrofoam in between. Enclosure shall be mounted to Aerowerks conveyor and building wall by Aerowerks installers.
5. Installation by Aeroworks:
   a. Aerowerks shall be responsible for all interconnections of electrical work required for conveyor system.
   b. Final connections to building services shall be by Electrical Contractor.
   c. All plumbing interconnections shall be by the Plumbing Contractor.
   d. Aerowerks shall install and adjust system to the Department's satisfaction and shall provide adequate written instructions to operating personnel.
   e. System shall be guaranteed for a period of one year for parts and labor under normal operating conditions.

6. Provide UL and NSF listed Aerowerks model SBC-10 Slat Belt Tray Return Conveyor as shown on plan, designed to deliver the tray from the deposit window to the scrapping table in the dish room.
   a. SBC Belting shall be Aerowerks K10SF-AD. Belting shall have a tensile strength of 6,100 lbs and shall "side-flex" to a minimum of 19" centerline radius at corners where required. There shall be no sliding friction at corners between belt and groove or guide rail. Both slide bed groove and return track shall be self-cleaning by the action of the belt. Belt take-up shall be accomplished by the natural catenary sag of the belt in the wash chamber.
   b. Drive frame shall be all-welded stainless steel angle with 1-5/8" Ø, 6" high stainless steel legs and adjustable s/s flanged feet.
   c. Drive housing: Drive frame shall be fitted with 18 ga. stainless steel housing to enclose drive frame on all sides. Access provided by 18 ga. stainless steel double wall hinged insulated doors. Where side or end panels are fitted to frame, they shall be sealed with silicone. Drive cabinet to house all necessary plumbing and detergent injection pump for the belt wash system.

d. Drive Tank: Provide all welded 14 ga. stainless steel wash chamber equipped with lift-off access panels and removable scrap tray.
e. Drive Shaft: Provide 1" stainless steel drive shaft mounted within wash chamber on dual-type sealed bearings (Aerowerks grease-filled sealed cartridge inside chamber; precision ball bearing flange cartridge outside chamber).
f. Belt Wash: Provide wash system consisting of stainless steel manifolds inside wash chamber. Spray manifolds shall be located to effectively clean the belt on both sides, and shall be easily removable without tools.
g. Drive Motor: Provide variable speed 3/4 hp AC Motor and gear reducer. Speed to be changed by turning a knob located on the control panel.
h. Slide Bed: Provide 14 ga. stainless steel bed formed with vertical and horizontal corners coved to a 3/4" radius. Unit shall be reinforced with channel mounted on 1-5/8" Ø tubular stainless-steel legs with adjustable s/s flanged feet and rails.
i. Main Control System: Provide UL Listed Main Control Center as shown on the plan containing start-stop button, belt wash, speed control and disconnect circuit breaker for slat belt tray return conveyor. All components shall be neatly contained in a stainless steel watertight enclosure. All wiring shall conform to the latest UL standards. The electrical contractor shall bring 208V/1phase/15A to the panel, but wiring from the equipment to this panel shall be done by Aerowerks, and all wiring shall be carried in liquid-tight conduits, including conveyor motors and controls. All electrical controls shall be approved for wet conditions and shall comply with all applicable codes. All enclosures for electrical components must be watertight.

7. Soiled Dish Table:

a. Provide NSF Listed SDT Soiled Dish Table, 14 ga. stainless steel top as shown on plan. Table shall be formed with vertical and horizontal corners covered to a 3/4" radius.

b. Provide one (1) pre rinse sink with rack guides and one (1) disposer control panel bracket as shown on the plan.

c. Table to be supported on 1-5/8" Ø stainless steel legs with adjustable s/s bullet feet's. Legs shall be positioned to align up front-to-back for maximum access for cleaning. Legs shall be supported with 12 ga. stainless steel leg channels. All cross rails shall be fully welded to legs with all welds polished and ground smooth.

d. Provide one (1) light and housing per Professional drawings.

e. Provide light switch for light mounted on item #75 sight and sound baffle.

8. Shop drawing required

ITEM #76 GLASS RACK OVERSHELF

Quantity: One (1)
Manufacturer: Aeroworks Manufacturing
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (No alternates available)
Model: CUSTOM
Remarks:

If fabricated, refer to HFS Detail 3.30

1. Model CUSTOM See Aeroworks Drawing #P211581
2. Provide stainless steel overhead tubular rack and storage shelf above table.
3. Shop drawing required

ITEM #77 CONVEYOR DISHWASHER & POWER SCRAPPER

Quantity: One (1)
Manufacturer: Hobart
Alternate MFG. #1: Champion
Alternate MFG. #2: Stero
Model: CL64EN-ADV+BUILDUP
Remarks:

1. Model CL64EN-ADV+BUILDUP Conveyor Dishwasher, Advansys model, (2) tank, (342) racks/hour, insulated hinged doors, .39 gallon/rack, stainless steel enclosure panels, microprocessor controls with low temperature & dirty water indicators, NSF Pot & Pan mode, programable de-lime notification, 30 kW stainless booster, energy recovery (DWER), automatic soil removal (ASR), drain water tempering kit, ENERGY STAR®, Free factory startup for installations within a 100 mile radius of a Hobart service office; installation beyond 100 miles will be charged at the quoted rate by the local Hobart service office
2. Oversized units with crated shipping dimensions greater or equal to 72" in length and/or 90" in height. If delivery is to a facility without a standard height dock, additional shipping charges will apply depending on the service requested. consult Factory.
3. Standard warranty - 1-Year parts, labor & travel time during normal working hours within the USA
4. Model CL64EN-ADVHTE15K Electric tank heat 15kW wash/10kW rinse
5. Model CL64EN-ADVERH30K 30kW electric booster; separate connection
6. Model CL64EN-ADVELE0CD 480v/60/3-ph
7. Single Point (1) service connection standard (Field convertible options available)
8. Model CL64EN-ADVHGTSTD Standard height
9. Model CL64EN-ADVDIRVER Verify direction of operation
10. Model CL64EN-ADVFETSTD Standard feet
11. Submit water quality report.
12. Hot water supply via Superior Water Conditioner RTK-1000 installed by Plumbing contractor per MFG. instructions and 3 feet or more away from three phase current.
13. Model VNTHD/E-ADJ E-series vent hood domestic (adjustable)
14. Blower Dryer
15. Shop drawing required

ITEM #78 CLEAN DISHTABLE

Quantity: One (1)
Manufacturer: Aeroworks Manufacturing
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (No alternates available)
Model: CUSTOM
Remarks:

If fabricated, refer to HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.06, 1.07, 3.20, 3.22

1. Model CUSTOM See Aeroworks Drawing #P211581
2. Provide NSF Listed Clean Dish Roller Table, 14 ga. stainless steel formed with vertical and horizontal corners coved to a 3/4” radius. Table shall be equipped with turned up sides with box edge on front and at rear. Table shall be connected to exit end of the dishwasher. Unloader to provide a drip-proof connection. Slope table to drain and show slope on shop drawings. Table shall be designed to accept a gravity roller conveyor to carry dish racks.

3. Gravity roller conveyor shall be in accordance with the following:
   a. Rollers shall be 1.9” Ø blue PVC, fitted with polypropylene bearings with stainless steel balls.
   b. Rollers shall be spaced at approximately 5-1/2” centers.
   c. Shafts shall be 7/16” hexagon aluminum securely bolted to side rails.
   d. Side rails shall be 1/8” x 2” stainless steel resting on support pins welded to side of conveyor bed to keep rollers elevated above bottom of bed for effective draining of water from dish racks.
4. Table to be supported on 1-5/8” Ø stainless steel legs with adjustable s/s flanged feet. Legs would be supported on 12 ga. stainless steel leg channels.
5. All cross rails to be fully welded to legs with all welds polished and ground smooth.
6. Provide a pre-wired accumulation switch at end of clean table integrated with dish machine to shut machine off when a rack reaches the end of the table.
7. Shop drawing required

ITEM #79 MOBILE DISHTABLE SORTING TABLE

Quantity: One (1)
Manufacturer: Caddy
Alternate MFG. #1: John Boos
Alternate MFG. #2: Steril-Sil
Model: T-239
Remarks:

1. Model T-239 Silver Sorting Caddy, mobile, 42"W x 26-1/2"D x 35-7/8"H, three sides turned up 2", trough 4"D x 4-1/2"W, holds (3) 20" x 20" racks, stainless steel construction, 5" heavy duty swivel polyurethane tired polymer horn Microban casters, UL, NSF

ITEM #80 MOBILE CUP/GLASS RACK DOLLY

Quantity: Three (3)
Manufacturer: Channel Manufacturing
Alternate MFG. #1: Advance
Alternate MFG. #2: Eagle Group
Model: GRD
Remarks:

1. Model GRD Dolly, Glass Rack, single stack, aluminum construction, 5" plate casters, NSF
2. Model 052 Caster Set, Heavy Duty, 5"x2", 2000 lb weight capacity

ITEM #81 DISHWASHER PANT LEG VENT

Quantity: Two (2)
Manufacturer: Fabricator
Alternate MFG. #1: (No alternates available)
Alternate MFG. #2: (No alternates available)
Model: CUSTOM
Remarks:

Refer to HFS Detail 5.40

1. Refer to #77 Dishwasher and #77.1 Blower/Dryer for sizing
2. Mechanical Contractor to manifold ducts after vents are above finished ceiling
3. Shop drawing required

ITEM #82 SPARE NO.

ITEM #83 MOBILE DISH CARRIER

Quantity: Six (6)
Manufacturer: Cambro
Alternate MFG. #1: Metro
Alternate MFG. #2: Carlisle
Model: ADCS110
Remarks:

1. Model ADCS110 Dish Cart, adjustable, 6 towers, minimum dish size 4-1/2", maximum dish size 13", includes vinyl dust cover, polyethylene construction, 28-5/8"W x 37-7/8"L x 31-7/8"H, black, NSF
2. General Contractor to issue RFI to the Department to verify plate size

ITEM #84 MOBILE TRAY & FLATWARE CART

Quantity: Four (4)
Manufacturer: Lakeside Manufacturing
Alternate MFG. #1: Caddy
Alternate MFG. #2: Steril-Sil
Model: 213
Remarks:

1. Model 213 Tray & Silver Cart, accepts (10) flatware cylinders (not included), (130) 16" x 22" trays, stainless steel shelf, stainless steel angle frame with push handle, 500 lb. load capacity, 5" non-marking cushion tread casters, Made in USA
2. S/s finish
3. Polyurethane casters, 5", cushion tread, all swivel, standard

ITEM #85 HAND SINK/ABAAS

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: Eagle Group
Alternate MFG. #2: Aero
Model: 7-PS-41
Remarks:

1. Model 7-PS-41 ADA Compliant Hand Sink, wall mounted, 14" wide x 16" front-to-back x 5" deep bowl, 18 gauge 304 stainless steel, electronic faucet (battery & 110v options both supplied), deck mounted soap dispenser (pump), undermounted paper towel dispenser, basket drain, wall brackets, NSF, cCSAus
2. Model K-08 Low-flow aerator 0.5gpm, fits 55/64-27 male or 15/16-27 female thread on spout, conforms to California AB 1953
3. Model 7-PS-10 P-trap, heavy duty, 1-1/2", 17 gauge

ITEM #85.1 SOAP & TOWEL DISPENSER

Quantity: One (1)
Remarks:

Refer to Specification Section 102813 Toilet Accessories

ITEM #86 MOBILE POT/PAN SHELVING RACK

Quantity: Nine (9)
Manufacturer: IMC/Teddy
Alternate MFG. #1: Fabricator
Alternate MFG. #2: Sammons
Model: SSS-4824-4L
Remarks:

1. Four (4) shelves per unit, louvered embossed, 48"W x 24"D, 16 gauge shelves, stainless steel
2. Four (4) post per unit, 61”H, for use with stem casters, stainless steel finish
3. Four (4) stainless Steel Cart-Washable Stem Caster, swivel, 5" diameter, 1-1/4" wide face, corrosion resistant, polyurethane wheel tread, with donut bumpers, 300 lb. capacity
4. Welded construction

ITEM #87 THREE COMPARTMENT POWERWASH SINK

Quantity: One (1)
Basis of Design: Power Soak 200PSD-210L CUSTOM
Remarks:

(Performance specifications for all manufacturers)
See Powersoak drawing #2133884-2

1. Model 200PSD - 210L CUSTOM
2. 208/60/3,29.9 AMPS (40 amp service required)
3. Self-draining pump housing and impeller
4. 7000 Watt Heater located in wash tank, Povye:red
5. Punch for #20 Pre-Rinse Spray Assembly
6. Rear-Exit S/S Ball Valve Drains
7. P250 Solid State Controller And Control Components, Including High And Low Water Sensors,
8. Conforms To ANSI/NSF Standard 2 For Food Equipment
9. Wash Tanks Supported By 1-5/8" s/s Diameter Legs With s/s Cross Members and adjustable s/s Bullet Feet
10. 10 slot and 14 slot sheet pan system.
11. Sheet pan insert which is fully covered with water and does not require flipping during wash cycle
12. Integrated chemical dispenser
13. 18”L stainless steel chemical under shelf on right end
14. 24”H stainless steel back splash extensions above standard 9.5”H rear splash

15. Fisher Model 2267 Pot Filler Faucet, 8" adjustable centers, splash-mounted, with double-joint spout, 20", with insulated off-on control valve at outlet, 3/4" inlet with Fisher 5 year warranty against defects in materials or workmanship
16. Fisher Model 24805 Lever Waste Valve, with overflow assembly, 3-1/2" industry standard sink opening, 2" drain outlet, flat strainer, 12 GPM drain rate, stainless steel, CSA with Fisher 5 year warranty against defects in materials or workmanship
17. 4”L scupper drain between wash tank and pre-rinse tank
18. T&S Brass Model B-0455-M Syphon breaker standard, 1/2"
19. Welded joints
20. 100% 14 gauge 304 S/S Construction, tanks, drain boards, splashes and channel rims
21. PS6 utensil basket
22. Sound deadening
23. Wash tank water flow front to back
24. 21” deep wash tank with effective water height of 18” to overflow
25. Sanitizer tank time with a high and low water level sensor with sanitizer meter
26. Flow of drains through drain manifold for prevention of drain blockage before water recharging
27. Shop drawing required

ITEM #88 FLOOR TROUGH - DISHWASH

Quantity: Two (2)
Manufacturer: IMC/Teddy
Alternate MFG. #1: Advance Tabco
Alternate MFG. #2: Fabricator
Model: FWR-120-SG-CUSTOM
Remarks:
If fabricated, refer to HFS Detail 6.03

1. Model FWR-120-SG-CUSTOM FWR Floor Water Receptacle
2. 120"W x 7-1/2"D, 4" deep receptacle
3. (2) 4" OD tailpieces
4. Two (2) stainless steel beehive strainer
5. 16/304 stainless steel construction, brushed satin finish
6. (SG) subway grating
7. NSF
8. Made in USA
9. Shop drawing required

ITEM #89 MOBILE WORK TABLE

Quantity: Two (2)
Manufacturer: Advance Tabco
Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: KMS-308 CUSTOM
Remarks:
If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02A, 1.03A, 1.06, 2.01C

1. Model KMS-308 Work Table
2. 96"W x 30"D
3. 14 gauge 304 stainless steel top
4. 14 gauge stainless steel fixed undershelf
5. Stainless steel legs & adjustable bullet feet
6. Model TA-31 Closed Splash, 5" high on rear
7. Provide legs to provide gap in undershelf for clearance for #38
8. Three (3) stem casters, brake (foot operated), 5" diameter, 1-1/4" face, corrosion resistant, polyurethane horn and wheel tread, with donut bumpers, 300 lb. capacity with brakes
9. Three (3) stem caster, brake (foot operated), 5" diameter, 1-1/4" face, corrosion resistant, polyurethane horn and wheel tread, with donut bumpers, 300 lb. capacity
10. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
11. Stainless steel gussets welded to die-embossed reinforcing channel
12. 1-5/8” diameter tubular stainless steel legs
13. Undershelf turned up on left, rear and right ends
14. Fully welded
15. NSF
16. Shop drawing required

ITEM #90 S/S CORNER GUARD

Quantity: Twelve (12)
Manufacturer: Fabricator
Model: CUSTOM
Remarks:
Refer to HFS Detail 1.10
Mount to wall with construction adhesive and without screws

ITEM #91 FOOD CUTTER

Quantity: One (1)
Manufacturer: Hobart
Alternate MFG. #1: Omcan
Alternate MFG. #2: Sirman
Model: 84145-1
Remarks:

1. Model 84145-1 Food Cutter with #12 attachment hub, 14" diameter stainless steel bowl 22 RPM, double stainless steel knives 1725 RPM, bowl cover with safety interlock, push/pull on/off switch, one-piece burnished aluminum housing, 3" legs, 115v/60/1-ph, 1/2 HP
2. Standard warranty - 1-Year parts
3. 4” legs

ITEM #92 SPARE NO.

ITEM #93 MOBILE HEATED CABINET

Quantity: Three (3)
Basis of Design: Winston HL4022-AL
Remarks:

(Performance specifications for all manufacturers)

1 Low wattage hot food holding cabinet
2. Full-size, insulated cabinet and doors, without fan
3. Adjustable universal wire slides, 3-1/2" OC, accommodates (14) 18" x 26" or (28) 12" x 20" or (14) 2/1 GN pans
4. Most, soft moist, firm moist and crisp temperature and texture settings
5. Air heater and water heater
6. Capacity: 14 18” x 26” sheet pans OR 28 12” x 20” x 2.5” steam table pans OR 14 Gastronorm 2/1 pans
7. Even heat distribution of air flow
8. (2) hinged solid dutch doors with magnetic latches
9. Electronic differential controls with altitude algorithm for automatic altitude adjustment for vapor pressure
10. Adjustable 3.5” O.C. wire racks 65 lbs. capacity per rack
11. Cord wrap with 84”L power cord and plug
12. Drain ball valve with custom s/s valve protection stop
13. Digital display
14. Automatic water fill with mobile water removal system
15. BK WSL-2572-WLK1 flexible self-coiling water connector with quick disconnect on cabinet end
16. Stainless steel interior
17. Custom stainless steel exterior
18. CE, UL EPH ANSI/NSF4, cUL, UL-Sanitation
19. 1 year limited warranty is standard (excluding gaskets, lamps, hoses, power cords, glass panels & evaporators) - for equipment operated in the US & Canada
20. 120v/60/1-ph, 1685 watts, 14.0 amps, (US) NEMA 5-15P
21. Recessed wall electrical receptacle by Electrical Contractor
22. Door hinging per plan
23. 5" swivel casters (2) with locking horn
24. Transport package
25. 90°F to 180°F temperature range

ITEM #94 MOBILE COOK / HOLD CABINET

Quantity: Two (2)
Basis of Design: Winston CHV5-14UV
Remarks:

(Performance specifications for all manufacturers)

1. Cook & Hold Oven, electric, full-size
2. HACCP temperature downloads
3. Processor uses calibration-free thermistors to adjust evaporator and air temperatures in 1’F increments for accurate +/- 2’F
4. Minimum 8 programmable & lockable USB channels for temperature monitoring and convection fan with audio port

5. Commercial grade s/s interior and exterior
6. Capability for slow cooking, bake, braise, poach, sous vide or low temperature steam
7. Full-size, insulated cabinet and doors
8. (2) hinged solid dutch doors with magnetic latches
9. Automatic water fill using ¼" NPT. May be used as manual fill, which includes low water detection.
10. BK WSL-2572-WLK1 flexible self-coiling water connector with quick disconnect on cabinet end
11. Adjustable universal wire slides, 3-1/2" OC, accommodates (14) 18" x 26" or (28) 12" x 20" or (14) 2/1 GN pans
12. Capacity: 14 18" x 26" sheet pans OR 28 12" x 20" x 2.5" steam table pans
13. Even heat distribution of air flow
14. Electronic differential controls with altitude algorithm for automatic altitude adjustment for vapor pressure
15. Wire racks 65 lbs. capacity per rack
16. Cord wrap with 84"L power cord and plug
17. Digital display
18. Stainless steel interior and exterior
19. CE, UL EPH ANSI/NSF4, cUL, UL-Sanitation
20. 1 year limited warranty
21. Each unit with a 208v/60/1-ph, 39.1 amps
22. Recessed wall electrical receptacle by Electrical Contractor
23. Door hinging per plan
24. 5" swivel casters (2) with locking horn
25. Transport package

ITEM #95 WORK TABLE W/ SINK

Quantity: Two (2)
Manufacturer: Advance Tabco
Alternate MFG. #1:
Alternate MFG. #2:
Model: KMS-2411 CUSTOM
Remarks:

If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02C, 1.03A, 1.06, 1.09, 1.09.1, 2.01, 2.21, 2.21.1, 3.02

1. Model KMS-3611-CUSTOM Work Table
2. 132"W x 36"D
3. 14 gauge 304 stainless steel top,
4. 14 gauge stainless steel fixed undershelf
5. stainless steel legs & adjustable bullet feet
6. 4"W common splash with Item #96
7. Utility Sink on right, 1-compartment, 18" long x 14" W x 12" deep bowl, 20 gauge 304 stainless steel
8. Sink bowl with 12"H water level and 15"H flood level
9. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
10. Fisher #53872 zero lead, all stainless steel gooseneck faucet with Fisher 5 year warranty against defects in materials or workmanship
11. Stainless steel gussets welded to die-embossed reinforcing channel
12. 1-5/8" diameter tubular stainless steel legs

13. S/s 108”L x 12”W two-tier overshelf over #95 and #96 with 14” clear space on each shelf with lower shelf 14” off work top; single shelf support through splash support to leg frame per HFS Detail 2.21; edge of lower shelf per HFS Detail 1.01.F.
14. 108”L check minder mounted on lower shelf of overshelf on exhaust hood side only
15. ½” faucet holes for faucet 4” on center
16. Punch hole in sink bowl for overflow of drain
17. One (1) Fisher #24872 rotary waste with overflow and support bracket for waste drain handle with Fisher 5 year warranty
18. Skirted front @ sink
19. Fully welded
20. NSF
21. 18”L x 6”W 16 gauge s/s chase common with #95 from work top to finished ceiling for utility sink and #26 Hand Sink water and vent supply lines
22. 108”L undershelf turned up 2” on left, rear and right ends
23. Terminate undershelf 24” from right end
24. One (1) drawer per HFS Detail 1.09, 1.09.1
25. Mounting provision for #26 Hand Sink
26. Shop drawing required

ITEM #96 WORK TABLE W/ POT RACK

Quantity: Two (2)
Manufacturer: Advance Tabco
Alternate MFG. #1: John Boos
Alternate MFG. #2: Fabricator
Model: KMS-2411 CUSTOM
Remarks:

If fabricated, refer to HFS Details 1.01A, 1.01.1M, 1.02C, 1.03A, 1.06, 1.09, 1.09.1, 1.12B, 2.01, 2.21, 2.21.1, 3.02

1. Model KMS-2411 Work Table
2. 132"W x 24"D, 14 gauge 304 stainless steel top
    a. 5"H backsplash
    b. Common splash with Item #95
3. 132”L undershelf turned up 2” on left, rear and right ends
    a. 14 gauge stainless steel
    b. fixed undershelf.
4. Stainless steel legs
5. Fully welded NSF construction
6. 14 gauge type 304 stainless steel, all-TIG-welded construction with welded areas blended to match adjacent surfaces and to #4 satin finish
7. Stainless steel gussets welded to die-embossed reinforcing channel
8. 1-5/8” diameter tubular stainless steel legs & adjustable bullet feet
9. Pot Rack, table-mounted above two-tier overshelf
    a. 108"L x 2"W x ¼” thick stainless steel pot rack, includes:
        i. (9) plated double pot hooks
        ii. Model TA-89 Pot Hooks, plated, double sided (package of 4).
        iii. Integral with overshelf specified under #95
10. S/s 108”L x 12”W two-tier overshelf over #95 and #96
    a. 14” clear space on each shelf with lower shelf 14” off work top;

b. single shelf support through splash support to leg frame per HFS Detail 2.21 with support through table top to cross rails of #95 and #96
c. edge of lower shelf per HFS Detail 1.01.F.
d. 108”L check minder mounted on lower shelf of overshelf on exhaust hood side only

11. One (1) drawer per HFS Detail 1.09, 1.09.1
12. Mounting provision for #26 Hand Sink
    a. 18”L x 6”W 16 gauge s/s chase
    b. common with #95/#96 from work top to finished ceiling for utility sink and #26 Hand Sink water and vent supply lines
13. Shop drawing required

ITEM #97 EXHAUST HOOD

Quantity: One (1)
Basis of Design: Halton KVE, Halton Drawing #U21-689_R1
Remarks:
(Performance specifications for all manufacturers)
See HFS Detail 6.10 S/s Wall Panel and Gasket

Features:

1. Three hood sections: #97A/#97B/#97C Sections comprised of: #98.1 Variable speed exhaust control panel, #99 Variable speed exhaust hood VFD fan controller, #100 Variable speed VFD room thermostat, #101 Exhaust hood remote control switch
2. Dimensions:
    a. Section A: 136” L x 63” W (plus 24” W supply plenum) x 24” H;
    b. Section B: 136” L x 63” W (plus 24” W supply plenum) x 24” H;
    c. Section C: 136” L x 63” W (plus 24” W supply plenum) x 24” H;
3. Air Flows:
    a. Section A: 1698 Exhaust CFM, 12” x 12” duct collar, 0.24” S.P.; 1257 Supply CFM, 14” x 12” duct collar, 0.15” S.P.
    b. Section B: 2060 Exhaust CFM, 14” x 12” duct collar, 0.31” S.P.; 1470 Supply CFM, 18” x 12” duct collar, 0.20” S.P.
    c. Section C: 2923 Exhaust CFM, 20” x 12” duct collar, 0.50” S.P.; 1700 Supply CFM, 20” x 12” duct collar, 0.27” S.P.
4. Weight:
    a. Section A: Exhaust- 1020 lbs. Supply: 227 lbs.
    b. Section B: Exhaust- 1020 lbs. Supply: 227 lbs.
    c. Section C: Exhaust- 1020 lbs. Supply: 227 lbs.
5. LIR2 Sensor, relay box in each section
6. 18 gauge s/s construction
7. Use of Capture Walls to create a seal between cooking equipment and wall shall not be used as they require cooking equipment to be located further from wall reducing isle space.
8. Chamfered front shall not be allowed as they reduce front overhang and jeopardize capture and containment over tall cooking equipment.
9. Internal endcaps must be cut out to create a continuous capture within the hood.
10. T.A.B. ports in each air screen supply and exhaust plenum section for balancing.
11. Continuous hanging channels front and rear; structural engineer to verify local requirements. Hanging requirements are the responsibility of the installing contractor; local codes must be followed
12. Grease cup in #98A exhaust hood section
13. Mount hood @ 78” AFF
14. 4”H supply plenum with 10% perforations

15. Twelve (12) Culinary LED lights; Light switch mounted on #98A exhaust hood section and inter-wired to three hood sections
16. S/s wall panel from floor cove to underside of hood, full length of hood per HFS Detail 6.10
17. Automated variable-speed modulating dampers with access panels in each exhaust duct collar
18. Finished ceiling height in kitchen is: Maximum 18" high 16 gauge s/s enclosure panels field installed; coordinate with mechanical Professional
19. Exhaust hood listed for 0" clearance
20. Variable-speed fan controllers and 6"H ETL 18 gauge s/s automatic balancing dampers w/ 1" wide flanged inlet and outlet connection (sleeved connection which will cause damper blades to bind are not permitted), manual adjustment device, Belimo actuator. Connections to meet NFPA96 requirements.
21. Grease sensor in main duct; perimeter auxiliary air curtain fan in each hood section with pressure transducer, SCR and access panel
22. Pirhana pre-piped s/s manifold and s/s or chrome plated drops and fittings
23. BacNet control interface to BMS; Mechanical Engineer to verify language
24. Perimeter air curtain air supply to be via room; see Mechanical drawings
25. Eighteen (18) 20"L x 13"H grease extractors and three (3) 11"L x 13"H grease extractors; provide UL1046 approved file # ; Effective area = 1.25 sf per full extractor and 0.75 SF per half extractor; Extraction of contaminants from the exhaust air is provided by the multi-cyclone grease extractors. Efficient grease extraction is achieved by forcing the exhaust air to spiral continuously in the same direction in the multiple chambers of the extractor, thus separating the grease particles from the air flow centrifugally. High extraction efficiency and low pressure loss over the filter remain practically constant.
26. Include grease filtration performance data (micron size versus extraction efficiency) and air flow calculations based on the convective heat load of cooking equipment beneath the hood.
27. Efficiency comparison data to be performed in accordance with the most current ASTM standard F1704 and include results for the required capture and containment exhaust air flow in accordance with the "Test method to determine the threshold of capture and containment". Data must include thermal imaging results validating conformance to ASTM F1704 and supply air temperature of 74'F. Make-up air will be calculated so that the same amount of air will be taken from the zone as is required by the specified system. An additional load cannot be placed on the kitchen HVAC system.
28. Provide a written guarantee of performance, ensuring the specifying manufacturer's engineer that the system will perform to the engineer's satisfaction when installed and balanced according to design air flows and results of ASTM standard F1704 test (as determined by TAB ports and pressure versus air flow curves). Professional reserves the right to reject any system which, when installed, does not provide capture and containment at the threshold flow rate determined in ASTM F1704. Rejected system must be replaced with the specified system, with all replacement costs paid by manufacturer of rejected system. Any changes in the specified sizing of power wiring, fan size, horsepower requirements, or gas lines due to the use of any system other than which is specified is the responsibility of the alternate hood manufacturer, and must be coordinated by the hood manufacturer and the contractors involved.
29. Extractor removal tool
30. Submit independent certification of hood construction and design per NFPA 96 and UL710 standard
31. Submit independent certification of Hood construction and design per NSF and ETL listed
32. Submit published third-party certified independent lab test and certification of extractors and hood construction and design
33. Installation by qualified persons and in accordance with state and local building code requirements
34. The installation shall be in accordance with NFPA 96, Removal of Smoke and Grease-Laden Vapors From Commercial Cooking Equipment

35. All exhaust ductwork and transitions are to be provided and installed by the Mechanical Contractor
36. Clearance from hood and ducts to combustible material shall per applicable building codes
37. For proper operation of the hood system, it is the responsibility of the General Contractor to have the hood balanced and tested to ensure that the exhaust and supply requirements of the hood are met.
38. Perimeter air curtain fan with air jets improve capture and containment of heat and grease emissions. Leave air space above and around the three air curtain fans intake cover on top of the hood.
39. Provide minimum of 2” clearance on the top and sides of the perforated air curtain fan intake cover to allow unimpeded entrance of air into the air curtain fans.
40. Provide approved shop drawings to appropriate trades referencing utility service and coordinate final connection.
41. Deliver, assemble and install system per approved system shop drawing.
42. Furnish wiring and plumbing diagrams to end use
43. Shop drawing required of air curtain fan schematic wiring, exhaust volume air damper schedule and installation notes.
44. Note: all field wiring and connection points are based on manufacturer’s requirements at the time of design and are subject to change due to electrical component(s) update or obsolescence. Contractor to verify and request current electrical diagrams at time of preparation of shop drawings and make changes to wiring as required.
45. Note: maximum length of cables between any controllers (control panel, hoods etc.) in series is 328 feet. If greater length is needed between controllers, in in-line Ethernet booster must be specified and used.
46. Electrical Contractor to supply and run 7 wire STP plenum-rated cable (9 wire STP cable if VFD is provided with bypass) from Exhaust Hood Control Panel to exhaust fan(s).
47. Shop drawing required

ITEM #98 FIRE SUPPRESSION SYSTEM

Quantity: One (1)
Manufacturer: Ansul
Alternate MFG. #1: AMEREX
Alternate MFG. #2: EQUIPEX
Model: Piranha 27
Remarks:

1. Model Piranha chemical fire suppression with water sprinkler continuation after discharge
2. Pre-Engineered Hybrid System per UL 300
3. Four gallon tank system (Piranha 27); serves #97 & #148
4. 3/8” concealed s/s piping and fittings with 3/8” s/s appliance drops
5. Mechanical engineer to advise on gas line size for mechanical gas valve supplied with unit
6. Mechanical gas valve shipped loose for installation by Plumbing Contractor
7. See plumbing drawings for size of mechanical gas valve
8. Remote mounted Piranha 13 regulated release
9. Remote mounted Piranha 7 regulated actuator
10. Lockable water valve by Plumbing Contractor
11. Remote pull station located per code 42-48” AFF
12. Single or multiple tank system enclosed in S/s box
13. All chrome plated or chrome sleeved piping and nozzles

14. Fire Marshal approval of submittal after Professional review of submittal
15. Shunt trip breakers and field wiring by Contractor
16. Shop drawing required

ITEM #98.1 EXHAUST HOOD CONTROL PANEL

Quantity: One (1)
Basis of Design: Halton Marvel 2
Remarks:
(Performance specifications for all manufacturers)
Provide same manufacturer as the manufacturer of #98

1. Serves #97 and #148 Exhaust Hoods
2. Automated regulation of ventilation exhaust levels
3. Demand control
4. Monitors indoor air quality in the kitchen space.
5. Reduce energy costs by scheduling and adjusting airflow based on hours of operation and appliance use.
6. Hood exhaust airflow adjustment depending on cooking activities
7. Touch screen interface
8. Control of common VFD exhaust fan for minimum energy consumption at all times
9. Automatic or on schedule start/stops
10. Automatic modulation via #98 balancing dampers which adjusts the airflow with motorized balancing dampers attached to the duct collar of each hood. Damper shall be controlled by a 0-10V DC position reference signal generated by a controller. Upon power failure, the automatic balancing damper fully opens.
11. For ease of field balancing of hoods, the DCV control panel shall include a push button on the touch screen for air balancing purposes. Pushing the button will bring all hoods to design air flow with CFM measured and verified. It is to also confirm Automated Balancing Damper operation, Make up air signal output and all sensor reporting.
12. Early fire warning signals
13. Internet monitory and programming
14. One to 3 thermal imaging sensors (depending on length of hood) per hood, used to measure the rate of change of the cooking surface temperature, the sensor acquires a “heat signature” of the equipment positioned below each sensor used to detect when one or more pieces of cooking equipment are turned on and is necessary to start the hood exhaust fan in idle mode and calculates an index which averages the temperature radiation over the sensor’s field-of-view. The thermal imaging device is placed in the hood ceiling and is used to measure a rapid change in temperature of cooking surfaces (for example, cooking activities) and adjust the airflow in the hood to the required level.
15. One to 3 thermal imaging sensors in combination with temperature sensor to measure the risk of fire in the hood and provide an early fire detection alarm. The alarm shall consist of a hood light changing from the standard white color to a blinking red color.
16. The early detection fire alarm shall also provide the ability to shut off the electrical or gas energy input to the appliances.
17. Controller to provide inputs/outputs and is designed to collect real time information and to implement various automation control algorithms. The controller to respond to the infrared sensor(s) and duct temperature sensor to measure changes in cooking status.
18. Differential Pressure Transducer used in conjunction with the value from the temperature sensor and thermal imaging sensor to measure the airflow in real time and control the airflow through each hood.

19. Duct Temperature Sensor to be located in the hood collar, the temperature sensor measures the temperature of the exhaust air is used in conjunction with the pressure transducer value and a thermal imaging sensor to detect the event of cooking equipment start-up to control the airflow. Duct temperature is often a better indicator of start-up when certain types of cooking equipment, such as fryers, are used. A system consisting of the duct temperature sensor in combination with thermal imaging sensors shall be used to activate the early fire detection alarm, activated before the fire system is triggered.
20. Alarm light status on a touch screen is activated when any alarm condition (i.e., extractor missing, extractor clogged, fire suppression activated, early fire detection alarm sensor failure, VFD in default) is detected. Reason for alarm can be diagnosed by the integral remote diagnostic software.
21. An IEQ Sensor shall monitor temperature, relative humidity, atmospheric pressure, VOC's, CO2, and particulate matter at levels of PM10, PM 2.5, and PM1 in the kitchen space. When safe levels of CO2, VOC's, and particulate matter are exceeded the system shall increase the exhaust airflow to decrease the contaminant levels in the kitchen space.
22. Provide permanent RJ45 CAT5E Ethernet connection (unless prohibited by Contracting Officer, when a temporary Ethernet service connection or USB B serial connection shall be provided) and inter-connection to Exhaust Hood VFD Thermostat and Exhaust Hood(s).
23. Electrical Contractor to supply and run RJ45 CAT5 cable from Exhaust Hood Control Panel to VFD, for communication language as verified by Mechanical Contractor.
24. Submit a sequence of Operation documenting procedures which occur during start-up, shut-down, idle, cooking, over-ride, fire, off, airflow reporting and replacement air control, alarm, and fault modes.
25. Refer to air curtain and VFD exhaust and supply installation manuals, exhaust hood submittal details and wiring schematics.
26. Mount at 48" AFF or in compliance with local code and ADA recommended mounting/position location must be taken into account by installing contractor.
27. Grease sensor installed vertically in main exhaust duct with field wiring to control panel consist with approved shop drawing and with access for future maintenance
28. Grease sensor must be installed with a duct access door and within 300 feet of control panel
29. Shop drawing required

ITEM #99 EXHAUST HOOD VFD FAN CONTROLLER

Quantity: One (1)
Basis of Design: Halton
Remarks:
(Performance specifications for all manufacturers)
Provide same manufacturer as the manufacturer of #98

1. Shall control the speed of a three-phase fan motor by changing the frequency of the current supplied to the exhaust/MUA fan motors. Provide inter-connection between Exhaust Hood VFD Fan Controller in separate conduits.
2. 0-10V DC position reference signal
3. Controller physical dimensions to be determined by motor horsepower and voltage
4. Install wiring in separate conduits for incoming and outgoing wiring from each VFD
5. Controller must be located within maximum of 150 feet of fan motor location
6. Controller is supplied and programmed by hood manufacturer and wired by the applicable trade other than hood manufacturer
7. Controller cabinet supplied and installed by Mechanical Contractor
8. Mount at 48" AFF with 6" clearance on left and right of controller cabinet

9. All fan motors must be compatible with variable frequency controller drives (VFD's)
10. All wiring and cabling to be provided by Electrical Contractor unless otherwise stated on shop drawing.
11. Shop drawing required

ITEM #100 EXHAUST HOOD VFD FAN THERMOSTAT (ROOM IEQ SENSOR)

Quantity: One (1)
Basis of Design: Halton Marvel 2
Remarks:
(Performance specifications for all manufacturers)
Provide same manufacturer as the manufacturer of #98

1. Mount on kitchen wall as shown on plan, near a HVAC room thermostat away from heat sources.
2. The sensor shall monitor space temperature, relative humidity, atmospheric pressure, VOC's, CO2, and particulate matter levels including PM10, PM 2.5, and PM1.
3. If safety thresholds are exceeded for the pollutants then the exhaust hood control panel (see #98.1) shall increase the exhaust airflows accordingly.
4. Shop drawing required

ITEM #101 REMOTE EXHAUST HOOD FAN OVERRIDE SWITCH

Quantity: Four (4)
Remarks:
(Performance specifications)
Provide same manufacturer as the manufacturer of #97 & #148
Three (3) integrated into #97 Exhaust Hood and one (1) integrated into #148 Exhaust Hood

1. Ability to override pre-programmed operation using one of two possible modes; a push button shall be illuminated when activated.
2. Mode #1: Ability to press and hold for 1 second to accelerate the exhaust rate to 100% of the design airflow for a pre-programmed period of time (default is 5 minutes).
3. Mode #2: Ability to press and hold for 3 seconds to accelerate the exhaust rate to 100% of the design airflow for a pre-programmed period of time (default 1 hour. This shall start the hood if it has been overridden by a schedule or an "off" state.
4. Shop drawing required

ITEM #102 MOBILE DOUBLE STACK 6 PAN CONVECTION STEAMER W/ STAND

Quantity: One (1)
Manufacturer: AccuTemp
Alternate MFG. #1: Cleveland
Alternate MFG. #2: Market Forge
Model: N61201D060 DBL
Remarks:

1. Model N61201D060 DBL Two compartment, Connectionless Evolution™ Boilerless, Convection Steamers featuring Steam Vector Technology, natural gas, holds (6) 12" x 20" x 2-1/2" deep pans in each compartment, Digital Controls, NO water & drain connection required, warranty NOT voided by water quality, no water filtration required, 60,000BTU natural gas, 120/60/1ph, (2) 5' cords & NEMA 5-15P, cULus, UL EPH Classified, Made in USA, ENERGY STAR® (Includes stand in configuration of choice)
2. 1 year parts & labor warranty, standard
3. Lifetime service and support guarantee
4. Door hinged on left
5. Manual water fill
6. SNH-21-06 - Support Stand, for double stacked Gas Evolution, Ergo-low mounting height: 8-7/8" lowest unit height, stainless steel, with 5" casters (in lieu of standard)
7. Two (2) model AT1A-3809-1 Drain kit allows a drain to be plumbed to the Evolution™ Steamer or Connectionless Steamer for draining into a floor drain (plumbing from steamer drain to floor drain by Plumbing Contractor)
8. 3 gallons potable water per hour for each section
9. T&S HG-2C-36-PS gas connector

ITEM #103 S/S WALL PANEL WITH GASKET

Quantity: One (1)
Manufacturer: Halton
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (No alternates available)
Model: HOPKINS WALL PANEL
Remarks:
If fabricated, refer to HFS Detail 6.10

1. Wall panel to match length of Item 97, Kitchen Exhaust Hood; Installation by GC with high temperature silicone and without screws or exposed fasteners
2. 18 gauge type 304 s/s; Lengths over 8 feet shall have a hemmed edge between sheets
3. Provide cantilevered flange @ 45° down from wall, to cover area behind equipment to the wall above utility connections
4. 6" deep horizontal
5. Turn down front edge and hem edge underneath
6. Hang at 45" A.F.F.
7. Flange runs full length of wall panel
8. “L” shaped wall panel along length of hood and width of exhaust canopy.
9. Shop drawing required

ITEM #104 MOBILE FRYER W/ FILTER

Quantity: Four (4)
Manufacturer: Pitco Frialator
Alternate MFG. #1: Frymaster
Alternate MFG. #2: KEATING
Model: SSHLV14C-4/FD
Remarks:

1. Model SSHLV14C-3/FD Solstice Supreme™ Reduced Oil Volume Fryer System, gas, (4) fryers, (1) 32 lb. oil capacity full tank per fryer, computer controls with push button top off, built-in Solstice™ Filter Drawer System, stainless steel tank, front, door & sides, (4) 72,500 BTU, ENERGY STAR®, CSA Flame, CSA Star, NSF, CE
2. 1 year parts and labor warranty from the date of installation up to a maximum of 15 months from the date of manufacture
3. 115v/50/60/1-ph, 0.7 amps, standard (fryer)
4. 115v/50/60/1-ph, 6.7 amps, standard (filter)
5. Natural gas
6. Model B2101519 Tank Cover, 18 gauge light duty
7. Filter flush hose
8. Paperless filter assembly
9. Model B3901504 Casters, 9" adjustable swivel non-lock rear & lock front casters, for battery of (4) Solstice gas and electric fryers, batteries and retherms
10. Model B2101519 Tank Cover, 18 gauge light duty
11. Model B3901504 Casters, 9" adjustable swivel (set of 4) non-lock rear & lock front casters,
12. Battery of Solstice Gas fryers
13. Auto Filtration - Full Pot
14. Hands-free automatic fry pot oil level control

ITEM #105 SPARE NO.

ITEM #106 PORTABLE OIL CADDY

Quantity: One (1)
Manufacturer: BKI
Alternate MFG. #1: Pitco
Alternate MFG. #2: Frymaster
Model: OC-90
Remarks:

1. Model OC-90 Oil Caddy, portable waste oil pick up & disposal unit, 150lb. oil capacity, 54" long high temp hose, bi-directional vane pump, fluoro-elastomer pump shaft, stainless steel removable tank, 8" wheels, dual handles

ITEM #107 40 GAL - TILT SKILLET

Quantity: One (1)
Manufacturer: Groen
Alternate MFG. #1: Cleveland
Alternate MFG. #2: Legion
Model: BPM-40GA
Remarks:

1. Model BPM-40GA Braising Pan, gas, 40-gallon capacity, 10" deep pan, 38" pan height, IPX6 water rated electronic Advanced controls with digital display, 1 minute to 10 hour timer, 175° - 400°F preset temperatures along with manual setting capability, manual tilt, standard etch marks,

faucet bracket, round tubular open leg base, stainless steel construction, bullet feet, electric spark ignition, 144,000 BTU/hr, cCSAus, NSF, IPX6, Made in USA
2. (1) year parts & labor, (10) year pan warranty, standard
3. 115v/60/1-ph, 5.0 amps, standard
4. T&S HG-2C-36-PS gas connector
5. T&S HW-2C-36 water connector

6. Natural gas

ITEM #108 FLOOR TROUGH - BRAISING PAN

Quantity: One (1)
Manufacturer: IMC/Teddy
Model: ASFT-3024-SG
Alternate MFG. #1: Advance Tabco
Alternate MFG. #2: Fabricator
Remarks:
If fabricated, refer to HFS Detail 6.03.1

1. Model ASFT-3024-SG ASFT Anti-Spill Floor Trough, 24"W x 30"D, 6" deep receptacle, (1) 4" OD tailpiece, stainless steel beehive strainer, 14/304 stainless steel, brushed satin finish, (SG) subway grating, NSF, Made in USA
2. Shop drawing required

ITEM #109.1 COMBI OVEN - ELECTRIC, UPPER

Quantity: Two (2)
Manufacturer: Convotherm
Model: C4 ED 6.10EB
Alternate MFG. #1: UNOX
Alternate MFG. #2: Rational
Remarks:

1. Model C4 ED 6.10EB Convotherm Combi Oven/Steamer, electric, steam generator, (6) half size sheet pan or (6) 12" x 20" x 1" hotel pan capacity, easyDial control panel with digital display 9-stage & 99 cooking recipes storage, (4) cooking modes: hot air, steam, combi-steam & retherm, multi-point core temperature probe, five-speed auto reversing fan, anti-microbial hygienic door handle, pull-out spray hose, ConvoClean+ fully automatic hands-free cleaning system, stainless steel construction, UL-Listed ventless (no hood required - local codes prevail)
2. 12 month parts and labor warranty and second 12 month parts only warranty, standard
3. 480v/60/3-ph, 13.1 amps
4. Model CACK ConvoClean "Hands Free" automatic cleaning system, comes with: (1) 10 liter ConvoClean, (1) 1 liter ConvoCare and set of connectors and hoses, standard
5. Model CCARE ConvoCARE Solution, (2) 10 liter containers
6. Model CCLEAN ConvoClean Solution, (2) 10 liter containers
7. Model DISSOLVE Descaling Solution, (6) one-gallon containers with quart markings
8. Model CCAREC ConvoCARE Concentrate, (2) 1-liter bottles
9. Model DD-TT Disappearing Door, for EasyDial 6.10
10. A water analysis is required for the proper selection of a water treatment system. Submit water quality report to MFG. to confirm specification for filter #110.

11. Dormont Manufacturing Model W100B36 Dormont Hi-PSI® Water Connector Hose, 1" dia., 36" long, covered with stainless steel braid, 2-year warranty

ITEM #109.2 COMBI OVEN - ELECTRIC, LOWER

Quantity: Two (2)
Manufacturer: Convotherm
Alternate MFG. #1: UNOX
Alternate MFG. #2: Rational
Model: C4 ED 10.10EB
Remarks:

1. Model C4 ED 10.10EB Convotherm Combi Oven/Steamer, electric, steam generator, (11) half size sheet pan or (11) 12" x 20" x 1" hotel pan capacity, easyDial control panel with digital display 9-stage & 99 cooking recipes storage, (4) cooking modes: hot air, steam, combi-steam & retherm, multi-point core temperature probe, five-speed auto reversing fan, anti-microbial hygienic door handle, pull-out spray hose, ConvoClean+ fully automatic hands-free cleaning system, stainless steel construction, UL-Listed ventless (no hood required - local codes prevail)
2. 12 month parts and labor warranty and second 12 month parts only warranty, standard
3. 480v/60/3-ph, 23.3 amps
4. Model CACK ConvoClean "Hands Free" automatic cleaning system, comes with: (1) 10 liter ConvoClean, (1) 1 liter ConvoCare and set of connectors and hoses, standard
5. Model CCARE ConvoCARE Solution, (2) 10 liter containers
6. Model CCLEAN ConvoClean Solution, (2) 10 liter containers
7. Model DISSOLVE Descaling Solution, (6) one-gallon containers with quart markings
8. Model DD-TT Disappearing Door, for EasyDial 10.10
9. Submit a water quality report MFG. to confirm specification for filter #110.
10. Model 3462275 Stacking Kit, 6" High on Casters, for 6.10 on 6.10 (6.10 on 10.10) (electric models)
11. Dormont Manufacturing Model W100B36 Dormont Hi-PSI® Water Connector Hose, 1" dia., 36" long, covered with stainless steel braid, 2-year warranty

ITEM #110 COMBI OVEN WATER FILTER

Quantity: Four (4)
Manufacturer: Convotherm
Alternate MFG. #1: UNOX
Alternate MFG. #2: Rational
Model: WBT-QT1+CR
Remarks:

1. Model WBT-QT1+CR Optipure Water Treatment System, dual-cartridge, (1) CTO-Q10 cartridge, (1) CTO-QCR cartridge, 2.5 gpm, 0.5 micron sediment and chlorine up to 20,000 gallons, 0.5 chloramine up to 6,000 gallons, pressure gauge, inlet shut-off valve, mounting bracket, for use with steam & combi ovens
2. Model WBT-CTO-Q10 QT Replacement Cartridge, 10" Quick-Twist, Pre-filter protects RO membrane by reducing sediment and chlorine, 1.5 gpm, 15,000 gallon capacity, 0.5 micron particulate, reduces chlorine, taste & odor, NSF (for use with QT10-1, QT10-2, OP-70, OP-70CR, OPS-70, OPS175, OPS175CR, SRO70) (300-05828)
3. Submit a water quality report MFG. to confirm specification for filter #110.

ITEM #111 SPARE NO.

ITEM #112 CONVEYOR TOASTER

Quantity: One (1)
Manufacturer: Hatco
Alternate MFG. #1: (no alternates available)
Alternate MFG. #2: (no alternates available)
Model: TK-100
Remarks:

1. Model TK-100 Toast King® Conveyor Toaster, vertical conveyor, countertop design, bread & bun toaster, approximately 960 units/hour capacity, stainless steel construction, 5.0kW, NSF, CE, UL, UL EPH Classified, CSA, Made in USA
3. Includes 24/7 parts & service assistance, call 800-558-0607
4. One year on-site parts & labor warranty, plus one additional year parts only warranty on all Toast-King metal sheathed elements
5. 208v/60/1-ph, 5038 watts, 24.0 amps, NEMA 6-30P (domestic voltage), standard

ITEM #113 GRIDDLE

Quantity: One (1)
Manufacturer: Vulcan
Alternate MFG. #1: AccuTemp GGF1201B48
Alternate MFG. #2: Keating
Model: 960RX
Remarks:

1. Model 960RX Heavy Duty Griddle, countertop, gas, 60" W x 24" D cooking surface, 1" thick polished steel griddle plate, embedded mechanical snap action thermostat every 12", millivolt pilot safety, electric spark or manual ignition, front manifold gas shut-off valve, low profile, stainless steel front, sides, front grease trough, 4" back & tapered side splashes, 4" adjustable legs, 135,000 BTU, CSA, NSF
2. 1 year limited parts & labor warranty, standard
3. Natural gas
4. 120v/50/60/1-ph, 1.0 amp, NEMA 5-15P, standard
5. T&S Brass Model HG-4D-48-FF Safe-T-Link Gas Connector Hose, 3/4" connection, 48" hose, stainless steel braiding with extruded coating, (1) Quick-Disconnect, gas elbows & nipples, 180,000 BTU / hr. minimum flow capacity
6. Gas regulator

ITEM #114 MOBILE REFRIGERATED EQUIPMENT STAND

Quantity: Two (2)
Manufacturer: Turbo Air
Alternate MFG. #1: Traulsen
Alternate MFG. #2: U-Line
Model: PRCBE-60R-N
Remarks:

1. Model PRCBE-60R-N PRO Series Refrigerated Chef Base, one-section, 60”W, 9.77 cu. ft., (2) stainless steel drawers, accommodates pans up to 6" deep, capacity: (3) full size pans per drawer (NOT included), digital temperature display, stainless steel top, full marine drip guard edge, front-breathing, self-cleaning condenser, hot gas condensate system, side mount self-contained refrigeration, R290 Hydrocarbon refrigerant, 1/4 HP, 115v/60/1-ph, 3.2 amps, NEMA 5-15P, ETL-Sanitation, cETLus
2. 3 year parts & labor warranty, standard
3. 7 year compressor warranty (self-contained only), (updated warranty & spec sheets pending from Turbo Air)
4. Condensing unit on the left, standard
5. Caster Set, swivel, locking front wheels, standard

ITEM #115 CHARBROILER

Quantity: One (1)
Manufacturer: Vulcan
Alternate MFG. #1: Jade
Alternate MFG. #2: Montague
Model: VTEC60
Remarks:

1. Model VTEC60 IRX™ Infrared Charbroiler, gas, countertop, 58-1/2", (5) 22,000 BTU burner, manual control, piezo ignition, crumb tray, stainless steel cooking grids, sides, control panel, top trim, removable heat shield & backsplash, 4" adjustable legs, 110,000 BTU, CSA, NSF
2. 1 year limited parts & labor warranty, standard
3. Natural gas
4. T&S Brass Model HG-4D-48-FF Safe-T-Link Gas Connector Hose, 3/4" connection, 48" hose, stainless steel braiding with extruded coating, (1) Quick-Disconnect, gas elbows & nipples, 180,000 BTU / hr. minimum flow capacity
5. Gas regulator

ITEM #116 TRASH CONTAINER - UNDERCOUNTER

Quantity: Eight (8)
Manufacturer: Rubbermaid Commercial Products
Model: 1971258
Remarks: BY DEPARTMENT

1. Model 1971258 Slim Jim® Container, 16 gallon, 22"L x 11"W x 25"H, with venting channels, molded-in handles, general purpose waste, open type without lid, high-impact plastic construction, gray, Made in USA

ITEM #117 HAND SINK W/ PULL OUT DRAWER AND SOAP & TOWEL DISPENSER

Quantity: Two (2)
Manufacturer: BSI
Alternate MFG. #1: Advance
Alternate MFG. #2: Duke/Countercraft
Model: HSD-ST
Remarks:

1. Model HSD-ST BSI, LLC Drain Tech Hand Sink Drawer with Soap & Towel Dispenser, mount to bottom side of cabinet top, 4" drain, tilt-out towel compartment, soap dispenser, stainless steel hand sink, NSF
2. Fisher zero-lead content faucet

ITEM #118 SERVICE COUNTER W/ LOAD CENTER

Quantity: Two (2)
Manufacturer: Duke/Countercraft Manufacturing
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: CUSTOM
Remarks:

See HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.05, 1.05.1, 1.06, 4.01.3, 4.01.5, 4.02.8, 4.32, 4.40; Duke details govern when deviation.

1. See Countercraft drawing #CC 1 & #CC2
2. 15’-2”L x 3’-0”W x 36”H; 15’-2”L x 8”W x 3-1/2”H tray slide with top of tray slide @ 34”AFF.
3. Silestone top; color by Professional. 4”H splash @ wall.
4. Plastic laminate clad vertical cladding; color by Professional.
5. Perforated s/s hinged perforated ventilation door on utility compartments below #124, #125, #126
6. Removable s/s access panel below #117 Hand Sink; punch base shelf for drain line.
7. Isolated 4-sided s/s trash enclosure (base is @floor level) with hinged s/s cut-off door on server side.
8. Fixed kick plates on ends; magnetic removable kick plates on patron side; omit kick plates on server side.
9. Integrate #116, 117, 119, 120, 123, 124, 125, 126
10. Continuous piece ‘fully enclosed base’ style construction with utility chase within counter. All electrical conduit and plumbing to be located within utility chase as required. Utility chase to be fully accessible from operator side of counter with electrical and plumbing to be located removable stainless steel panels.
11. Fully welded angle iron frame utilizing 1.5" x 1.5” x 1/8" galvanized angle. Welds to be ground smooth and sprayed with silver enamel paint. Angle Iron to be framed around each cutout for drop-in-equipment. Angle iron to run front-to-back and at each mullion. 1/2" sound deadening tape to be applied to top of angle iron frame prior to installation of countertop.
12. All stainless steel fabrication to be fully welded. Butt or knuckle joints will not be accepted. Silestone tops must be arranged for a consistent appearance. All radius edges of turn down to have a minimum 3/8" #8 finish.
13. Stainless steel internal shelving compartments, fully enclosed back, sides, and top. Removable rear access panels, removable top panel, coved corners All internal stainless steel fabrication to be fully welded.
14. All electrical to be interconnected to load center. Electrical to be located in electrical conduit pipe, flex conduit to be kept to a minimum. Exposed flex conduit will not be accepted. All wiring to be numbered at all junctions, per circuit. Wiring diagram to be provided at each load center door. All receptacles mounted in the counter to be recess mounted and labeled.
15. One (1) lot plumbing and load center compartments. Plumbing lines are to be 3/4" copper. All copper lines to be coated to protect from corrosion. All hot food well drains are to be manifolded with unions for ease of maintenance. Unions to utilize compression fittings, no soldering is

permissible. Manifolded drains lead to single 3/4" turn ball valve mounted in full stainless steel housing. Drain valve to be located on operator side for ease of access.

16. Custom control panel containing remote mounted controls for drop-in equipment (i.e. hot food wells, cold pans, etc), custom Duke labeling and switches
17. Duke to provide installation and coordination services. Installation and coordination services to include delivery, uncrating & setting in place, completion of all required field welds and joints, completing all final assembly, leveling, and start up. This includes all necessary site visits prior to and during fabrication including site visits for field dimensions.
18. Labeled light switch for #119, 120 & 123 and labeled controls of #124, 125, 126 mounted in service side apron
19. Hinged perforated ventilated access panel for #124, 125 & 126
20. Remote labeled illuminated on/off switch mounted in service side apron and connected to electrical in counter base serving #124, 125, 126
21. Separate counter section to support #127 Refrigerated Display Case with remote labeled illuminated on/off switch mounted in service side apron and connected to electrical in counter base serving #127. Hinged perforated ventilated access panel for #127. Adjust overall length of #118 as necessary to provide clearance for #127 and main a minimum of three feet clearance from end of counter and wall.
22. Shop drawing required

ITEM #119 FOOD GUARD WITH LIGHTS & HEAT LAMP

Quantity: Two (2)
Manufacturer: Premier Metal & Glass
Alternate MFG. #1: BSI
Alternate MFG. #2: Fabricator
Model: TM2N-A
Remarks:

If fabricated, refer to HFS Detail 4.10A

1. Refer to #118
2. 3/8” Starphire glass
3. Labeled light switch mounted in service-side apron of #118
3. Shop drawing required

ITEM #120 FOOD GUARD WITH LIGHTS

Quantity: Two (2)
Manufacturer: Premier Metal & Glass
Alternate MFG. #1: BSI
Alternate MFG. #2: Fabricator
Model: TM2N-A
Remarks:

If fabricated, refer to HFS Detail 4.10A

1. Refer to #118
2. 3/8” Starphire glass
3. Labeled light switch mounted in service-side apron of #118
4. Shop drawing required

ITEM #121 MOBILE REACH-IN PASS THROUGH FREEZER

Quantity: One (1)
Manufacturer: Victory Refrigeration
Alternate MFG. #1: Traulsen
Alternate MFG. #2: TurboAir
Model: FS-1D-S1-EWPTHDHC
Remarks:

1. Model FS-1D-S1-EWPTHDHC UltraSpec™ Series Freezer, Pass-thru, one-section, self-contained refrigeration, 26.2 cu. ft. capacity, (4) wide half height solid hinged doors, (3) silver freeze (chrome-style) shelves, stainless exterior & interior, standard depth cabinet, TOUCH POINT™ electronic temperature control/indicator, LED lighting, expansion valve technology, Santoprene door gaskets with 2 year warranty, stainless steel breakers, 3/4 HP, UL, cUL, UL EPH Classified, MADE IN USA
2. 3 years parts & labor warranty
3. Self-Contained refrigeration
4. Additional 4 year compressor warranty (part only), standard
5. 115v/60/1-ph, 9.1 amps, cord with NEMA 5-15P
6. Control/Kitchen side door hinging: standard on right
7. Rear/Server side door hinging: on right standard
8. Legs, set of 4, 6" high adjustable stainless steel, standard

ITEM #122 PASS-THRU TWO-DOOR ROLL-IN REFRIGERATOR

Quantity: One (1)
Manufacturer: Traulsen
Alternate MFG. #1: Victory
Alternate MFG. #2: TurboAir
Model: RRI232LPUT-FHS
Remarks:

1. Model RRI232LPUT-FHS Spec-Line Refrigerator, Roll-thru, two-section, self-contained refrigeration, StayClear™ Condenser, stainless steel exterior and interior, standard depth cabinet, full-height doors, accepts 66" high racks (#57) with microprocessor controls, 1/3 HP, cULus, NSF
2. 115v/60/1-ph, 13.4 amps, NEMA 5-20P, standard
3. 3 year service/labor & 5 year compressor warranty, standard
4. Kitchen/Thermometer side: Left door hinged left/right hinged right, standard
5. Rear: Left door hinged left/right hinged right, standard

ITEM #123 FOOD GUARD WITH LIGHTS

Quantity: Two (2)
Manufacturer: Premier Metal & Glass
Alternate MFG. #1: BSI
Alternate MFG. #2: Fabricator
Model: TM2N-A
Remarks:

If fabricated, refer to HFS Detail 4.10A

1. Refer to #118
2. 3/8” Starphire glass
3. Labeled light switch mounted in service-side apron of #118
4. Shop drawing required

ITEM #124 DROP-IN FOUR WELL HOT/COLD FOOD UNIT

Quantity: Two (2)
Manufacturer: Delfield
Alternate MFG. #1: Atlas Metal
Alternate MFG. #2: Duke/Countercraft
Model: N8656P
Remarks:

1. Model N8656P Drop-In Hot/Cold Food Well, 56-1/4", 4-pan size for 12" x 20" pans, 8" deep single tank with drain, remote control panel with single temperature control & three-way toggle switch, stainless steel top & well, galvanized steel exterior housing, self-contained refrigeration, R290 refrigerant, 1/4 HP, (55-1/4" x 25" cutout required), cUL, UL, NSF
2. Model 0460000N 1 year parts & labor warranty, standard
3. Model W00003N 1 year compressor warranty, standard
4. 120/240v/60/1-ph, 21.0 amps, standard
5. Model 000-504-0030 Autofill assembly kit (shipped loose), for N8600 and N8800 series

ITEM #125 DROP-IN THREE WELL COLD PAN

Quantity: Two (2)
Manufacturer: Delfield
Alternate MFG. #1: Atlas Metal
Alternate MFG. #2: Duke/Countercraft
Model: 8145-EFP
Remarks:

1. Model 8145-EFP LiquiTec® Drop-In Cool Food Unit, 3-pan size, 4" or 6" deep pans flush with counter top, insulated pan, stainless steel inner liner & top, galvanized outer liner, self-contained Eutectic fluid refrigerated system, R290 Hydrocarbon refrigerant, 1/4 hp, (44-1/4" x 25" cutout required), cUL, UL, NSF
2. Model 0460000N 1 year parts & labor warranty, standard
3. Model W00003N 1 year compressor warranty, standard
4. 115v/60/1-ph, 3.7 amps, NEMA 5-15P, standard

ITEM #126 DROP-IN FROST TOP

Quantity: Two (2)
Manufacturer: Delfield
Alternate MFG. #1: Atlas Metal
Alternate MFG. #2: Duke/Countercraft

Model: N8245P
Remarks:

1. Model N8245P Drop-In Frost Top, stainless steel 1" elevated top with drain trough & 2" overhang, galvanized steel exterior housing, on/off toggle switch, self-contained refrigeration, R290 refrigerant, 1/5 HP, (44-5/8" x 25" cutout required), cUL, UL, NSF
2. Model 0460000N 1 year parts & labor warranty, standard
3. Model W00003N 1 year compressor warranty, standard
4. 115v/60/1-ph, 2.4 amps, NEMA 5-15P, standard

ITEM #127 DROP-IN REFRIGERATED MERCHANDISER

Quantity: One (1)
Manufacturer: Turbo Air
Alternate MFG. #1: Federal
Alternate MFG. #2: RPI
Model: TOM-48L-UFD-S-3SI-N
Remarks:

1. Model TOM-48L-UFD-S-3SI-N Drop-In Horizontal Open Display Case, low profile, 15.2 cu. ft. capacity, 47-7/8"W x 33"D x 53-1/8"H, self-contained refrigeration with self-cleaning condenser, (2) glass shelves + deck, tempered glass front shield & side walls, rear sliding glass doors, solar digital thermometer, digital electronic thermostat with defrost control, LED interior lighting, stainless steel interior, specify exterior color, front air intake & rear air discharge, includes night cover, R290 Hydrocarbon refrigerant, (2) 3/4 HP, 115v/60/1-v/60/1-ph, 13.6 amp, cord with NEMA 5-20P, CSA Sanitation, cCSAus
2. 2 year parts & labor warranty, standard
3. Additional 3 year compressor warranty (5 year total), standard
4. Counter base by MFG. of #118 with identical standard features
5. Self-cleaning condenser device equipped, standard

ITEM #127.1 MERCHANDISER COUNTER

Quantity: One (1)
Manufacturer: Duke/Countercraft
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: CUSTOM
Remarks:

See HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.05, 1.05.1, 1.06, 4.01.3, 4.01.5, 4.32, 4.40; Duke details govern when deviation.

1. See Countercraft drawing #DM-4
2. 4’-0” +/- L x 3’-0”+/- W x 36” H; field verify clearances prior to fabrication
3. Refer to Professional drawings for finishes
4. Installation by Duke
5. Finished ends adjunct to #84.

6. Provide top of ½” synthetic stone; see GEN-G-104 finish schedule by Professional.

7. Stone top with 5”H eased exposed edge.

8. Toe kick shall be 4” H and set back 3-1/2” from face of the counter.

9. Provide ventilated toe kick on customer side. Provide magnetic s/s toe kicks on customer side of long axis clad with matte black powder coat and held in place with magnets; end toe kicks are fixed; omit toe kick on server side.

10. Provide two (2) ventilated doors on server side; provide fixed panel on ends and customer side.

11. Provide utility compartments where equipment on counter top projects into base compartment; omit base and intermediate shelves.

12. Provide angled door top to serve as a finger reveal the length of the top of each door, with top of doors set at 33.82” AFF with ¾” between the top of door and counter top edge turn down. See Professional detail for finger pull design.

13. Provide Blum hinges on cabinet doors and access panels with magnetic catches.

14. Provide flush door locks at upper right of each pair of storage and utility compartment doors.

15. Clad vertical counter and all exposed faces, ends and edges of counter on patron side cladding; see GEN-G-104 Professional Finish Schedule.

16. Continuous piece ‘fully enclosed base’ style construction with utility chase within counter.
17. Fully welded angle iron frame utilizing 1.5” x 1.5” x 1/8” galvanized angle. Welds to be ground smooth and sprayed with silver enamel paint.

18. Angle iron to be framed around each cutout for drop-in-equipment.

19. Angle iron to run front-to-back and at each mullion.

20. 1/2” sound deadening tape to be applied to top of angle iron frame prior to installation of countertop.

21. All stainless steel fabrication to be fully welded. Butt or knuckle joints will not be accepted.

22. Stone tops must be arranged for a consistent appearance. All radius edges of turn down to have a minimum 3/8” #8 finish.

23. Plumbing compartments: Plumbing lines are to be 3/4” copper. All copper lines to be coated to protect from corrosion. Unions to utilize compression fittings, no soldering is permissible. Manifolded drains lead to single 3/4” turn ball valve mounted in full stainless steel housing. Drain valve to be located on operator side for ease of access.

24. Duke to provide installation and coordination services. Installation and coordination services to include delivery, uncrating & setting in place, completion of all required field welds and joints, completing all final assembly, leveling, and start up. This includes all necessary site visits prior to and during fabrication including site visits for field dimensions.

25. Provide thermal breaks in top for all cold and hot equipment penetrations in top.

26. Shop drawing required

ITEM #128 BEVERAGE COUNTER W/ LOAD CENTER

Quantity: Two (2)
Manufacturer: Duke/Countercraft
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: CUSTOM
Remarks:

See HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.05, 1.05.1, 1.06, 4.01.3, 4.01.5, 4.32, 4.40; Duke details govern when deviation.

1. See Countercraft drawing #CC-3
2. #128A 13'-1-1/2" +/- L x 3'-0"+/- W x 36" H; field verify clearances prior to fabrication
3. #128B 15'-1-3/4"L" +/- L x 3'-0"+/- W x 36" H; field verify clearances prior to fabrication
4. Synthetic stone top with 4"H splash @ rear and end wall.
5. Plastic laminate clad vertical cladding; see GEN-G-104 by Professional.
6. Isolated 4-sided s/s trash enclosure (base is @floor level) with hinged s/s cut-off door on server side.
7. Magnetic numbered removable kick plates on patron side; fixed kick plates on exposed end
8. Installation by Duke
9. Scribe toe kick to toe base on left and right building walls to maintain 1" set back from walls.
10. 4" H x 1.18" D splash at open end opposite end where #141 located and rear end. Seal splash to counter top; follow Professional finish schedule for food grade sealant color.
11. Finished end adjunct to #141. Hold niche of 1'-10"L in alcove.
12. Provide top of ½" synthetic stone; see GEN-G-104 by Professional.
13. Stone top with eased exposed edge.
14. Toe kick shall be 4" H and set back 3-1/2" from face of the counter. Scribe toe kick to line curve of wall cove base.
15. Provide magnetic s/s toe kicks on long axis clad with matte black powder coat and held in place with magnets; end toe kicks are fixed.
16. #118A: Provide eight (8) equal width hinged locking door panels of base cabinet on patron side.
    #118B: Provide eight (8) equal width hinged locking door panels of base cabinet on patron side.
17. Provide storage compartments with base and intermediate shelf where equipment on counter top does not project into base compartment. Provide utility compartments where equipment on counter top projects into base compartment; omit base and intermediate shelves.
18. Provide clearance in base and reinforce top for #133 Ice/Soda Dispenser. Coordinate location and if required for clearance, provide cut out in base shelf if for soda conduit stub-up. Cap conduit.
19. Coordinate and provide cut outs in base shelf for access to drain fixtures.
20. Mount one (1) cup dispenser #130.2 on rear wall of each counter.
21. Provide angled door top to serve as a finger reveal the length of the top of each door, with top of doors set at 33.82" AFF with ¾" between the top of door and counter top edge turn down. See Professional drawings for detail for finder pull.

22. Provide Blum hinges on cabinet doors and access panels with magnetic catches.

23. Provide flush door locks at upper right of each pair of storage and utility compartment doors.

24. Clad vertical counter and all exposed faces, ends and edges of counter on patron side. See GEN-G-104 by Professional.

25. Provide space in counter base for electrical outlet mounting of electrical outlets and switches to serve #133, 134, 131, 46.1, 146.

26. Continuous piece 'fully enclosed base' style construction with utility chase within counter.
27. All electrical conduit and plumbing to be located within utility chase as required. Utility chase to be fully accessible from operator side of counter with electrical and plumbing to be located removable stainless steel panels.
28. Fully welded angle iron frame utilizing 1.5" x 1.5" x 1/8" galvanized angle. Welds to be ground smooth and sprayed with silver enamel paint.

29. Angle iron to be framed around each cutout for drop-in-equipment.

30. Angle iron to run front-to-back and at each mullion.

31. 1/2" sound deadening tape to be applied to top of angle iron frame prior to installation of countertop.

32. All stainless steel fabrication to be fully welded. Butt or knuckle joints will not be accepted.

33. Stone tops must be arranged for a consistent appearance. All radius edges of turn down to have a minimum 3/8" #8 finish.

34. Stainless steel internal shelving compartments shall be fully enclosed on back, sides, and top. All internal stainless steel fabrication to be fully welded.

35. All electrical to be interconnected to load center. Electrical to be located in electrical conduit pipe, flex conduit to be kept to a minimum. Exposed flex conduit will not be accepted.

36. All electrical to be interconnected to load center concealed behind hinged door. All wiring to be numbered at all junctions, per circuit. Wiring diagram to be provided at each load center door. All receptacles and controls mounted in the counter to be labeled with engraved labels.

37. Plumbing compartments: Plumbing lines are to be 3/4" copper. All copper lines to be coated to protect from corrosion. Unions to utilize compression fittings, no soldering is permissible. Manifolded drains lead to single 3/4" turn ball valve mounted in full stainless steel housing. Drain valve to be located on operator side for ease of access.

38. Custom control panel containing remote mounted controls for drop-in equipment (i.e. hot food wells, cold pans, etc.), custom Duke labeling and switches.

39. Duke to provide installation and coordination services. Installation and coordination services to include delivery, uncrating & setting in place, completion of all required field welds and joints, completing all final assembly, leveling, and start up. This includes all necessary site visits prior to and during fabrication including site visits for field dimensions.

40. Three (3) BK Resources WL-3848-WLK3 water connector hose.
41. Counter top holes with black grommets as required for all exposed power, drain and water lines.
42. Shop drawing required

ITEM #128.1 ISLAND BEVERAGE COUNTER W/ LOAD CENTER

Quantity: One (1)
Manufacturer: Duke/Countercraft
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: CUSTOM
Remarks:

See HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.05, 1.05.1, 1.06, 4.01.3, 4.01.5, 4.32, 4.40; Duke details govern when deviation.

1. See Countercraft drawing #CC-4
2. 18'-8"+/-L x 6'-2"+/-W x 36"H; field verify clearances prior to fabrication
3. Synthetic stone top; see GEN-G-104 by Professional.
4. Plastic laminate clad vertical cladding; color by Professional.
5. Two (2) isolated 4-sided s/s trash enclosure (base is @floor level) with hinged s/s cut-off door on server side.
6. Refer to Professional drawings for finishes
7. Installation by Duke
8. Follow Professional finish schedule for food grade sealant color.
9. Finished ends.
10. Provide top of ½" synthetic stone; see GEN-G-104 by Professional.
11. Stone top with 5"H eased exposed edge.
12. Toe kick shall be 4" H and set back 3-1/2" from face of the counter.
13. Provide magnetic numbered s/s toe kicks on long axis clad with matte black powder coat and held in place with magnets; end toe kicks are fixed.
14. Provide nine (9) equal width hinged locking door panels of base cabinet on both long axis of counter.
15. Provide storage compartments with base and intermediate shelf where equipment on counter top does not project into base compartment. Provide utility compartments where equipment on counter top projects into base compartment; omit base and intermediate shelves.
16. Provide removable base shelf and adjustable intermediate shelves.
17. Provide clearance in base and reinforce top for #133 Ice/Soda Dispenser. Coordinate location and if required for clearance, provide cut out in base shelf if for soda conduit stub-up. Cap conduit.
18. Coordinate and provide cut outs in base shelf for access to drain fixtures.
19. Provide angled door top to serve as a finger reveal the length of the top of each door, with top of doors set at 33.82" AFF with ¾" between the top of door and counter top edge turn down. See Professional drawings for door pull detail.
20. Provide space on counter for two (2) #130.1 Cup Dispenser.
21. Provide Blum hinges on cabinet doors and access panels with magnetic catches.

22. Provide flush door locks at upper right of each pair of storage and utility compartment doors.

23. Clad vertical counter and all exposed faces, ends and edges of counter on patron side cladding; see GEN-G-104 finish schedule by Professional.

24. Integrate #129, 130, 133, 147. Provide infrastructure and clearance for #40, 42, 45, 46.1, 116, 131, 134
25. Continuous piece 'fully enclosed base' style construction with utility chase within counter.
26. All electrical conduit and plumbing to be located within utility chase as required. Utility chase to be fully accessible from operator side of counter with electrical and plumbing to be located removable stainless steel panels.
27. Fully welded angle iron frame utilizing 1.5" x 1.5" x 1/8" galvanized angle. Welds to be ground smooth and sprayed with silver enamel paint. Angle Iron to be framed around each cutout for drop-in-equipment. Angle iron to run front-to-back and at each mullion. 1/2" sound deadening tape to be applied to top of angle iron frame prior to installation of countertop.
28. All stainless steel fabrication to be fully welded. Butt or knuckle joints will not be accepted.
29. Stone tops must be arranged for a consistent appearance. All radius edges of turn down to have a minimum 3/8" #8 finish.
30. Stainless steel internal shelving compartments, fully enclosed back, sides, and top. Removable rear access panels, removable top panel, coved corners All internal stainless steel fabrication to be fully welded.
31. All electrical to be interconnected to load center. Electrical to be located in electrical conduit pipe, flex conduit to be kept to a minimum. Exposed flex conduit will not be accepted. All wiring to be numbered at all junctions, per circuit. Wiring diagram to be provided at each load center door. All receptacles mounted in the counter to be recess mounted and labeled.
32. One (1) lot plumbing and load center compartments. Plumbing lines are to be 3/4" copper. All copper lines to be coated to protect from corrosion. All hot food well drains are to be manifolded with unions for ease of maintenance. Unions to utilize compression fittings, no soldering is permissible. Manifolded drains lead to single 3/4" turn ball valve mounted in full stainless steel housing. Drain valve to be located on operator side for ease of access.
33. Custom control panel containing remote mounted controls for drop-in equipment (i.e. hot food wells, cold pans, etc), custom Duke labeling and switches
34. Duke to provide installation and coordination services. Installation and coordination services to include delivery, uncrating & setting in place, completion of all required field welds and joints, completing all final assembly, leveling, and start up. This includes all necessary site visits prior to and during fabrication including site visits for field dimensions.
35. Provide thermal breaks in top for all cold and hot equipment penetrations in top.
43. Six (6) BK Resources WL-3848-WLK3 water connector hose.
44. Counter top holes with black grommets as required for all exposed power, drain and water lines.
36. Shop drawing required

ITEM #129 DROP-IN DRIP TRAY

Quantity: Four (4)
Manufacturer: Advance Tabco
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: DP-1842
Remarks:

1. Model DP-1842 Drain pan, countertop, drop-in style, 18" x 42", 16 gauge 300 series stainless steel, with removable perforated stainless steel drip tray, 1/2" NPT drain

ITEM #130 CUP DISPENSER

Quantity: One (1)
Manufacturer: Antunes
Alternate MFG. #1: Vollrath
Alternate MFG. #2: Dispense-rite
Model: LS-20
Remarks:

1. Model LS-20 Cup Dispenser, counter style, 15”L x 24”W x 21.5”H, accommodates two (2) 8 oz to 64 oz, includes: s/s, adjustable gaskets, black, NSF, Made in USA
2. Three caddy compartments
3. Contractor to issue RFI to the Department to confirm cup size.
4. Set on counter #153.

ITEM #130.1 CUP DISPENSER

Quantity: Two (2)
Manufacturer: Antunes
Alternate MFG. #1: Vollrath
Alternate MFG. #2: Dispense-rite
Model: DACS-20
Remarks:

1. Model DACS-20 Cup Dispenser, counter top style, 9.25” dia. x 24”D, accommodates cup rim diameters 2-3/4" – 4-1/4”, includes: (2) adjustable gaskets, black, NSF, Made in USA
2. Contractor to issue RFI to the Department to confirm cup size.
3. Set on counter #128.1

ITEM #130.2 CUP DISPENSER

Quantity: Two (2)
Manufacturer: Antunes
Alternate MFG. #1: Vollrath
Alternate MFG. #2: Dispense-rite
Model: DAC-10
Remarks:

1. Model DAC-10 Cup Dispenser, wall mount, 5” dia. x 22.75”D, accommodates cup rim diameters 2-3/4" – 4-1/4”, includes: (1) adjustable gasket, black, NSF, Made in USA
2. Mounting bracket
3. Contractor to issue RFI to the Department to confirm cup size.
4. Mount on wall behind #128 Beverage Counter

Quantity: Two (2)
Manufacturer: Antunes
Alternate MFG. #1: Vollrath
Alternate MFG. #2: Dispense-rite
Model: DACS-30
Remarks:

1. Model DACS-30 Cup Dispenser, counter style, 9.25”L x 24”W x 29.75”H, accommodates three (3) 8 oz to 64 oz, includes: s/s, adjustable gaskets, black, NSF, Made in USA
2. Set on counter #128
3. Contractor to issue RFI to the Department to confirm cup size.

ITEM #131 JUICE DISPENSER

Quantity: Four (4)
Manufacturer: BUNN
Model: 37300.0000
Remarks: BY VENDOR

1. Model 37300.0000 37300.0000 JDF-4S Silver Series® 4-Flavor Cold Beverage System, (3) 12 oz. drinks/min capacity, 2-modular dispense decks, 18 lb. ice bank, 7" cup clearance, dispense 1.0 to 1.5 ounces per second flow rate, pumps & mixes 2+1 to 11+1 concentrated beverages, 4+1 high viscosity & 5+1 juices, dispenses frozen and ambient products, High Intensity™ mixing technology, push button and portion control, door lock, juice display, 120v/60/1-ph, 6 amps, NEMA 5-15P, NSF, ETL

ITEM #132 SPARE NO.

ITEM #133 ICE & BEVERAGE DISPENSER

Quantity: Four (4)
Manufacturer: Multiplex
Alternate MFG. #1: Cornelius
Alternate MFG. #2: Lancer
Model: 2706100
Remarks:

1. Model 2706100 MDH-302 Ice & Beverage Dispenser, countertop, internal carbonation unit, 300 lbs. ice capacity, (2) ice chutes, (12) Flomatic® 464GP sanitary lever valves, 12" lighted merchandiser with "Quench Your Thirst" graphics, drain kit, 120v/60/1-ph, 2.8 amps, cUL, UL, NSF
2. 2 year limited parts & 1 year limited labor warranty
3. See Detail 5.10

ITEM #134 ICE MAKER

Quantity: Four (4)
Manufacturer: Manitowoc
Alternate MFG. #1: Ice-O-Matic
Alternate MFG. #2: Hoshizaki
Model: IYT0750A
Remarks:

1. Model IYT0750A Indigo NXT™ Series Ice Maker, cube-style, air-cooled, self-contained condenser, 30"W x 24"D x 21-1/2"H, production capacity up to 715 lb/24 hours at 70°/50° (575 lb AHRI certified at 90°/70°), easyTouch display with 13 different language options, date/time stamp display, automatic reminder/alert icon, one touch asset information, automatic detection of accessories, continuous operating status, programmable production options (time, weight, day or night), one touch cleaning with displayed instructions, Alpha-San anti-microbial protection, acoustical ice sensing probe, self-diagnostic technology, DuraTech™ exterior, half-dice size cubes, R410A refrigerant, NSF, cULus, CE, ENERGY STAR®
2. Model WARRANTY-ICE-SC 3 year parts & labor (Machine), 5 year parts & labor (Evaporator), 5 year parts & 3 years labor (Compressor), standard
3. Top air discharge kit
4. 208-230v/60/1-ph, 11.1 amps

ITEM #135 SPARE NO.

ITEM #136 SPARE NO.

ITEM #137 SALAD/TOPPINGS ISLAND W/ LOAD CENTER

Quantity: One (1)
Manufacturer: Duke/Countercraft
Model: CUSTOM
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Remarks:
See HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.05, 1.05.1, 1.06, 4.01.3, 4.01.5, 4.32, 4.40; Duke details govern when deviation.

1. See Countercraft drawing #CC-3
2. 21’-5-3/16” +/-L x 4’-9” W x 36” H; Field verify clearances prior to fabrication
3. Silestone top; color by Professional.
4. Plastic laminate clad vertical cladding; color by Professional.
5. Refer to quote # CCXX
6. Finished ends.
7. Provide top of ½” synthetic stone; see GEN-G-104 by Professional.
8. Stone top with 5”H eased exposed edge.
9. Toe kick shall be 4” H and set back 3-1/2” from face of the counter.
10. Provide magnetic numbered s/s toe kicks on long axis clad with matte black powder coat and held in place with magnets; end toe kicks are fixed.

11. Provide ten (10) equal width hinged door panels of base cabinet on either side; no visible gap at top and bottom of door panels.

12. Provide storage compartments with base and intermediate shelf where equipment on counter top does not project into base compartment. Provide utility compartments where equipment on counter top projects into base compartment; omit base and intermediate shelves.

13. Provide removable base shelf and adjustable intermediate shelves.

14. Integrate food guards, with engraved on/off switches for lights. Food shields shipped to Duke and installed in counters by Duke. Under-mount #139 food guards with thin black post trim at counter top penetrations.

15. Coordinate and provide cut outs in base shelf for access to drain fixtures.

16. Provide angled door top to serve as a finger reveal the length of the top of each door, with top of doors set at 33.82” AFF with ¾” between the top of door and counter top edge turn down.

17. Provide Blum hinges on cabinet doors and access panels with magnetic catches.

18. Provide flush door locks at upper right of each pair of storage and utility compartment doors.

19. Clad vertical counter and all exposed faces, ends and edges of counter on patron side with cladding; see GEN-G-104 by Professional.

20. Integrate #138, 139, 140, 147. Provide infrastructure and clearance for #144
21. Continuous piece ‘fully enclosed base’ style construction.

22. All electrical conduit and plumbing to be located within utility chase as required. Utility chase to be fully accessible from operator side of counter with electrical and plumbing to be located removable stainless steel panels.
23. Fully welded angle iron frame utilizing 1.5” x 1.5” x 1/8” galvanized angle. Welds to be ground smooth and sprayed with silver enamel paint. Angle Iron to be framed around each cutout for drop-in-equipment. Angle iron to run front-to-back and at each mullion. 1/2” sound deadening tape to be applied to top of angle iron frame prior to installation of countertop.

24. All stainless steel fabrication to be fully welded. Butt or knuckle joints will not be accepted.

25. Stone tops must be arranged for a consistent appearance. All radius edges of turn down to have a minimum 3/8" #8 finish.
26. Stainless steel internal shelving compartments shall be fully enclosed on back, sides, and top. All internal stainless steel fabrication to be fully welded.

27. All electrical to be interconnected to load center. Electrical to be located in electrical conduit pipe, flex conduit to be kept to a minimum. Exposed flex conduit will not be accepted. All wiring to be numbered at all junctions, per circuit. Wiring diagram to be provided at each load center door. All receptacles mounted in the counter to be recess mounted and labeled.
28. One (1) lot plumbing and load center compartments. Plumbing lines are to be 3/4" copper. All copper lines to be coated to protect from corrosion. All hot food well drains are to be manifolded with unions for ease of maintenance. Unions to utilize compression fittings, no soldering is permissible. Manifolded drains lead to single 3/4" turn ball valve mounted in full stainless steel housing. Drain valve to be located on operator side for ease of access.
29. Custom control panel containing remote mounted controls for drop-in equipment (i.e. hot food wells, cold pans, etc), custom Duke labeling and switches
30. Duke to provide installation and coordination services. Installation and coordination services to include delivery, uncrating & setting in place, completion of all required field welds and joints,

completing all final assembly, leveling, and start up. This includes all necessary site visits prior to and during fabrication including site visits for field dimensions.

31. Provide thermal breaks in top for all cold and hot equipment penetrations in top.

32. Continuous slot toe kick fresh air supply and counter top warm air exhaust ventilation slot.

33. Provide air gap at toe kick and below top in 6” H apron for ventilation in area of #140 Drop-In Cold Wells.

34. Provide space in counter base for electrical outlet mounting of electrical outlets and switches to serve #138, 139,140.

35. Shop drawing required

ITEM #138 DROP-IN TWO-WELL COLD UNIT

Quantity: One (1)
Manufacturer: Delfield
Alternate MFG. #1: Atlas Metal
Alternate MFG. #2: Duke/Countercraft
Model: 8132-EF
Remarks:

1. Model 8132-EF LiquiTec® Drop-In Cool Food Unit, 2-pan size, 4" or 6" deep pans flush with counter top, insulated pan, stainless steel inner liner & top, galvanized outer liner, self-contained Eutectic fluid refrigerated system, 1/4 hp, (30-3/4" x 25" cutout required), cUL, UL, NSF 7
2. 115v/60/1-ph, 7.5 amps, NEMA 5-15P, standard
3. 1 year parts & labor warranty, standard
4. Integral to #137
5. Angled pan, 2" product tilt

ITEM #139 DOUBLE SIDED SALAD FOOD GUARD WITH LIGHTS

Quantity: One (1)
Manufacturer: Premier Metal & Glass
Alternate MFG. #1: BSI
Alternate MFG. #2: Fabricator
Model: TMIR-A
Remarks:
If fabricated, refer to HFS Detail 4.10A
Integral to #137 counter

1. Refer to #137
2. 3/8” Starphire glass
3. Labeled light switch mounted behind door of #137
4. Shop drawing required

ITEM #140 DROP-IN FOUR WELL COLD WELL

Quantity: Three (3)
Manufacturer: Delfield
Alternate MFG. #1: Atlas Metal
Alternate MFG. #2: Duke/Countercraft
Model: N8157-FAP
Remarks:

Integral to #137 counter

1. Model N8157-FAP Drop-In Mechanically Cooled Pan, forced air, 4-pan size, accommodates 4" deep pans, insulated pan, stainless steel inner liner & top, galvanized steel outer liner, includes adapter bars, self-contained refrigeration, R290 refrigerant, 1/2 hp, (55-3/4" x 25-1/2" cutout required), cUL, UL, NSF
2. Model 0460000N 1 year parts & labor warranty, standard
3. Model W00003N 1 year compressor warranty, standard
4. 115v/60/1-ph, 8.9 amps, NEMA 5-15P, standard

ITEM #141 MOBILE CUP DOLLY

Quantity: Six (6)
Manufacturer: Lakeside Manufacturing
Alternate MFG. #1: Advance Tabco
Alternate MFG. #2: Sammons
Model: 450
Remarks:

1. Model 450 Rack Dolly, platform design with push handle, single stack, designed for 20" x 20" racks, stainless steel construction, 200 lb. capacity, (4) 4" swivel casters, Made in USA
2. Casters, 4", all swivel, standard

ITEM #142 SPARE NO.

ITEM #143 DROP-IN SOUP WELL

Quantity: One (1)
Manufacturer: Vollrath
Alternate MFG. #1: Cook Tek
Alternate MFG. #2: (no alternates available)
Model: 741101D
Remarks:

Integral to Staff Dining Area counter; see Professional drawings

1. Model 741101D Mirage® Induction Rethermalizer, drop-in, dry operation, 11 quart, inset with hinged cover, 13-7/8"W x 12-7/16"D x 12-5/16"H, (4) soup presets, stir indicator, locking controls function, LED push button controls, temperature control in °F or °C, cabinet mount controls with leads (6-1/2"W x 3"D x 2-1/2"H), includes: induction ready inset, inset cover, mounting hardware & cord with Nema 5-15P, 800 watt, 6.7 amp, 120v/60/1-ph, cULus, NSF, FCC (cover not NSF)
2. Requires use of included Vollrath induction-ready inset - failure to use these insets may damage the unit & will void the warranty
3. Model 88204NS Inset, 11 quart, induction ready, SteelCoat x3™ non-stick interior, for Mirage induction rethermalizers, NSF

4. Model 47490 Kool-Touch Hinged Cover, stainless with black phenolic knob, fits 78204 Inset & 77110 Double Boiler, imported
5. Model 4980422 Ergo Grip® One-Piece Ladle, equipped with all-natural antimicrobial, 4 oz., stainless steel, 13-1/8" OA length, one-piece construction with black Kool-Touch™ offset handle, shorter overall length for easy serving under low profile breath guards, integrated handle stopper prevents ladle from sliding into containers, Jacob's Pride® Collection, Limited Lifetime Warranty
6. Model 47492 Decorative Ring, for 11 qt. induction soup drop in units, 22 gauge stainless steel

ITEM #144 FLATWARE HOLDER

Quantity: Two (2)
Manufacturer: Dispense-Rite
Alternate MFG. #1: Alegacy
Alternate MFG. #2: Caddy
Model: CTSH-6BT
Remarks:

1. Model CTSH-6BT Silverware Organizer, 13"H x 10-1/8"W x 15-3/8"D, countertop, with inserts, (6) compartment, polystyrene, black
2. 1 year limited warranty, standard

ITEM #145 MOBILE SOAK SINK

Quantity: One (1)
Manufacturer: Aeroworks Manufacturing
Alternate MFG. #1: Advance
Alternate MFG. #2: Eagle
Model: SS2323
Remarks:

1. Model CUSTOM See Aeroworks drawing #P211581
2. Provide one (1) Mobile Soak Sink where shown on plan.
3. Unit shall measure 23” x 23” x 24” high x 8” deep sink and shall be mounted on 1-5/8” Ø stainless steel legs and 5” heavy-duty casters.
4. Sink shall be formed of 14 ga. stainless steel with all corners coved to 5/8” radius.
5. Provide boxed edge on all top edges and lever-operated 1-1/2” waste with open drain.

ITEM #146 COUNTERTOP REFRIGERATOR

Quantity: Seven (7)
Manufacturer: Excellence
Alternate MFG. #1: (no alternates available)
Alternate MFG. #2: (no alternates available)
Model: EMM-4HC
Remarks:

1. 4”H legs
2. Door hinging per plan

ITEM #147 DROP-IN UTILITY SINK

Quantity: Five (5)
Manufacturer: Advance
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: DI-1-255 CUSTOM
Remarks:

1. Drop in #138
2. 9”L x 9”W x 10”D
3. Basket drain
4. Fisher gooseneck faucet #53872 with all stainless steel construction with zero lead content and Fisher 5 year warranty against defects in materials or workmanship
5. Shop drawing required

ITEM #148 EXHAUST HOOD

Quantity: One (1)
Basis of Design: Halton KVE, Halton Drawing #U21-689_R1
Remarks:
(Performance specifications for all manufacturers)
See HFS Detail 6.10 S/s Wall Panel and Gasket

Features:
1. #101 Exhaust hood remote control switch
2. Dimensions:
   a. 148” L x 63” W x 24” H;
3. Air Flows:
   a. 1571 Exhaust CFM, 12” x 11” duct collar, 0.22” S.P.
4. Weight:
   a. Exhaust- 320 lbs.
5. LIR2 Sensor, relay box in each section
6. 18 gauge s/s construction
7. Use of Capture Walls to create a seal between cooking equipment and wall shall not be used as they require cooking equipment to be located further from wall reducing isle space.
8. Chamfered front shall not be allowed as they reduce front overhang and jeopardize capture and containment over tall cooking equipment.
9. T.A.B. ports in each air screen supply and exhaust plenum section for balancing
10. Continuous hanging channels front and rear; structural engineer to verify local requirements. Hanging requirements are the responsibility of the installing contractor; local codes must be followed
11. Grease cup in exhaust hood section
12. Mount hood @ 78” AFF
13. N/A
14. Two (2) Culinary LED lights; Light switch mounted on #148 exhaust hood section
15. S/s wall panel from floor cove to underside of hood, full length of hood per HFS Detail 6.10
16. Variable speed dampers with access panels in each exhaust duct collar

17. Finished ceiling height in kitchen is: Maximum 18” high 16 gauge s/s enclosure panels field installed; coordinate with mechanical engineer and Professional
18. Exhaust hood listed for 0” clearance
19. Variable speed fan controllers and 6”H ETL 18 gauge s/s automatic balancing dampers w/ 1” wide flanged inlet and outlet connection (sleeved connection which will cause damper blades to bind are not permitted), manual adjustment device, Belimo actuator. Connections to meet NFPA96 requirements.
20. Grease sensor in main duct; perimeter auxiliary air curtain fan in each hood section with pressure transducer, SCR and access panel
21. Piranha pre-piped s/s manifold and s/s or chrome plated drops and fittings
22. BacNet control interface to BMS; Mechanical Engineer to verify language
23. Perimeter air curtain air supply to be via room; see Mechanical drawings
24. Two (2) 20”L x 13”H grease extractors; provide UL1046 approved file # ; Effective area = 1.25 sf per full extractor and 0.75 SF per half extractor; Extraction of contaminants from the exhaust air is provided by the multi-cyclone grease extractors. Efficient grease extraction is achieved by forcing the exhaust air to spiral continuously in the same direction in the multiple chambers of the extractor, thus separating the grease particles from the air flow centrifugally. High extraction efficiency and low pressure loss over the filter remain practically constant.
25. Include grease filtration performance data (micron size versus extraction efficiency) and air flow calculations based on the convective heat load of cooking equipment beneath the hood.
26. Efficiency comparison data to be performed in accordance with the most current ASTM standard F1704 and include results for the required capture and containment exhaust air flow in accordance with the “Test method to determine the threshold of capture and containment”. Data must include thermal imaging results validating conformance to ASTM F1704 and supply air temperature of 74’F. Make-up air will be calculated so that the same amount of air will be taken from the zone as is required by the specified system. An additional load cannot be placed on the kitchen HVAC system.
27. Provide a written guarantee of performance, ensuring the specifying manufacturer’s engineer that the system will perform to the engineer’s satisfaction when installed and balanced according to design air flows and results of ASTM standard F1704 test (as determined by TAB ports and pressure versus air flow curves). Professional reserves the right to reject any system which, when installed, does not provide capture and containment at the threshold flow rate determined in ASTM F1704. Rejected system must be replaced with the specified system, with all replacement costs paid by manufacturer of rejected system. Any changes in the specified sizing of power wiring, fan size, horsepower requirements, or gas lines due to the use of any system other than which is specified is the responsibility of the alternate hood manufacturer, and must be coordinated by the hood manufacturer and the contractors involved.
28. Extractor removal tool
29. Submit independent certification of hood construction and design per NFPA 96 and UL710 standard
30. Submit independent certification of Hood construction and design per NSF and ETL listed
31. Submit published third-party certified independent lab test and certification of extractors and hood construction and design
32. Installation by qualified persons and in accordance with state and local building code requirements
33. The installation shall be in accordance with NFPA 96, Removal of Smoke and Grease-Laden Vapors From Commercial Cooking Equipment
34. All exhaust ductwork and transitions are to be provided and installed by the Mechanical Contractor
35. Clearance from hood and ducts to combustible material shall per applicable building codes

36. For proper operation of the hood system, it is the responsibility of the General Contractor to have the hood balanced and tested to ensure that the exhaust and supply requirements of the hood are met.
37. Perimeter air curtain fan with air jets improve capture and containment of heat and grease emissions. Leave air space above and around the three air curtain fans intake cover on top of the hood.
38. Provide minimum of 2” clearance on the top and sides of the perforated air curtain fan intake cover to allow unimpeded entrance of air into the air curtain fans.
39. Provide approved shop drawings to appropriate trades referencing utility service and coordinate final connection.
40. Deliver, assemble and install system per approved system shop drawing.
41. Furnish wiring and plumbing diagrams to end use
42. Shop drawing required of air curtain fan schematic wiring, exhaust volume air damper schedule and installation notes;
43. Note: all field wiring and connection points are based on manufacturer’s requirements at the time of design and are subject to change due to electrical component(s) update or obsolescence. Contractor to verify and request current electrical diagrams at time of preparation of shop drawings and make changes to wiring as required.
44. Note: maximum length of cables between any controllers (control panel, hoods etc.) in series is 328 feet. If greater length is needed between controllers, in in-line Ethernet booster must be specified and used.
45. Electrical Contractor to supply and run 7 wire STP plenum-rated cable (9 wire STP cable if VFD is provided with bypass) from Exhaust Hood Control Panel to exhaust fan(s).
46. Shop drawing required

ITEM #149 MOBILE 4-BURNER RANGE

Quantity: One (1)
Manufacturer: Vulcan
Alternate MFG. #1: Montague
Alternate MFG. #2: Jade
Model: EMM-4HC
Remarks: V4B36B

1. T&S Brass quick disconnect model HG-2D-36K
2. Rear 3/4” gas connection’ and cover front manifold
3. Polyurethane casters, two w/brakes
4. Cabinet base
5. S/s finish on exterior
6. Finished back
7. 34”H back riser

ITEM #150 S/S WALL PANEL WITH GASKET

Quantity: One (1)
Manufacturer: Halton
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (No alternates available)

Model: HOPKINS WALL PANEL
Remarks:
If fabricated, refer to HFS Detail 6.10

1. Wall panel to match length of Item 148, Kitchen Exhaust Hood; Installation by GC with high temperature silicone and without screws or exposed fasteners
2. 18 gauge type 304 s/s; Lengths over 8 feet shall have a hemmed edge between sheets
3. Provide cantilevered flange @ 45° down from wall, to cover area behind equipment to the wall above utility connections
4. 6" deep horizontal
5. Turn down front edge and hem edge underneath
6. Hang at 45" A.F.F.
7. Flange runs full length of wall panel
8. Shop drawing required

ITEM #152 DROP-IN DRIP TRAY

Quantity: One (1)
Manufacturer: Advance Tabco
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: DP-1842
Remarks:

1. Model DP-1824 Drain pan, countertop, drop-in style, 18" x 24", 16 gauge 300 series stainless steel, with removable perforated stainless steel drip tray, 1/2" NPT drain

ITEM #153 BEVERAGE COUNTER

Quantity: One (1)
Manufacturer: Duke/Countercraft
Alternate MFG. #1: Fabricator
Alternate MFG. #2: (no alternates available)
Model: CUSTOM
Remarks:
See HFS Details 1.01, 1.01.1, 1.02, 1.03, 1.05, 1.05.1, 1.06, 4.01.3, 4.01.5, 4.32, 4.40; Duke details govern when deviation.

1. See Countercraft drawing #CC 6
2. 8’-4” +/- L x 3’-0”+/- W x 36” H; field verify clearances prior to fabrication
3. Synthetic stone top; see GEN-G-104 finish schedule color by Professional.
4. 4”H splash @ rear, left and right end wall.
5. Plastic laminate clad vertical cladding; see GEN-G-104 finish schedule by Professional.
6. Isolated 4-sided s/s trash enclosure (base is @floor level) with hinged s/s cut-off door on server side with bezel in counter top.
7. Magnetic numbered removable kick plates on patron side; fixed kick plates on exposed end
8. Installation by Duke
9. Scribe toe kick to toe base on left and right building walls to maintain 1” set back from walls.

10. Seal splash to counter top; follow Professional finish schedule for food grade sealant color.

11. Finished left end.

12. Provide top of ½" synthetic stone; see GEN-G-104 finish schedule by Professional.

13. Stone top with eased exposed edge.

14. Toe kick shall be 4" H and set back 3-1/2" from face of the counter. Scribe toe kick to line curve of wall cove base.

15. Provide magnetic numbered s/s toe kicks on long axis clad with matte black powder coat and held in place with magnets; end toe kicks are fixed.

16. Provide six (6) equal width hinged locking door panels of base cabinet on patron side.

17. Provide storage compartments with base and intermediate shelf where equipment on counter top does not project into base compartment. Provide utility compartments where equipment on counter top projects into base compartment; omit base and intermediate shelves.

18. Coordinate and provide cut outs in base shelf for access to drain fixtures.

19. Provide angled door top to serve as a finger reveal the length of the top of each door, with top of doors set at 33.82" AFF with ¾" between the top of door and counter top edge turn down. See Professional drawings for door pull detail.

20. Provide Blum hinges on cabinet doors and access panels with magnetic catches.

21. Provide space on counter for one (1) #130 Cup Dispenser.

22. Provide flush door locks at upper right of each pair of storage and utility compartment doors.

23. Clad vertical counter and all exposed faces, ends and edges of counter on patron side; see GEN-G-104 finish schedule by Professional.

24. Continuous piece 'fully enclosed base' style construction with utility chase within counter.

25. All electrical conduit and plumbing to be located within utility chase as required. Utility chase to be fully accessible from operator side of counter with electrical and plumbing to be located removable stainless steel panels.

26. Fully welded angle iron frame utilizing 1.5" x 1.5" x 1/8" galvanized angle. Welds to be ground smooth and sprayed with silver enamel paint.

27. Angle iron to be framed around each cutout for drop-in-equipment.

28. Angle iron to run front-to-back and at each mullion.

29. 1/2" sound deadening tape to be applied to top of angle iron frame prior to installation of countertop.

30. All stainless steel fabrication to be fully welded. Butt or knuckle joints will not be accepted.

31. Stone tops must be arranged for a consistent appearance. All radius edges of turn down to have a minimum 3/8" #8 finish.

32. Stainless steel internal shelving compartments shall be fully enclosed on back, sides, and top. All internal stainless steel fabrication to be fully welded.

33. Duke to provide installation and coordination services. Installation and coordination services to include delivery, uncrating & setting in place, completion of all required field welds and joints,

completing all final assembly, leveling, and start up. This includes all necessary site visits prior to and during fabrication including site visits for field dimensions.

45. One (1) BK Resources WL-3848-WLK3 water connector hose.
46. Counter top holes with black grommets as required for all exposed power, drain and water lines.
34. Shop drawing required

2.2 PERFORMANCE AND DESIGN CRITERIA

A. Performance Criteria:

2.3 BEVERAGE CONDUITS

A. The KEC shall coordinate with the Contractor and Professional for installation of above grade floor slab. The Contractor shall provide and install the conduit below or above grade floor slab. Four (4) runs of 2 inch (50mm) I.D. PVC shall be used where conduit runs below slab in soil or concrete and or aluminum EMT conduit where conduit runs above ground and exposed. Where conduit changes 90 degrees in direction, elbows with minimum radius sweeps are referred with a minimum 24 inch (600mm) radius; multiple smaller I.D. conduits are permitted after coordination with the KEC and if approved by the Professional. Minimize the number of bends. Plumbing style short radius elbows are not acceptable. “Tee” fittings are not acceptable.

1. All joints shall be watertight. A pull box shall be provided every 100 feet (30m) or every three bends, whichever occurs first. Stub up the conduit a minimum of 6 inches (150mm) above the finished floor. The Contractor will provide and install conduit hangars.

2. Contractor shall wrap conduit with electric heat strip when conduit is exposed to below freezing temperatures. Install pull-line in all conduits. Tape conduit ends closed during construction to prevent debris from entering conduit, which may later contaminate or degrade beverage lines. Beverage syrup product lines are furnished and installed in the conduit by the Soda Vendor.

3. After the product lines are installed, the Contractor is to fill open conduit ends flush with polyurethane foam insulation and fit conduit end with PVC or aluminum end cap. The end caps are to be drilled to minimum diameter to accept the appropriate number of product lines.

2.4 DISPENSERS (SELF-LEVELING)

A. KEC to verify make of ware, dimensions, and weight and submit to the dispenser manufacturer so that units may be properly calibrated and sized as required. Cup dispensers which are self-leveling also require spring weights according to style of cup customer uses. Coordinate with operator and manufacturer.

2.5 FIRE SUPPRESSION

A. General: Provide surface, hood, and duct fire suppression system as required for compliance with NFPA guidelines and local codes and ordinances. Include certification of compliance by a manufacturer's licensed installer. System(s) shall be complete, including, but not limited to, requirements of the following:

B. Furnish & Connect Fire Suppression System: Furnish fire suppression system piping and detector and install in ventilator or hood. Include with submittal a certification of compliance with NFPA Bulletins 13, 17, 17A, 96, and UL300, Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment by a manufacturer's licensed installer.

C. All exposed piping, brackets, fasteners, etc. shall be chrome plated or sleeved with chrome sleeves. Piping shall be installed unexposed where possible. Coordinate with Work of other trades to enable concealing piping in a timely manner.

D. The mechanical gas fuel shut off valve sized as required shall be provided to the Gas System Contractor for installation in a timely manner by the Fire Suppression Contractor.

E. The Fire Suppression Contractor's fire suppression system cabinet shall include the electric control switch at system control head with normally open contacts and terminals for interconnection to building fire annunciator panel, shunt trip breaker control, as specified under the Electrical Section, and/or other Sections, as specified.

F. The fire extinguishing agent shall be manually released in the vicinity of the cooking equipment as required by NFPA 96.The fire suppression cabinet shall be located to be readily accessible for maintenance.

G. Agent piping and detection devices may be partially built into hood or ventilator at hood manufacturer's factory and assembled in the field by Fire Suppression Contractor contracted by the ventilator manufacturer.

H. All exposed conduit and fittings shall be chrome sleeved or s/s. Pull stations shall be flush mounted into partitions so junction box is not exposed. Stations shall not be located in crash zone of walkways. Locate pull stations on Fire Suppression Submittal for approval.

2.6 EXHAUST HOODS

A. Size and Location: KEC shall verify size and location of all duct connections required in this Contract before fabrication.

B. Duct Collars: Provide stainless steel formed duct collars at ceiling or wall duct connections, where exposed to worker or public view. Provide galvanized or black iron material where not exposed as specified by the Mechanical Drawings.Exposed Ducts: Provide all exposed ducts to walls or ceiling in stainless steel.

C. Verify Conditions: Verify all buildings conditions prior to fabrication or purchase.

D. Filters/Cartridges: Provide stainless steel removable baffle type filters or cartridges on conventional hoods. Filters/Cartridges shall be manufactured of Type 304, 18-8 stainless steel. Provide performance data on filters with submittals.

E. All multiple hood systems tied to one fan assembly shall be provided with balancing dampers. Dampers may be preinstalled in the exhaust plenum or shipped loose for field installation.

F. Stainless Steel Wall Panels: Provide 18 gauge stainless steel sheet behind cooking battery where shown on plan and elevation. Steel shall be extended the full length of the hood, including the fire suppression cabinet, if applicable, to 2 inches (50mm) above the hood line and extend down to the floor. Lengths over 8 feet (2.4m) shall have a hemmed edge between the sheets.

G. Condensate Gutter: Hood shall be fabricated so as to form a condensate gutter 3 inch (75mm) wide by 1 inch (25mm) high at perimeter and shall be provided with a condensate drain terminating at a floor sink location

2.7 INSERT PANS & TOPS

A. All cut-outs, openings, drawers, or equipment specified, sized or detailed to hold stainless steel insert pans shall be provided with a full complement of pans.

B. Pan size to be as follows:

1. One (1) stainless steel, 20 gauge minimum, solid insert pan and top for each space, sized per plans, details, or specifications.

2. Where pan and top sizes are not indicated in plans, details, or specifications, provide one pan and top sized for the size of the pan holder for each opening.

3. Provide maximum depth pan to suit application and space.

4. Provide 18 gauge removable stainless steel adapter bars where applicable.

5. All shallow cold pans shall be provided with 1 inch (25mm) perforated false bottoms when specified. All deep cold pans shall be provided with both 1 inch (25mm) and 7-1/2 inch (190mm) perforated false bottoms when specified unless established by the KEC with the Professional. Combination hot/cold pans shall be provided with 1 inch (25mm) perforated false bottoms when specified.

2.8 QUIETNESS OF OPERATIONS

A. Quietness of operation of food service and related equipment is a requirement. Remove or repair any equipment producing objectionable noise or vibration as determined by the Professional. This also includes providing and installing bumpers and/or gaskets for doors/drawers on fabricated and/or standard manufactured items.

2.9 SERVICEABILITY

A. All components of equipment which may require periodic service or lubrication as a part of normal operation shall be accessible without the use of tools, disassembling or removing major components of the unit or adjacent units. Louvers and access panels shall be coordinated on items of standard manufacture and custom fabrication to ensure access is provided and maintained as shown on Food Service and Professional Drawings.

2.10 TRAY SLIDES

A. Before fabrication of counters with tray slides or extended tops, verify with the Professional:

1. Configuration of all corners, turns, and shape of tray slides for slides for proper support and safe guidance of trays.

2. Size and shape of tray.

2.11 UTILITY QUICK DISCONNECT DEVICES

A. General:

1. Provide quick disconnect gas connector assemblies for the connection of movable or castered equipment as listed in the Item Specifications.

2. Provide for mobile or portable equipment, assemblies to match equipment inlet size, and of a length to permit equipment movement for disconnect access and cleaning. KEC to indicate and coordinate wall backing locations for restraining device of quick disconnect devices.

3. Gas:

   a. Provide T&S Safe-T-Link HG series with K model installation kit for gas equipment. Assure installation per manufacturer's direction and sized according to BTU requirements of equipment.Provide quick disconnect gas connector assembly consisting of hydro formed #321 stainless steel corrugated tubing, constant 360^{O} rotating brass quick disconnect couplings with restraining cable, gas ball valve, Type 304 stainless steel hose and braid connector with extruded yellow flexible plastic coating, all necessary fittings and related appurtenances required for the proper operation of the assembly. Assemblies shall be NSF, NFPA, and AGA certified and comply with applicable ANSI Z21.69, AGA, CGA, and NSF standard.

4. Water:

   a. Provide T&S Safe-T-Link HW series for cold water services; counter top beverage equipment shall use T&S CW series fitting sized to equipment inlet with AW quick disconnect.

   b. Provide a master faucet repair kit for each manufacturer of faucet specified.

2.12 WATER FILTERS

A. Provide In Line Filters:

1. Furnish in-line water filters-purifiers to remove materials, taste, and odor for beverage systems, coffee urns, and ice makers as point of use or central point as specified.

2. All equipment manufacturers requiring water filters for extended warranty coverage to be effective, shall be provided with manufacturer specified filter.

3. Everpure is a preferred manufacturer.

4. Cartridges shall be accessible, easily replaceable, and of standard manufacture.

B. Provide Combi Oven Water Filters:

1. Submit a Water Quality Report identifying all the combi oven manufacturer wwater components.

2. Submit Water Quality Report to combi oven manufacturer to request confirmation of specified water filter is sufficient to maintain combi oven warranty. If an alternate water filter is recommended, provide the recommended water filter in lieu of the specified water filter.

2.13 WATER CONDITIONERS

A. For all steam generators, hot water boilers or quick recovery compartment steamers, provide water conditioners by Superior/Kemtune (or approved equal). Cartridges shall be provided by the KEC to the plumber for installation, accessible, easily replaceable, and of standard manufacture.

B. All steamers using packaged boilers up to and including 15 PSI (103 kPa) operating pressure and containing two compartments and one kettle (up to 250,000 BTUs, or 36 KW) shall use the Superior Water Conditioner model RT-500-K (or approved equal).

C. All larger steamer-kettle combinations containing up to three compartments and two kettles (300,000 BTUs, or 48 KW) shall use the Superior Water Conditioner model RT-750-K (or approved equal).

D. On small table top steamers shall use the Superior Water Conditioner model C-50 (or approved equal) when 1/4 inch tubing feeds the boiler and model C-100 on all units with a 3/8 inch feed.

E. See Detail 5.80 for further information.

2.14 FOOD GUARDS

A. Stainless steel tubing shall be 1 inch (25mm) O.D. x minimum .050 wall, square cut shall fit solid stainless steel fittings. Fittings shall be uniformly machined to accept internal welding to tubing inside neck of fitting adjusted to accommodate thickness of final finish combinations. Exposed screws, bolt heads or rivets are not acceptable. Soldered joints on connections of tubing and fittings are not acceptable. Tubing and related metal components shall be finished with NSF listed, high temperature, thermosetting clear 2 ml powder coatings. Surfaces receiving powder coating shall be treated for maximum adhesion and free of all visual defects including fabrication marks. Coated surfaces shall be smooth with no evidence of bubbles, dust, flux or orange peel.

B. All electrical supply conduit to light fixtures shall be concealed and run inside tubular components. Light transformer/ballast shall be concealed in cabinet base. Light fixture ends shall be equipped with uniform cap at each end. Light fixture housings shall be finished to same specifications as tubing. Lamps shall be full range per Section 114000. Lamps and shatterproof covers shall be removable without tools. Light fixtures shall be sized and provided as required to provide a five to one (5-1) ratio of light level at counter height under food guard and area room illumination at counter height.

C. All glass shall be tempered 3/8” thick Starphire, iron-free glass.

D. Frame shall be equipped with welded brackets to support light fixtures, heat lamps and pass shelf.

E. Stainless steel tubing shall be 1 inch (25mm) O.D. x 16 gauge with all joints fully welded, ground smooth and polished. All channels, escutcheon trim, glass channel edging, mounting pins, stops and light fixture cover shall be stainless steel, polished where exposed.

2.15 CUSTOM FABRICATED EQUIPMENT

A. General: All fabrication shall conform to applicable standards of NSF, latest editions and revisions.

B. Workmanship:

1. General: Items of specially fabricated equipment must be, in the judgment of the Professional fabricated by one manufacturer who is acceptable and of consistent high quality, and be suitable for sustained commercial use.

2. Finished in an approved and satisfactory manner.

3. Structurally sound, without rattle, wobble, buckles or warp.

4. Closures: Where ends of fixtures, splash backs, shelves, etc. are open, fill by forming the metal, or welding sections, if necessary, to close entire opening flush to walls or adjoining fixtures.

5. Controls and Switches: Controls and switches should be located out of heat zones, easily accessible, securely mounted, and in locations that preclude accidental contact by employees.

6. Coved Corners: All stainless steel foodservice equipment shall have 1/4 inch (6 mm) or larger radius coves in all horizontal and vertical corners and intersections per NSF standards. Sinks shall have 3/4 inch (20 mm) coves in compartments.

7. Fasteners and Joints:

    a. The following will not be accepted:

        1) Exposed screw or bolt heads; exposed threads, including those which may come in contact during cleaning. Rivets of any type.

        2) Butt joints made by riveting scraps under seams and then filling with solder.

        3) Overlapping materials, including all mitered or filleted corners.

8. Finishing:

    a. Break bends shall be smooth and unblemished.

    b. Sheared edges shall be finished without burrs or sharp projections.

    c. Butt joints shall be close-fitting, maximum 1/32 inch (1mm) gap, requiring no filler.

    d. The grain of polishing shall be consistent.

    e. Fasteners shall generally be of the same material as the materials being fastened. With dissimilar materials, the higher grade prevails. On all sinks and exposed lock nuts on shelves, tables, etc. lock nuts and lock washers shall be stainless steel.

    f. Turn Down Edges: Turn down edges shall be standard, or other NSF approved shape as specified, with corners filleted, ground and polished.

    g. Welding and Soldering:

    h. Materials 18 gauge, or heavier, shall be welded.

i. Welding shall be of the Heliarc method with rod of the same composition as the material being welded.

j. Welds must be complete, ground smooth, and polished to match original finish.

k. Where galvanizing has been burned off, the weld shall be cleared and touched up with high-grade aluminum paint.

l. Spot welding, for other than temporary alignment, is unacceptable.

m. Tack welds shall be a minimum of 1/4 inch (6mm) long and 6 inches (150mm) apart.

n. Soldering is not acceptable as a means of fastening, and is to be used only as a filler.

C. Materials:

1. Aluminum: ASTM B 209 sheet and plate, ASTM B 221 extrusions, 0.40-mil clear anodized finish where exposed, unless otherwise noted.

2. Castings: Shall be corrosion-resisting metal containing not less than 30 percent nickel. All castings shall be rough ground, polished, and buffed to a bright luster and free from pit marks, runs, checks, burrs and other imperfections. In lieu of corrosion-resisting metal castings, die-stamped or cast 18-8 stainless steel will be acceptable.

3. Galvanized Steel:

a. Galvanizing shall be applied to rolled shapes in conformance with ASTM A 123, coating designation G-90, and to sheets in conformance with ASTM A 526, zinc coating designation G-90, chemical treatment, except ASTM A 527 for extensive forming.

b. Galvanized steel sheets shall be cold-rolled, stretcher leveled, bonderized and rerolled to ensure a smooth surface. Framework of galvanized steel shall be of welded construction.

c. Framework constructed of galvanized steel shall be of welded construction.

4. Gaskets:

a. Solid or hollow (not cellular) neoprene or PVC gaskets shall be used, light gray, minimum 40 Shore A hardness, self-adhesive or prepared for either adhesive application or mechanical anchorage.

5. Insulation:

a. For low-temperature applications, such as ice bins, cold pans, or fabricated under counter freezers, use urethane rigid board, foam, or foamed-in-place, not less than 2 inch (50mm) thick, except vertical surfaces of cold pans and ice bins may be 1 inch (25mm) thick. Insulation shall be bonded at joints to prevent condensation on exterior.

b. For normal temperature applications, such as fabricated under counter refrigerators, use urethane material 1 inch thick, bonded at all joints.

c. For heated-type applications, such as warming cabinets, use block-type rock wool, minimum 1 inch (25mm) thick Johns-Manville marinate 36 (or equal), to insulate underside of top.At counter tops, subject to heat from cooking equipment and/or refrigeration compressors, use 1 inch (25mm) thick Johns-Manville Marinite 36, (or equal).

d. All temperature-controlled areas of equipment shall be isolated from adjacent construction. Marinite or other breaker strip material shall be added.

e. For walk-in freezer drain line insulation, provide insulation as made by Rubatex or equal.

6. Plastic Materials and Components: Except for plastic laminate, provide plastic materials and components that comply with NSF 51.

7. Sealant: ASTM C 920; Type S, Grade NS, Class 25, Use NT. Provide sealant that when fully cured and washed meets requirements of Food and Drug Administration Regulation 21 CFR 177.2600 for use in areas where it comes in contact with food. Sealant shall be Dow-Corning #790 or General Electric “Silastic”, (or approved equal).

8. Sheet Steel: ASTM A 569 hot-rolled carbon steel.

9. Stainless Steel:

a. Stainless steel sheets shall conform to ASTM A 240, Type 304 Condition A, 18-8, having a No. 4 finish. A No. 2B finish shall be acceptable on surfaces of equipment not exposed to view of public or workers. All sheets shall be non-magnetic, uniform throughout in color, finish and appearance and free from buckles, waves or surface imperfections.

b. Stainless steel tubing and pipe shall be Type 304, 18-8, having a No. 4 finish, and shall conform to either ASTM A 213 if seamless or ASTM A 36 if welded.

c. Rolled shapes shall be of the cold-rolled type conforming to ASTM A 36.

D. Metal Top Construction:

1. Metal tops shall be 14-gauge stainless steel of one-piece welded construction, including field joints. Secure to a full perimeter 14 gauge galvanized steel channel frame cross-braced not farther than 30 inches (762mm) on center. Fasten top with stud bolts and stainless steel cap nuts with lock washers. Enclose channel ends where exposed. Framing for drain boards and dish tables shall be all stainless steel.

2. Properly designed draw fastening, trim strip, or commercial joint material to suit requirement shall be used only if specified.

3. Coat underside of tops with a minimum 1/8 inch (3mm) thick, NSF approved, hard-drying, sound-deadening, mastic material. Apply by spreading after top has been secured to frame, such that top and frame are covered and sealed.

4. Provide additional bracing under legs of counter-top equipment.

5. Backsplashes shall be integral with top, turned up 4 inch (100mm) and back on a 45 degrees angle for an additional 2 inch (50mm) in height and then down 1 inch (25mm), secured to adjacent walls with "Z" clips, and be fully closed where exposed to view on sides or rear.

E. Shelves:

1. Under Shelves: All under shelves shall be 14-gauge stainless steel. Extend bottom and fixed intermediate shelves forward and turn down at front so as to be flush with front facing of cabinet. Channel adjustable shelves on all four (4) sides, weld corners, and mount on removable stainless steel standards.

2. 2 inch (50mm) Turn Up In Enclosed Bases: In fixtures with enclosed bases, turn up shelves 2 inch (50mm) on back and sides with 1/4 inch (6mm) (minimum) radius and feather slightly to ensure a tight fit to enclosure panels.

3. 2 inch (50mm) Turn Up In Open Bases: In fixtures with open bases, turn up shelves 2 inch (50mm) on back and sides with 1/4 inch (6mm) radius, notch shelves around legs, continuously weld to leg, and polish all welds.

4. Reinforcement: Under shelves exceeding 4 feet 6 inches (7315mm) length to have 14 gauge stainless steel channel reinforcement full length of shelf.

5. Over Shelves: Fixture over shelves shall be 16 gauge stainless steel construction supported by 1-1/4 inch (32mm) O.D. 16 gauge stainless steel tubing, secured to framework. Provide suitable 14-gauge stainless steel support brackets, fully welded to uprights and bolted to shelf. Over shelves exceeding 15 inch (381mm) depth to be reinforced with longitudinal channel.

6. Wall Shelves: Wall Shelves shall be 16-gauge stainless steel, turned up 2 inch (50mm) at rear and inaccessible ends with 16 gauge stainless steel brackets to wall. Provide 2 inch (50mm) spacing all around to facilitate cleaning. Shelf support brackets shall be 14-gauge stainless steel, be triangular, and have a horizontal to vertical ratio of 10/6.

F. Enclosed Cabinet Bases:

1. Bases shall be made of 16 gauge steel sheets reinforced by forming the metal.

2. Ends, partitions, and shelves are stainless steel.

3. Unexposed backs and structural members are galvanized. Vertical ends and partitions is single wall, with a 2 inch (50mm) face.

4. Sides and through partitions are flush with bottom rail, welded at intersections.

5. Shelves are removable, except bottom shelf of cabinet mounted on legs. Maximum shelf depth equals 20 inch (508mm). All shelves are 16-gauge stainless steel.

6. Bottom front rail of bases set on masonry platform shall be continuously open, and framing between each section shall clear platform. Provide sealed base with front rail closure section.

7. Unit supported with channel framework, below. Weld legs to framing.

G. Sinks and Bain Maries:

1. Compartment Partitions: Partitions between compartments shall be double thickness, continuously welded where sheets join at top.

H. Components:

1. Stainless Steel Gusset: Gussets to be Component Hardware A20-0206 (or approved equal) with set screws for securing legs. Fully weld gussets to channels or gusset plates.

2. Stainless Steel Counter Legs: Shall be Component Hardware Al8-0202 (or approved equal).Stainless Steel Adjustable Foot: Shall be Component Hardware A10-0852 Bullet Foot (or approved equal).

3. Drawers: Provide for lift-out type drawer body, one piece 20 inch (508mm) x 20 inch (508mm) by 5 inch (127mm) (or as specified), die stamped of 18 gauge stainless steel, with inside radiused corners. Construct front of double-pan stainless steel, 16-gauge exterior and 16-gauge interior. Provide lock for each drawer. Fasten drawer suspension guides to 18-gauge stainless steel housing suspended from angle framing under fixed top.

4. Legs and Cross Rails:

a. Equipment legs and cross rails shall be 1-5/8 inch (42mm), 16-gauge stainless steel tubing polished to a No. 4 finish.

b. All welds at cross rails shall be continuous and ground smooth. Tack welds not acceptable.

c. Bottom of legs shall be wedged inward and fitted with a stainless steel bullet-type foot with not less than 2 inch (50mm) adjustment.

d. Free-standing legs shall be pegged to floor with 1/4 inch (6mm) stainless steel rod where specified.

e. Where specified, flanged feet to be securely bolted to floor in a waterproof and sanitary manner with two stainless steel bolts.

f. Legs shall be fastened to equipment with gussets, as follows:

1) Sinks: Gusset welded to 14-gauge stainless steel triangular plate, fully welded to underside of sink bowl.

2) Sink drainboards and dishtables welded to stainless steel channels, 14 gauge or heavier, anchored to top with welded studs through slotted holes.

3) Metal top tables: welded to framework.

5. Disher Wells: Disher Wells shown on drawings or specified shall be Kenco Products Corp. Model W-5 with Model F-10 faucet.

6. Casters: Casters shall be stainless steel, heavy-duty type, ball-bearing, solid or disc wheel with polyurethane tire.

   a. Wheels to be 5 inch (127mm) diameter, minimum width of tread 1-3/16 inch (30mm), minimum capacity per caster 250 pounds (113kg).

   b. Solid material wheels to be provided with stainless steel rotating wheel guard.

   c. Shall be sanitary, have sealed wheel and swivel bearings and polished plated finish per NSF.

7. Doors:

   a. Construction:

      1) Shall be solid, heavy-duty type; chrome plated brass or stainless steel.

      2) Door Hardware: Door hardware shall provide for locks of brass, 5-pin cabinet-type lock, two keys per lock and keyed separately when not indicated; master keyed when indicated.

      3) Refrigeration hinges shall be edge mounted, self-closing type.

      4) Door slides shall be equipped with stainless steel slides with minimum load capacity of 100 pounds per pair, and with positive door stop. Provide ball bearing rollers. Hinges shall be stainless steel, continuous type or butt type as indicated.

      5) For hinged doors, provide permanent magnetic catch of sufficient strength to hold door shut.

   b. Adjustable Shelf Support: Provide stainless steel shelf supports, snap-in type, and stainless steel brackets with countersunk mounting hole.

   c. Door Pulls: Pulls on sliding doors shall be Standard-Keil 1262-1014-1283, or equal, stainless steel, with No. 4 finish, recessed rectangular type, with beveled edge frame.

   d. Identification: Doors and hardware shall be identified with manufacturer's name and number so that broken or worn parts may be replaces.

I. Electrical:

1. General:

   a. Confirm Service: Before ordering equipment, confirm with the serving electric utility and all pertinent electrical requirements such as actual voltages available, number of phases and number of wires in the system.

   b. UL Approved: Components and assemblies shall bear the UL label or be approved by the prevailing authority.

   c. Wiring and Labeling: Electrical work for fabricated equipment shall be completely wired by KEC to a junction or pull box, wholly accessible,

mounted on the equipment. Wiring shall be labeled for outlet or item served. Each switch and pilot light on counters shall be labeled with the appliance it serves.

d. Convenience and Power Outlets:

1) Make cutouts and install appropriate boxes or outlets in fabricated fixtures complete with wiring, conduit, outlet, and cover plate.

2) All outlets and plugs shall conform to NEMA standards.

3) All electrical outlets and devices shall be first quality “Specified Grade.”

e. Electric Heating Equipment:

1) Electric and heating equipment shall be so installed as to be readily cleanable or removable for cleaning.

f. Internal Wiring of Fixtures:

1) Scope of Work: Provide internal wiring of electrical devices, built into or forming an integral part of fabricated equipment items. Wiring to be in metal conduit to a pull box tagged for intended use. Refer to Section 16120 for color coding.

2) Dishwashers and Conveyors: Provide dishwashers and conveyors internally wired to junction box or distribution panel as specified, including push button switches, motors, immersion heaters, solenoids, and similar items.

g. Exposed Conduit:

1) Exposed flexible steel conduit on kitchen equipment shall be neoprene-jacketed “Seal-Tite” conduit equal to Anaconda type “UA”, UL approved, complete with approved liquid-tight connectors on each end, designed to provide electrical grounding continuity. Conduit shall be set ¾” (19mm) away from walls or if set against wall, it shall be caulked and sealed.

2) Exposed electrical conduit used in kitchen wet area applications, except for flexible connections, shall be rigid galvanized steel. Thin wall conduit (EMT) will not be permitted for wet areas. Exposed outlet boxes shall be liquid-tight with threaded hubs. Exposed conduit and fittings for electrical and fire suppression systems shall be chrome plated, stainless steel or chrome sleeved.

h. Heated Equipment: All electrically heated equipment shall be wired to a thermostatic control with on/off switch and indicator light.

i. Light Fixtures: Light fixtures specified or detailed as part of exhaust hoods in servery counters or cases of fixtures, light fixtures and lamps shall be provided and installed by KEC. When LED lights are specified, full range 3100k for hot food counters shall be provided and 3400K for cold food

counters. All lamps in food service areas shall be equipped with protective devices to guard against lamp breakage and contamination.

j. Refrigerator and Freezer Cabinets: Wiring for fabricated refrigerator and freezer cabinets shall be UL approved, insulated, cable from exterior junction box to internal components within insulation, unless code requires metallic conduit.

1) Conduit shall be electrical metallic tubing, rigid or flexible (Greenfield). For freezer applications, Seal-Tite Flex (or approved equal) shall be used.

2) Internal wiring shall be UL approved, rubber-covered, 600-volt rated conductor except door heaters, which shall be nichrome wire with silicone braided jacket having resistance of 10.4 (30.0) watts per lineal foot (meter).

3) Convenience outlets, lighting receptacles (rubber or porcelain), and door switches shall be mounted in UL approved boxes. Convenience outlets for evaporators shall be twist-lock type. Solid connections as for freezer evaporators shall be made vapor-tight.

k. Refrigerator Lights: Custom fabricated and standard refrigerator units shall be provided with vapor-tight light fixtures, shatterproof lamps and automatic switches. All wiring shall be concealed.

l. Ship in Sections: Each standard item shipped in sections shall be properly connected internally and verified by KEC. For example: exhaust hoods, ovens, dishwashers, conveyors, broilers.

m. Strip and Immersion Heaters: Wiring for built-in strip heaters or immersion-type elements shall be provided as follows:

1) In heat zone, shall have UL approved insulation (250º F, 121º C) and be not less than 300-volt rated mineral-covered with nickel wire.

2) Connection wiring extended in raceway or conduit to junction or pull box shall be not less than 600 volt rated AVA insulation-covered wire, UL approved, (or approved equal).

n. Walk-in Coolers: All wiring for walk-in box lights, switches, heaters, coils, etc. shall be run on the exterior of the box with the shortest possible run inside to the actual connection.

o. Plugs and Cords:

1) Provide cords and plugs in accordance with the specifications and/or the spot connection drawings. Where a receptacle is shown or noted as the connection point, provide a cord and plug of suitable size as required to be furnished by the KEC.

2) Where cords and plugs are required, they shall be provided to comply with NEMA requirements.

p. Starters, Switches and Controls:

1) Furnish all starters, motor controls, remote controls, and transformers as noted in Item Specifications.

2) All switches shall be located out of heat zone.

J. Refrigeration:

1. Additional Guarantee:

a. Refrigeration systems shall include start-up and one-year service and maintenance contract in addition to the regular one-year guarantee as stated in Section 01, plus additional four-year guarantee on compressors from the Date of Substantial Completion. This includes refrigerators, ice cream cabinets, ice makers, freezers, dispensers, or any other refrigerated item.

b. Submit written warranty, signed by manufacturer, agreeing to replace/repair, within warranty period, refrigeration compressors with inadequate and defective materials and workmanship, including leakage, breakage, improper manufacturer assembly, or failure to perform as required, providing manufacturer's instructions for handling, installing, protecting, and maintaining units have been adhered to during warranty period. This warranty shall be in addition to, and not a limitation of, the rights of the Department may have against the KEC under Contract Documents.

K. Cold Pans:

1. Mechanical Cold Pans:

a. All mechanically refrigerated cold pans, refrigerated bases, or similar devices shall have a normally closed liquid line electric solenoid valve installed before the expansion valve and wired to a silent-type toggle switch complete with an "on/off" red neon light indicator and both mounted in a terminal box on a removable access panel. This switch shall be fed by a separate control circuit and shall not be wired into the compressor circuit so that it shall stop the flow of refrigerant to the cold pan and not turn off the compressor. The compressor shall then pump down and turn off through the action of the pressure control.

b. Refrigeration system for cold pans shall be capable of providing a surface temperature of 35º F – 38º F (1.6º C – 3.3º C) when measured one half way between the bottom of the cold pan and the top of the cold pan frame. Entire surface must be refrigerated using pre-manufactured evaporator plates or by soldering 1/2 inch (13mm) O.D. type L refrigeration tubing to outside and pan, maximum 3 inches (150mm) on center in loops or coils. Embed the tubing in thermal mastic and apply waterproof membrane under insulation.

L. Components:

1. All custom refrigeration systems shall be equipped with a refrigerant in-line sight glass.

2. Coils for standard and fabricated refrigerators shall have vinyl plastic coatings, housings and shall be installed in such a manner as to be replaceable.

Condensate shall be piped to the exterior of the walk-in to an indirect drain. All exposed piping shall be chrome plated.

3. Standard reach-in refrigerators and freezers for remote refrigeration system shall be complete with thermostatic expansion valves at the evaporator.

4. Thermometers:

   a. Refrigerated compartments, fabricated and standard, shall be fitted with flush dial-type thermometers with chrome-plated bezels.

   b. Thermometers shall be adjustable and shall be calibrated after installation and have an accuracy of 12º F.Thermometer sensing bulbs shall be located in the air stream entering the coil for accurate reading.

5. Hardware:

   a. Refrigerator hardware for standard and fabricated refrigerator compartments shall be heavy-duty components.

   b. Hinges shall be self-closing.

   c. Latches to be magnetic edge-mount-type unless specified or detailed otherwise.

   d. Doors and drawers for reach-in refrigerated compartments, both fabricated and standard, shall be fitted with cylinder locking type latches, and provided with master keys.

   e. Custom fabricated reach-in refrigerator and freezer to have shelving of plastic-coated or stainless steel wire.

   f. Door Stops and Bumpers: Door stops shall be provided and pinned into floor material where door swings may impact other equipment or drain lines as approved by the Professional. Where a floor door stop is not provided, door bumpers shall be affixed to walk-in cooler to protect panel from opening door hardware.

M. Refrigeration Systems:

1. Alarm Systems: High-low temperature alarms as specified, alarms shall be mounted in the walk-in panel 72 inches (1829mm) above Finished Floor.

2. Walk-In Drain Lines: Hard tempered copper, type L line shall be provided and installed by the Plumber from evaporator to exterior of walk-in with a P-trap to the drain. Exposed drain line shall be painted by the Plumber with silver epoxy paint. The Kitchen Equipment Contractor's refrigeration contractor shall provide and install heat tape on freezer drain line. Electrical connection is by the Kitchen Equipment Contractor's refrigeration contractor.

3. Defrost System: An evaporation coil defrost system shall be provided and installed by the specified supplier of the coil on all refrigeration systems designed to operate at an evaporator coil temperature of less than 35º F (1.6º C). Evaporator coil units provided without electric defrost feature shall be installed with a solenoid valve in the liquid line, controlled by the time clock so as to shut off the flow of refrigerant,

and allow the compressor to pump down and shut off by activation of the pressure control switch.

4. Furnish Operating System:

   a. All refrigeration systems shall be complete, charged, started, and operating properly, including, but not limited to: Condensing units including low ambient controls and weather enclosures as applicable, racks, evaporator coils, vibration eliminators, sight glasses (moisture indicating type), expansion valves, filters, oil separators, thermostats, defrost time clocks, all controls and control wiring, liquid line driers, and piping. Liquid and suction lines and supports shall be provided and installed by the KEC with a minimum of 1/2 inch (13mm) pre-molded foamed plastic insulation, “Armaflex”, (or approved equal) with UV resistant PVC insulation covers where exposed to outdoors.

   b. Evaporators furnished under this Section shall be furnished with proper thermal expansion valve (size and refrigerant), thermostat and solenoid valve, internally pre-piped and pre-wired. All piping is to be placed under dry nitrogen pressure of 125 P.S.I.G. and stubbed to outside fixture for a single point connection by Refrigeration Contractor. Thermostat and solenoid valve shall be pre-wired to evaporator fan motor for single point connection by job site electrician. All color-coded freezer defrost control wiring shall be properly connected to evaporator and terminate outside fixture, with each wire being clearly identified.

   c. Hard tempered copper, type ACR line is to be provided and installed by the plumbing contractor from evaporator to exterior of walk-in through a P-trap to the drain. Exposed drain line shall be painted by the refrigeration contractor with epoxy silver paint. The Kitchen Equipment Contractor’s refrigeration contractor shall provide and install heat tape on freezer drain line and then insulate freezer drain lines with Rubatex or equal flexible insulation.

   d. Leak-Proof and Reclaim Capability: In the interest of protecting our environment, all refrigeration systems under this specification shall be guaranteed leak-proof, including the following criteria:

      1) Refrigerant piping shall be in refrigerant-grade, Type L hard tempered copper tubing, with wrought fittings and as few joints as possible.

      2) All fittings and joints shall be silver-soldered. No flare nuts will be acceptable, including, for example, at expansion valves and coils.

      3) Each system shall be fitted with professional testing/recovery ports suitable for standard portable instrumentation and/or CFC reclamation devices.

   e. Manufacturer’s Certificate: KEC to verify and provide to the Professional, Manufacturer’s Certification (or certification by manufacturer’s authorized agent) that “the equipment selection specified for each refrigeration system is properly sized and shall meet the operating requirements, conditions, and locations set forth for each system regarding maintaining specified operating temperature, hours of compressor running time, and system pressures and velocities as recommended by the equipment

manufacturer(s)". Provide any additional components and/or specialties recommended by the manufacturer.

f. Operating Range: Each refrigeration Item Specification is written to provide minimum Specifications and Scope of Work. All refrigeration equipment shall be designed and installed to maintain the following general temperatures unless otherwise specified.

Type	**Refrigerators**	**Freezers**		
Walk-in	35°F	-10°F	(1.6°C	-23.3°C)
Reach-in	35°F	-10°F	(1.6°C	-23.3°C)
Undercounter	35°F	-10°F	(1.6°C	-23.3°C)
Fabricated	35°F	-10°F	(1.6°C	-23.3°C)
Cold-Pans	35°F	0°F	(1.6°C	-17.8°C)

g. Wiring Routing:

1) All refrigeration systems shall be installed and wired in strict conformance with the manufacturer's instructions and recommendations. Wiring for coils, controls, lights, e.g., shall be run outside of the refrigerated compartment wherever possible.

h. Refrigerants: The following refrigerants will not be utilized on this Project: R-22, CFC-11, CFC-12, CFC-3, CFC-113, CFC-114, CFC-115, R134A, R404, R-500, R-503.

5. Ventilation of Refrigeration Equipment:

a. Adequate air supply and exhaust shall be provided for self-contained refrigeration condensing units, both fabricated and standard, as required for proper operation.

b. If, in the opinion of the KEC, additional ventilation is required to ensure correct operating temperatures, KEC shall so state in a letter to the Professional for evaluation and decision before installation.

N. Plumbing:

1. General: All exposed piping in the walk-ins, dish room, kitchen and servery shall be chrome plated, chrome sleeved or stainless steel unless a waiver in writing is obtained from the Professional. Unexposed piping (surfaces behind cabinet doors when doors are open or behind equipment, and piping not visible while standing at any point in the room) shall not be plated, chrome sleeved or stainless steel.

O. Miscellaneous Materials:

1. Installation Accessories, General: NSF certified for end-use application indicated.

2. Elastomeric Joint Sealant: ASTM C 920; [**silicone**] [**urethane**]. Type S (single component), Grade NS (non-sag), Class 25, Use NT (non-traffic) related to exposure, and Use M, G, A, or O as applicable to joint substrates indicated.

3. Public Health and Safety Requirements:

a. Sealant is certified for compliance with NSF standards for end-use application indicated.

b. Washed and cured sealant complies with the FDA's regulations for use in areas that come in contact with food.

4. Cylindrical Sealant Backing: ASTM C 1330, Type C, closed-cell polyethylene, in diameter greater than joint width.

P. Finishes:

1. Stainless-Steel Finishes:

a. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.

b. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.

c. Run grain of directional finishes with long dimension of each piece.

d. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

2. Powder-Coat Finishes: Immediately after cleaning and pre-treating, electrostatically apply manufacturer's standard, baked-polymer, thermosetting powder finish. Comply with resin manufacturer's written instructions for application, baking, and minimum dry film thickness.

2.16 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide 114000 Foodservice Equipment products of the specified quantity of the either the basis of design manufacturer and model listed or the specified quantity of the either the first alternate manufacturer listed or second listed alternate manufacturer and appropriate model and custom modifications deemed by the Professional equal to the basis of design.

B. If after award, a manufacturer and model may be submitted for review according to the requirements of Section 01 and reviewed by the Professional for determination of equality.

C. When an item is noted “performance specification, Contractor shall either submit to the basis of design manufacturer and model or submit for review an alternate manufacturer and model which meets all the listed performance item REMARKS.

D. Products of other manufacturers will be considered by the Professional only if evidence is furnished showing compliance with items of standard manufacturer and specified custom modifications or an item of custom manufacturer showing compliance of the minimum design and performance requirements specified.

2.17 PERFORMANCE AND DESIGN CRITERIA

A. Design Criteria: When an item is as an alternate of Fabricator, or the model of an item of standard manufacture with suffix of CUSTOM, the item shall additionally comply with the design criteria of the referenced custom Details listed.

B. Performance Criteria: When an item is noted “performance specification, Contractor shall either submit to the basis of design manufacturer and model or submit for review an alternate manufacturer and model which meets all the listed performance item REMARKS.

PART 3 - EXECUTION

3.1 GENERAL

A. Manufacturer's Instructions: Provide equipment and install the Work of this Section; including components, accessories in accordance with the manufacturer's instructions, except where more stringent requirements are shown or specified, and where project conditions, require extra precautions or provisions to ensure satisfactory performance of the Work.

3.2 EXAMINATION

A. Verification of Conditions: Examine the areas to receive the Work and the conditions under which the Work would be performed. Remedy conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

B. Supervision and Sequence:

1. KEC shall provide full time, competent on-site installation supervision to accomplish the Work.

2. KEC shall attend on site Project Coordination Meetings with the Professional and Contractor and work with Contractor to accomplish over-all goals of the Project.

3. KEC shall inspect Project prior to start of installation and provide a written list of deficiencies to the Professional and Contractor so as to ensure all corrections may be made prior to start of installation.

4. KEC shall coordinate and schedule setting in place items requiring final connection by others first, and then miscellaneous items later so connections may be accomplished while KEC is on site.

3.3 PREPARATION

A. Cutting, Fitting, and Penetrations:

1. The KEC shall provide all cutting and fitting required on the KEC equipment by other trades to make their work fit. All building penetrations shall be by the Contractor.

2. Should any repairs to food service equipment be required due to neglect of other Contractors, all extra charges must be approved by the Professional and all repairs must be approved, and noted in writing before Work is performed, stipulating the price and by whom the extra expense is to be paid. In case the KEC does not secure such approved extra order, the expense shall be borne by KEC.

3. No cutting, notching, drilling, or altering of any kind shall be done to the building by the KEC.

3.4 ERECTION / INSTALLATION / APPLICATION / USER-DEFINED PROCESS

A. Orientation:

1. All equipment exposed to public view shall be provided and installed, with operating controls facing the working side, not facing the public, unless approved otherwise by the Professional.

B. Install foodservice equipment level and plumb, according to manufacturer's written instructions in all cases, unless noted in item Specifications or Drawings.

1. Connect equipment to utilities.

2. Retain subparagraph below if equipment items will be modified on-site.

3. Provide cutouts in equipment, neatly formed, where required to run service lines through equipment to make final connections.

C. Complete equipment assembly where field assembly is required.

1. Provide closed butt and contact joints that do not require a filler.

2. Grind field welds on stainless-steel equipment until smooth and polish to match adjacent finish.

D. Trimming and Sealing:

1. Any space between equipment and walls, ceilings, floors and adjoining units, not portable, shall be completely sealed against entrance of food particles or vermin by means of trim strips, appropriately welded and finished, or commercial sealant, suitable to the nature of the equipment.

2. Sealant, when not exposed to extreme heat, shall be Food Grade Silicone Sealant in an appropriate color. Sealant shall not span more than 1/4 inch (6mm) and shall be finished smooth and be easily cleanable. Larger voids shall be spanned with s/s trim and fastened and sealed to neighboring surfaces.

3. Ends of hollow sections shall be closed.

4. Enclosed fixtures without legs as specified to be mounted on masonry bases or floor shall be sealed watertight to base or floor.

E. Verify equipment access- and maintenance-clearance requirements of authorities having jurisdiction and of local sanitation and health codes; reflect minimum clearances on Drawings.

F. Install equipment with access and maintenance clearances that comply with manufacturer's written installation instructions and with requirements of authorities having jurisdiction.

G. Install cabinets and similar equipment on bases in a bed of sealant.

H. Install closure-trim strips and similar items requiring fasteners in a bed of sealant.

I. Install joint sealant in joints between equipment and abutting surfaces with continuous joint backing unless otherwise indicated. Produce airtight, watertight, vermin-proof, sanitary joints.

J. Schedule, attend, and coordinate Health Authorities' inspections and requirements.

K. Verify make of ware, dimensions, and weight and submit to the dispenser manufacturer so that units may be properly calibrated and sized as required.

3.5 FIELD QUALITY CONTROL

A. The KEC will coordinate with the Contractor for installation of beverage conduit above grade floor slab.

B. Coordinate delivery of gas fuel shut off valve will be provided to the gas system contractor for installation in a timely manner.

C. Verify size, location and all building conditions of all exhaust hood duct connections required in this Contract prior to fabrication or purchase.

D. Before ordering equipment, KEC shall coordinate with the Electrical Contractor to confirm with the serving electric utility and the Professional, all pertinent electrical requirements such as actual voltages available, number of phases and number of wires in the system. Refer to Section 16120 for color coding.

E. Coordinate foodservice equipment layout and installation with other work, including layout and installation of lighting fixtures, HVAC equipment, and fire-suppression system components.

3.6 SYSTEM STARTUP

A. Ventilator factory technicians, when specified, will be available for onsite coordination with the Contractor and KEC.

B. Coordinate the start-up of food service equipment when lines have been tested, sanitized, balanced and adjusted for pressure, voltage, and similar considerations.

C. Before testing, lubricate each piece of equipment item in accordance with manufacturers' recommendations.

3.7 ADJUSTING

A. Upon completion of the Work repair surfaces that have been permanently stained, marred, or otherwise damaged. Replace Work which is damaged or cannot be adequately cleaned as directed.

B. Adjust equipment as required to produce ready-for-use condition.

C. Restore exposed and semi-exposed finishes to remove abrasions and other damages; polish exposed metal surfaces and touch up painted surfaces.

D. Replace Work that cannot be successfully restored at no cost to the Department.

3.8 CLEANING & PROTECTING

A. Upon completion of the Work, remove unused materials, debris, containers and equipment from the project site. In addition to the initial cleaning procedure required, and not more than two (2) days before occupancy, clean the Work as recommended by the manufacturer.

B. After completion of installation and other major work in food, service areas, remove protective coverings and clean food service equipment internally and externally.

C. Prior to Date of Substantial Completion on food service equipment work, buff exposed stainless steel finishes lightly, using power buffer and polishing rouge or grit of No. 400 or finer.

D. Clean and prepare equipment for operation as specified in Section 01, prior to the Final Acceptance by the Professional.

3.9 CLOSEOUT ACTIVITIES

A. Demonstration:

1. Engage a factory-authorized service representative to train the Department's maintenance personnel to operate foodservice equipment.

   a. Refer to Section 01 requirements.

   b. Food dispensing, processing and cooking equipment shall be demonstrated using edible food provided by the demonstrator.

2. Engage a factory-authorized service representative to train the Department's maintenance personnel to adjust and maintain foodservice equipment.

3.10 PROTECTION

A. Protect the Work during the construction period so that it will be without any indication of use or damage at the time of acceptance.

B. During the progress of the Project, protect equipment against theft and/or damage until Final Acceptance by the Department. All items delivered to the Site prior to Final Acceptance shall be signed for, by the Professional, as delivered.

C. Access to Walk-in Coolers: Pre-fabricated walk-in boxes, on site and installed in advance of the rest of the equipment, are not to be used for general storage by other trades and shall be locked by the KEC before leaving the site. Damaged and/or theft resulting from KEC's failure to secure boxes will be repaired/replaced at KEC's expense. Secure doors open during curing of floors in walk-ins.

3.11 N/A

3.12 N/A

3.13 N/A

3.14 ILLUSTRATIONS

A. Refer to Standard Details for fabrication and installation.

B. Standard Details Index:

1.01 Edges
1.01.1 Edges
1.02 Backsplashes
1.03 Table and Drainboard Framework
1.05 Counter Framework
1.05.1 Counter Framework
1.06 Legs, Feet, Crossrails

1.09 Drawer Assembly
1.09.1 Drawer Assembly
1.10 Corner Guards
1.12 Overhead Utensil Rack

2.00 TABLES AND SHELVES

2.01 Worktables
2.21 Fixture Overshelves
2.21.1 Fixture Overshelves

3.00 SINKS AND DISH TABLES

3.01 Sinks and Drainboards
3.01.1 Sinks and Drainboards
3.02 Counter Type Sinks
3.20 Dish Tables
3.22 Pre-Rinse Sink

4.00 CABINETS AND COUNTERS

4.01.3 Back Counter
4.01.5 Back Counter
4.02.8 Cafeteria Counters
4.02.1 Cafeteria Counters
4.10A Protector Case
4.31 Control Panels
4.32 Built-in Electrical Panels
4.40 Hinged Doors

5.00 INSTALLATION CONDITIONS

5.10 Beverage Conduit
5.20 Disposer Installation
5.20.1 Disposer Installation-Control Panel
5.40 Warewasher Vent Duct
5.60 Electrical Receptacles
5.80 Water Conditioner

6.00 SPECIAL DETAILS

6.03 Floor Trough
6.03.1 Anti-Splash Floor Trough
6.04 Hose Reel Assembly
6.10 S/s Wall Panel with Gasket

3.15 N/A

END OF SECTION

SECTION 119020

SPECIALTY EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Stipulations:

1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Division 01 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

B. General: Provide specialty equipment and installation provisions for equipment supplied by Department in accordance with requirements of the Contract Documents.

C. Section includes, but not limited to, the following:

1. BSO-01 A&B: Drying Rack
2. BSO-02: Washer Extractor
3. BSO-03: Drying Cabinet
4. BSO-04 A&B: K9 Narcotic Safe
5. BSO-05: ESS Workbench
6. SEQ-01: Ultrasonic Cleaner
7. SEQ-02: Solvent Tank
8. SEQ-03: SS Vented Workstation 60” Wide
9. SEQ-03A: SS Vented Workstation 60” Wide ADA
10. SEQ-04: SS Vented Workstation 36” Wide
11. SEQ-04A: SS Vented Workstation 36” Wide ADA
12. SEQ-06: Ultrasonic SS Vented Workstation
13. SEQ-07: 36” SS Exhaust Hood
14. SEQ-08: 96” SS Exhaust Hood
15. SEQ-09: Stainless Steel Base Cabinet
16. SEQ-10: Rolling Cabinet
17. SEQ-11: Gun Clearing Tube
18. EP-02: Portable Eye Wash

D. Related Requirements:

1. All necessary roughing-in required for the equipment as specified in Section 055000 “Metal Fabrications.”

2. All necessary roughing-in of mechanical, plumbing, and electrical connections required for the equipment complete with final connections, including electrical, communications and other utility line connections required to properly operate the equipment specified herein.

3. Finish painting of exposed metal surfaces requiring painting other than prefinished items is specified in Section 099100, "Painting".

4. Complies with NFPA 1851/FEMSA recommendations for drying gear

5. Narcotic Safes comply with CFR Title 21

1.2 DEFINITIONS

A. Department Furnished Contractor Installed (OFCI): Equipment that will be furnished by the Department for installation by the Contractor. The Contractor shall be responsible for coordinating substrate and installation requirements as well as coordinating equipment dimensions. The Contractor shall be responsible for mechanical, electrical, and A/V connections as well as final installation and integration of this equipment with the Work.

1.3 REFERENCES

A. General: Comply with the applicable provisions of the referenced standards except as modified by governing codes and the Contract Documents. Where a recommendation or suggestion occurs in the referenced standards, such recommendation or suggestion shall be considered mandatory. In the event of conflict between referenced standards, this specification or within themselves, the more stringent standard or requirement shall govern.

1. National Association of Architectural Metal Manufacturers (NAAMM): NAAMM "Metal Finishes Manual".

2. Industrial Fasteners Institute (IFI): "Fastener Standards Book."

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's literature, specifications and installation instructions describing the general properties of each piece of equipment and accessory to be used in the Work.

B. Shop Drawings: Submit shop drawings for the fabrication and installation of the Work including details of each type of equipment, anchorage and accessory items. When appropriate, prepare details at not less than 3 in. = 1 ft. minimum scale. Include location drawings for each item or assembly, dimensioned elevations and plans and large scale details. Show finish and edge treatments, hardware, anchors (size and spacing), support attachment and framing locations, fittings and accessories. Indicate adjacent and supporting construction for each item and fabrication.

C. Samples: Label samples to indicate product, characteristics, and location in the Work. Samples will be reviewed for color and appearance only. Furnish sufficient samples to establish the full range of colors and textures for materials exposed in the finished work. Compliance with other requirements is the responsibility of the Contractor. Submit the following:

1. Exposed Material: 6 in. square, of each color and finish of exposed portions of the equipment.

D. Closeout Submittals: submit the following:

1. Warranties: Submit warranties as specified.

2. Maintenance Data: Submit the following:

a. Maintenance schedule for all operable equipment.

b. Maintenance Manuals: Two (2) copies of bound maintenance manuals, describing the materials, and procedures for cleaning and maintaining each piece of equipment. Include manufacturer's data describing the materials and finishes used in the work including parts lists.

1.5 QUALITY ASSURANCE

A. Qualified Installer: The equipment work shall be performed by a firm having 5 years experience in the installation of specified equipment on comparable projects. The installer shall provide evidence of successful completion of work of similar scope to that shown and specified for this Project using similar equipment and as approved by product manufacturers.

B. Sole Source Responsibility: Obtain equipment from one source of a single manufacturer for each piece of equipment for the entire project. Each manufacturer shall furnish evidence that the specified materials have been manufactured by the same source and successfully utilized on a yearly basis for a minimum of 5 years on projects of a similar scope to that shown and specified for this Project.

1. The catalog numbers specified herein are from the current catalogs of the respective manufacturers and establish minimum standards of design, dimension and quality unless otherwise modified. Equipment manufactured by others will be considered provided all requirements specified herein are satisfied.

C. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of Federal, State and Municipal authorities having jurisdiction. Obtain necessary approvals from authorities having jurisdiction.

D. Pre-Installation Meeting: Prior to the start of the Work, meet at the Project site to review material selections, methods and sequence of installation, special details and conditions, standard of workmanship, quality control requirements, job organization, coordination with other trades, and other pertinent topics related to the Work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading: Pack, ship and handle components in accordance with manufacturer’s instructions. Protect equipment and components during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration. Do not deliver equipment until painting, wet work, grinding, and similar operations that could damage, soil, or deteriorate equipment have been completed in installation areas.

B. Storage and Protection: Store components in a dry, well ventilated space, off the ground and covered with non-staining protective wrapping. Cover and keep covered with non- staining protective wrapping.

1.7 WARRANTIES

A. General: Warranties and guaranties specified in this Article shall not deprive the Department of other rights the Department may have under other provisions of the Contract Documents and are in addition to and run concurrent with other warranties and guaranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 BSO-01 A&B: DRYING RACK

A. BSO-01A: Gear Dryer for 4 Gear sets, 12 accessory drying ports,
800 cfm 1HP, 120v/60h/1phase
Basis of Design: Ram Air Model T4-IHT

1. Manufacturer: Ram Air Model T4-IHT
2. Manufacturer: Continental; Model C4-MU
3. Manufacturer: Williams Direct Dryers, Model PC4

B. BEQ-01B: Gear Dryer for 8 Gear sets, 24 accessory drying ports, heated air drying,
8 helmet dryers, 800 cfm 1HP, 240v/60h/1phase 30 Amp
Basis of Design: Ram Air Model TG-8H

1. Manufacturer: Ram Air Model TG-8H
2. Manufacturer: Continental; Model CON-XD-8
3. Manufacturer: Williams Direct Dryers

2.2 BSO-02: WASHER EXTRACTOR

A. Washer Extractor; 60 lb capacity, Basis of Design: Continental EH 060

1. Manufacturer: Continental EH060
2. Manufacturer: Milnor MWT27X5
3. Manufacturer: UniMac UCT060QN

2.3 BSO-03: DRYER CABINET

A. 6 Gear Dryer, NFPA 1851 Compliant, 900CFM, 240v/60h/1phase 35 Amp
Basis of Design: Ready Rack FH6Gama

1. Manufacturer: Ready Rack FH6G
2. Manufacturer: Staber 6 Gear PPE Drying Cabinet
3. Manufacturer: Huebsch PPE Gear Drying Cabinet

2.4 BSO-04: K9 NARCOTIC SAFE

A. BSO-04A: Narcotic Safe, DEA APPROVED, Must meet CFR Title 21 regulations. 34.5 Cubic Feet inside, TL-30, 2Hr Fire Rated, Size 79”H, 43”W x 32.5” D Group 1R Lock.

1. Manufacturer: Mesa MTLF7236
2. Manufacturer: AMSEC
3. Manufacturer: SafeandVaultStore

B. BSO-04B: Narcotic Safe, DEA APPROVED, Must meet CFR Title 21 regulations. 21.06 Cubic Feet inside, TL-30, 2Hr Fire Rated, Size 72”H, 35”W x 29.5” D Group 1R Lock, Modular Alarm- Detects Vibration, Heat & Door Opening. 2 Inner shelves

1. Manufacturer: AMSEC CF6528 AMVAULT
2. Manufacturer: Mesa MTLF6528
3. Manufacturer: SafeandVaultStore

2.5 BSO-05: ESS WORKBENCH

A. Electronics Workbench 72”Wx30Dx 36” High –Stainless Steel top – w/ outlets and Riser/Shelf,

1. Manufacturer: Tennsco: EB-2-3072S
2. Manufacturer: Lista
3. Manufacturer: Uline

2.6 SEQ-01: ULTRASONIC CLEANER

A. Ultasonic Cleaner – 8.7 Gallons x 2 Tanks Capacity, 120V, 50/60Hz, 30 Amps, Tank Dimensions 36” x 7” x8” each

1. Manufacturer: SharperTek SH1200-6_6G-D
2. Manufacturer: Omega Sonics
3. Manufacturer: Uline

2.7 SEQ-02: SOLVENT TANK

A. Large remote reservoir parts washer. Fusible link safety lid, flexible metal spigot, and lamp. 24.5 – 30 Gal capacity, Not larger than 39”W x 26”D x 66”H, 115 VAC, 60 Hz, 1.4A

1. Manufacturer: Safety Kleen Model 34
2. Manufacturer: McMaster-Carr - 3333K33
3. Manufacturer: Gray Mills 4KTW9

2.8 SEQ-03 & 03A: SS VENTED WORKSTATION 64” WIDE

A. **SEQ-03**: Custom Design. See Drawing for details. Size:. All Stainless Steel workbench, Wall mounted. Stainless Steel Pegboard for standard pegboard hook and bins

attachments, Marine edge, 4” x 48” 300 CFM Exhaust backdraft, Exposed Duct connection behind pegboard, minimum 1 electrical receptacle– 115V, 1 Ph, 60Hz, 15 Amp Service.

When multiple vented workstation are adjacent, provide a continuous stainless steel counter with marine edge only on perimeter of the grouping. Limit number of joints and supports. Include joints and supports only between workstations – to allow for uninterrupted surface and legroom clearance at the center of each station.

B. **SEQ-03A:** Custom Design. ADA Compliant. See Drawing for details. All Stainless Steel workbench, Height Adjustable to 31”-40” counter height , motorized – pushbutton, floor mounted. Stainless Steel Pegboard for standard pegboard hook and bins attachments, 4” x 48” 300 CFM Exhaust backdraft, Exposed Duct with Bellow connection behind pegboard, minimum 1 electrical receptacle – 115V, 1 Ph, 60Hz, 15 Amp Service.

ADA station are not to be continuous with other adjacent workstations due to their adjustability. Provide a marine edge on the perimeter of the workstation surface.

1. Manufacturer: TBJ Inc (Chambersburg,PA)
2. Manufacturer: Geneva Scientific
3. Manufacturer: SIC Experts, Inc.

2.9 SEQ-04 & 04A: SS VENTED WORKSTATION 36” WIDE

A. **SEQ-04**: Custom Design. See Drawing for details. Size: 36”W x 24” D x 72H. All Stainless Steel workbench, Wall mounted. Workstations shall be constructed to provide a continuous surface along the length of the wall. Marine edge, Stainless Steel Pegboard for standard pegboard hook and bins attachments, 4” x 30” 200 CFM Exhaust backdraft, Exposed Duct connection behind pegboard, minimum 1 electrical receptacle– 115V, 1 Ph, 60Hz, 15 Amp Service.

When multiple vented workstation are adjacent, provide a continuous stainless steel counter with marine edge only on perimeter of the grouping. Limit number of joints and supports. Include joints and supports only between workstations – to allow for uninterrupted surface and legroom clearance at the center of each station.

B. **SEQ-04A:** Custom Design. ADA Compliant. See Drawing for details. Size: 36”W x 24” D x 72H. All Stainless Steel workbench, Height Adjustable to 31”-40” counter height , motorized – pushbutton, floor mounted. Stainless Steel Pegboard for standard pegboard hook and bins attachments, 4” x 30” 200 CFM Exhaust backdraft, Exposed Duct with Bellow connection behind pegboard, minimum 1 electrical receptacle – 115V, 1 Ph, 60Hz, 15 Amp Service.

ADA station are not to be continuous with other adjacent workstations due to their adjustability. Provide a marine edge on the perimeter of the workstation surface.

1. Manufacturer: TBJ Inc (Chambersburg,PA)
2. Manufacturer: Geneva Scientific
3. Manufacturer: SIC Experts, Inc.

2.10 SEQ-06: SS VENTED ULTRASONIC WORKSTATION -48” WIDE

A. Custom Design. See Drawing for details.. All Stainless Steel workbench, Wall mounted.

Workstations shall be constructed to provide a continuous surface along the length of the wall. Marine edge, Stainless Steel Pegboard for standard pegboard hook and bins attachments, 4" x 42"- appropriate CFM Exhaust backdraft, Exposed Duct connection behind pegboard, minimum 1 electrical receptacle– 115V, 1 Ph, 60Hz, 15 Amp Service. When multiple vented workstation are adjacent, provide a continuous stainless steel counter with marine edge only on perimeter of the grouping. Limit number of joints and supports. Include joints and supports only between workstations – to allow for uninterrupted surface and legroom clearance at the center of each station.

1. Manufacturer: TBJ Inc (Chambersburg,PA)
2. Manufacturer: Geneva Scientific
3. Manufacturer: SIC Experts, Inc.

2.11 SEQ-07: SS CUSTOM CANOPY HOOD 36"

A. Custom Design. See Drawing for details.. All Stainless Steel exhaust hood, Wall mounted. 10" Outside Diameter, 900 CFM @ .06 SP, 80" AFF

1. Manufacturer: TBJ Inc (Chambersburg,PA)
2. Manufacturer:Kewaunee Scientific Corporation (Statesville, NC)
3. Manufacturer: Laboratory Design & Supply (Buford, Georgia 30518)

2.12 SEQ-08: SS CUSTOM CANOPY HOOD 96"

A. Custom Design. See Drawing for details.. All Stainless Steel exhaust hood, Wall mounted. 10" Outside Diameter, 120000 CFM @ .06 SP, 80" AFF

1. Manufacturer: TBJ Inc (Chambersburg,PA)
2. Manufacturer:Kewaunee Scientific Corporation (Statesville, NC)
3. Manufacturer: Laboratory Design & Supply (Buford, Georgia 30518)

2.13 SEQ-09: SS BASE CABINET

A. See Drawing for details.
B. Cabinetry fabricated from T304 stainless steel sheet conforming to ASTM A240. All exposed surfaces polished to a No. 4 brushed satin finish. (150/180 grit.)
C. Casework and components shall withstand the following minimum loads without damage to components or casework operations:
   1. A. Base cabinets shall support a minimum of 500 lbs. per lineal foot suspended across cabinet ends.
   2. Drawers in a cabinet shall support a minimum of 100 lbs.
   3. Utility tables (with 4 legs) shall support a minimum of 300 lbs.
   4. Hanging wall cases shall support a minimum of 300 lbs.
   5. Shelves of base units, wall cases, and tall cases shall support a minimum of 100 lbs.
   6. Provide locks- Heavy-duty cylinder type 5-disc tumbler dull nickel plated, stamped with identifying number
   7. Cabinet backs, end panels, uprights, and toe base fabrication from 18 gauge
   8. stainless steel. Top and intermediate horizontal rails and rear triangular gussets fabricated from 18 gauge stainless steel.

9. “L” shaped front corner reinforcement gussets and hinge reinforcements fabricated from 14 gauge stainless steel.
10. Bottom triangular leveler gussets fabricated from 11 gauge stainless steel.
11. All cabinets shall have a cleanable smooth interior. Front and rear reinforcing
12. members, and channel shaped uprights shall be enclosed full height.
13. Front face joints fully welded, ground and polished to provide a continuous flat front plane free of crevices.
14. Front face of doors, drawers, and panels shall align flush with cabinet front, and shall not overlap case ends or top and bottom rails.
15. Base cabinets furnished with removable back panel for access to stops, valves, and service lines. No back panel furnished on cabinets with drawers only. Sink base cabinets furnished with lowered back panels (2/3 height) to accommodate sink, drain and service fixtures
16. Concealed horizontal rails furnished beneath all drawers, with or without locks
17. Bottom of base cabinets shall be removable for cleanability and access to leveling glides. Open or plugged holes in bottom of cabinets for access to leveling glides are not acceptable.
18. Top of toe space below bottom cabinet closed and finished flush.
19. Front corners of cabinets reinforced with “L” shaped reinforcement gussets.
20. Front top rails on cabinets over 30” in width reinforced with additional stainless steel angle shape for greater strength and rigidity.
21. Doors: All doors shall close against rubber bumpers.
22. Set casework components plumb, square and straight with no distortion and securely anchored

D.

1. Manufacturer: TBJ Inc (Chambersburg,PA)
2. Manufacturer:Kewaunee Scientific Corporation (Statesville, NC)
3. Manufacturer: Laboratory Design & Supply (Buford, Georgia 30518)

2.14 SEQ-10: ROLLING TOOL STORAGE CABINET

A. See Drawing for details. 16” X 22” X 32”

1. Manufacturer: LISTA NW0600-0402NA-M
2. Manufacturer: HUSKY
3. Manufacturer: CRAFTSMAN

2.15 SEQ-11: GUN CLEARING TUBE /TRAP

A. Rifle Rated Gun Clearing Tube (up to .223 & .308), Floor Mounted,

1. Manufacturer: ACTION TARGET, SKU: AT-123
2. Manufacturer: INVERIS
3. Manufacturer: RANGE SYSTEMS

2.16 EP-02: PORTABLE EMERGENCY EYE WASH

Wall Mounted, Eye Saline Portable Eye Wash Station

1. Manufacturer: Honeywell Model 210004620000
2. Manufacturer: Fendall 32-000462-0000-H5
3. Manufacturer: CGOLDENWALL Portable Eye Wash Station

PART 3 - EXECUTION

3.1 GENERAL

A. Manufacturer's Instructions: Prepare substrates and erect the work of this Section, including equipment, components, and accessories in accordance with the manufacturer's instructions, except where more stringent requirements are shown or specified, and where project conditions require extra precautions or provisions to ensure satisfactory performance of the Work.

3.2 EXAMINATION

A. Verification of Conditions: Examine the areas to receive the Work and the conditions under which the Work would be performed. Remedy conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

3.3 PREPARATION

A. Substrate Acceptability: Commencement of installation shall constitute acceptance of substrate conditions by the Installer

B. Deliver items which are to be built into the work of other sections in time so as not to delay the progress of the Work.

3.4 INSTALLATION

A. Install the Work of this Section in accordance with manufacturer's written installation instructions, so that completed installation is in perfect operating condition.

B. Install operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports in accordance with final shop drawings, manufacturer's

written instructions, and as specified herein. Install items within the clearances and space limitations shown.

C. Perform all necessary cutting, drilling and fitting required to accommodate electrical and mechanical services.

D. Uncrate equipment and anchor or fasten to floors, walls or ceilings as required. Make equipment complete and ready to receive final utility connections. Equipment set in place level and true.

E. Dimensions shown on Drawings are based on an assumed design temperature of 70 deg. F. Fabrication and erection procedures shall take into account the ambient temperature range at the time of the respective operations.

F. Do not erect members which are warped, bowed, deformed or otherwise damaged to such extent as to impair strength or appearance. Remove and replace members damaged in the process of erection.

G. Dielectric Separator: Separate dissimilar metals and metals in contact with concrete or masonry with a dielectric separator.

H. Touch-up marred and abraded surfaces with the specified prime paint after erection in the field. Touch-up galvanized surfaces in accordance with ASTM A780.

3.5 TESTS

A. Start-up, adjust and test equipment to demonstrate compliance with specified performance requirements of the specifications.

3.6 CLEANING

A. At a time as directed by the Department, remove all temporary protection and leave the installation clean and free of any imperfections.

END OF SECTION

SECTION 119030

TRAINING EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Stipulations:

1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Division 01 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

B. General: Provide training equipment and installation provisions for equipment supplied by Department in accordance with requirements of the Contract Documents.

A. Section includes, but not limited to, the following:

1. TRN-01: Interior Training Maze
2. TRN-03: Simulated Tree
3. TRN-04: Mock Fire hydrant
4. TRN-05: Mock Manhole Cover
5. TRN-06: Mock Mailbox
6. TRN-09: Mock Garbage Can
7. TRN-10: Mock Outdoor Lighting Fixture

B. Related Requirements:

1. All necessary roughing-in required for the equipment as specified in Section 055000 “Metal Fabrications.”

2. All necessary roughing-in of mechanical, plumbing, and electrical connections required for the equipment complete with final connections, including electrical, communications and other utility line connections required to properly operate the equipment specified herein.

3. Finish painting of exposed metal surfaces requiring painting other than prefinished items is specified in Section 099100, "Painting".

1.2 DEFINITIONS

A. Department Furnished Contractor Installed (OFCI): Equipment that will be furnished by the Department for installation by the Contractor. The Contractor shall be responsible for coordinating substrate and installation requirements as well as coordinating equipment dimensions. The Contractor shall be responsible for mechanical, electrical, and A/V connections as well as final installation and integration of this equipment with the Work.

1.3 REFERENCES

A. General: Comply with the applicable provisions of the referenced standards except as modified by governing codes and the Contract Documents. Where a recommendation or suggestion occurs in the referenced standards, such recommendation or suggestion shall be considered mandatory. In the event of conflict between referenced standards, this specification or within themselves, the more stringent standard or requirement shall govern.

1. National Association of Architectural Metal Manufacturers (NAAMM): NAAMM "Metal Finishes Manual".

2. Industrial Fasteners Institute (IFI): "Fastener Standards Book."

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's literature, specifications and installation instructions describing the general properties of each piece of equipment and accessory to be used in the Work.

B. Shop Drawings: Submit shop drawings for the fabrication and installation of the Work including details of each type of equipment, anchorage and accessory items. When appropriate, prepare details at not less than 3 in. = 1 ft. minimum scale. Include location drawings for each item or assembly, dimensioned elevations and plans and large scale details. Show finish and edge treatments, hardware, anchors (size and spacing), support attachment and framing locations, fittings and accessories. Indicate adjacent and supporting construction for each item and fabrication.

C. Samples: Label samples to indicate product, characteristics, and location in the Work. Samples will be reviewed for color and appearance only. Furnish sufficient samples to establish the full range of colors and textures for materials exposed in the finished work. Compliance with other requirements is the responsibility of the Contractor. Submit the following:

1. Exposed Material: 6 in. square, of each color and finish of exposed portions of the equipment.

D. Closeout Submittals: submit the following:

1. Warranties: Submit warranties as specified.

2. Maintenance Data: Submit the following:

a. Maintenance schedule for all operable equipment.

b. Maintenance Manuals: Two (2) copies of bound maintenance manuals, describing the materials, and procedures for cleaning and maintaining each piece of equipment. Include manufacturer's data describing the materials and finishes used in the work including parts lists.

1.5 QUALITY ASSURANCE

A. Qualified Installer: The equipment work shall be performed by a firm having 5 years experience in the installation of specified equipment on comparable projects. The installer shall provide evidence of successful completion of work of similar scope to that shown and specified for this Project using similar equipment and as approved by product manufacturers.

B. Sole Source Responsibility: Obtain equipment from one source of a single manufacturer for each piece of equipment for the entire project. Each manufacturer shall furnish evidence that the specified materials have been manufactured by the same source and successfully utilized on a yearly basis for a minimum of 5 years on projects of a similar scope to that shown and specified for this Project.

1. The catalog numbers specified herein are from the current catalogs of the respective manufacturers and establish minimum standards of design, dimension and quality unless otherwise modified. Equipment manufactured by others will be considered provided all requirements specified herein are satisfied.

C. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of Federal, State and Municipal authorities having jurisdiction. Obtain necessary approvals from authorities having jurisdiction.

D. Pre-Installation Meeting: Prior to the start of the Work, meet at the Project site to review material selections, methods and sequence of installation, special details and conditions, standard of workmanship, quality control requirements, job organization, coordination with other trades, and other pertinent topics related to the Work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading: Pack, ship and handle components in accordance with manufacturer's instructions. Protect equipment and components during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration. Do not deliver equipment until painting, wet work, grinding, and similar operations that could damage, soil, or deteriorate equipment have been completed in installation areas.

B. Storage and Protection: Store components in a dry, well ventilated space, off the ground and covered with non-staining protective wrapping. Cover and keep covered with non- staining protective wrapping.

1.7 WARRANTIES

A. General: Warranties and guaranties specified in this Article shall not deprive the Department of other rights the Department may have under other provisions of the Contract Documents and are in addition to and run concurrent with other warranties and guaranties made by the Contractor under requirements of the Contract Documents.

B. Provide a minimum of 1 year warranty for all products.

PART 2 - PRODUCTS

2.1 **TDN-01:** Interior Training Maze

A. Location: ITV

B. Reconfigurable Interior Training Maze for force on force training on a roughly 4ft by 4ft grid, capable of being moved around and rearranged in a variety of ways. Panel size to be roughly 4ft wide and 8ft tall. To fill up the interior training spaces as depicted in the drawings with a variety of solid panels and door panels.

C. Submittal requirement: Show 3 configuration layouts of all mazed spaces utilizing the total quantity of panels specified. Provide dimensions for storage requirement for panels.

1. Able to be carried by two people, under 100 lbs a panel
2. Moisture, impact and fire resistant.
3. Rated for simulated ammunition
4. Modular
5. Requires no tools for setup
6. Requires not more than two people for assembly and take down
7. Finish: White or Gray Finish
8. Provide a minimum quantity of 21 Door Panels, 120 Solid Panels
9. Provide a demonstration to client at time of turnover on use of system.

D. Manufacturer: Action Target
E. Manufacturer: Simtek Modular
F. Manufacturer: or equivalent

2.2 TRN-03 & TRN-03A: Simulated Tree

Location: ITV

Color / Descriptions: Oak Sapling with silk foliage and epoxy bark.
Specifications: see drawings for dimensions
Provide structurally engineered trees as a delegated design item.
Trees are to be shaped around adjacent building elements including but not limited to: Beams, Walls, Upper level structure and floors, MEP items.

TRN-03A: 15' tall trees
a) 8'-9' canopy diameter
b) 12"-14" truck base diameter
c). Major limbs starting at 5' above finished floor
d) 7' foliage clearance

TRN-03: 20' tall tree
a). 10' canopy diameter
b) 18" truck base diameter
c) Major limbs starting at 6' above finished floor
d) 7' foliage clearance
Purpose of tree: To blend two dissimilar facades at the corner. Tree foliage to fit the corner of this location and foliage to help conceal the corner wall line where graphic wall meets with building wall.

Manufacturers:
1)Nature Maker
2)Plantscape Inc. Commercial Silk International
Or Equivalent

2.3 TRN-04: Mock Fire hydrant
Location: ITV
Model: Smith 2-LP Fire Hydrant with 2 1/2" nozzle and one 4 ½" nozzle; or approved Equal (by department).
Color / Descriptions: Red

2.4 TRN-05: Mock Manhole Cover
Location: ITV
Model: Campbell Foundry
Color / Descriptions: DEP Approved Manhole Cover
Specifications: 18" Diameter x 1" Thick

2.5 TRN-06: Mock Mailbox
Location: ITV
Model: USPS type street mailbox, Blue

2.6 TRN-09: Mock Steet Garbage Can
Location: ITV
Model: Trashcans unlimited 37 Gallon SCD-2633 Metal Outdoor Streetscape Covered Trash Can or similar
Color / Descriptions: Black

2.7 TRN-10: Mock Lighting Fixture
Location: ITV
Model: 1-Light Imperial Black Outdoor Wall Mount Barn Light Sconce or similar
Color / Descriptions: Black

PART 3 - EXECUTION

3.1 GENERAL

A. Manufacturer's Instructions: Prepare substrates and erect the work of this Section, including equipment, components, and accessories in accordance with the manufacturer's instructions, except where more stringent requirements are shown or specified, and where project conditions require extra precautions or provisions to ensure satisfactory performance of the Work.

3.2 EXAMINATION

A. Verification of Conditions: Examine the areas to receive the Work and the conditions under which the Work would be performed. Remedy conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

3.3 PREPARATION

A. Substrate Acceptability: Commencement of installation shall constitute acceptance of substrate conditions by the Installer

B. Deliver items which are to be built into the work of other sections in time so as not to delay the progress of the Work.

3.4 INSTALLATION

A. Install the Work of this Section in accordance with manufacturer's written installation instructions, so that completed installation is in perfect operating condition.

B. Install operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports in accordance with final shop drawings, manufacturer's written instructions, and as specified herein. Install items within the clearances and space limitations shown.

C. Perform all necessary cutting, drilling and fitting required to accommodate electrical and mechanical services.

D. Uncrate equipment and anchor or fasten to floors, walls or ceilings as required. Make equipment complete and ready to receive final utility connections. Equipment set in place level and true.

E. Dimensions shown on Drawings are based on an assumed design temperature of 70 deg. F. Fabrication and erection procedures shall take into account the ambient temperature range at the time of the respective operations.

F. Do not erect members which are warped, bowed, deformed or otherwise damaged to such extent as to impair strength or appearance. Remove and replace members damaged in the process of erection.

G. Dielectric Separator: Separate dissimilar metals and metals in contact with concrete or masonry with a dielectric separator.

H. Touch-up marred and abraded surfaces with the specified prime paint after erection in the field. Touch-up galvanized surfaces in accordance with ASTM A780.

3.5 TESTS

A. Start-up, adjust and test equipment to demonstrate compliance with specified performance requirements of the specifications.

3.6 CLEANING

A. At a time as directed by the Department, remove all temporary protection and leave the installation clean and free of any imperfections.

END OF SECTION

SECTION 122100

WINDOW SHADES

PART 1 - GENERAL

1.1 SUMMARY

A. Stipulations:

1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Division 01 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

B. General: Provide window shades in accordance with requirements of the Contract Documents.

C. B. Section includes, but not limited to, the following:

1. **WTR-01** through **WTR-03**: Window Shades.

2. **WTRA-01**: Shade Fascia

D. Related Requirements:

3. Sheet metal window treatment pockets as specified under Section 057000 “Decorative Metal”

4. Wood blocking, shims, and other wood items required for installation of window shades is specified under Section 061000 “Rough Carpentry”.

5. Electrical service and connections motor operators, control interface, limit switches and system disconnect switches for electrically operated window shades is specified in applicable Division 26 Electrical specification sections.

1.2 REFERENCES

A. Comply with the applicable provisions of the referenced standards except as modified by governing codes and the Contract Documents. Where a recommendation or suggestion occurs in the referenced standards, such recommendation or suggestion shall be considered mandatory. In the event of conflict between referenced standards, this specification or within themselves, the more stringent standard or requirement shall govern.

1. National Association of Architectural Metal Manufacturers (NAAMM): NAAMM "Metal Finishes Manual".

2. Industrial Fasteners Institute (IFI): "Fastener Standards Book."

3. National Electric Code (NEC): NFPA 70: National Electrical Code

4. National Fire Protection Association (NFPA): NFPA No. 701 "Standard Methods of Fire Tests for Flame-Resistant Textiles and Films", Small Scale Test.

5. American Society for Testing and Materials (ASTM)

   a. ASTM G21 “Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi”.

6. National Electric Code (NEC): NFPA 70: National Electrical Code

7. National Electrical Manufacturers Association (NEMA).

   a. NEMA ICS 1: Industrial Control and Systems General Requirements

   b. NEMA ICS 6: Industrial Control and Systems Enclosures

   c. NEMA MG 1(Revision No. 2): Motors and Generators

1.3 SUBMITTALS

A. Product Data: Submit for Professional’s action. Submit manufacturer’s literature, specifications and installation instructions describing the general properties of each material and accessory to be used in the Work.

B. Shop Drawings: Submit for Professional’s action. Submit shop drawings for the fabrication and installation of the Work. Prepare details at not less than 3 in. = 1 ft. minimum scale. Include dimensioned plans, details, connections, anchorages, relation to adjacent construction, and other necessary data.

   1. Wiring Diagrams: Submit wiring diagrams detailing wiring for motorized shade operators, signal, and control systems differentiating clearly between manufacturer installed wiring and field installed wiring. Show the locations of connections to electrical service provided as a unit of work under other Sections.

   2. Show locations and details for installing operator components, switches, and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting, and grounding provisions.

C. Shade Schedule: Submit for Professional’s information. Provide a shade schedule based on field measurements and showing the types and locations of each size of shade as well as accessories and types and locations of controls.

D. Samples: Submit for Professional’s action. Label samples to indicate product, characteristics, and location in the Work. Samples will be reviewed for color and appearance only. Furnish sufficient samples to establish the full range of colors and textures for materials exposed in the finished work. Compliance with other requirements is the responsibility of the Contractor. Submit the following:

   1. 24 in. x 24 in. sample of each shade material and color specified complete with bottom hem bar.

   2. Sample of each type of control device complete with cover plate to be utilized for control of the motorized shade assemblies.

E. Quality Control Submittals: Submit for Professional’s information.

   1. Certificates

a. Document Review: Before commencing work, submit a written statement signed by the Contractor and the Applicator certifying that the Contract Documents, shop drawings and product data have been reviewed with material manufacturers' qualified technical representatives and that they agree the selected materials are proper, compatible with contiguous materials and adequate for the application shown.

2. Test Reports

a. Flame Resistance Ratings Test Reports: Provide flame resistance ratings test reports from an independent testing agency in accordance with NFPA 701, -Small Scale Test stating that the for-shade material passes NFPA 701 and is washable, dimensionally stable and resistant to ultra-violet deterioration.

F. Sustainable Design Submittal Requirements per Section 018113: "Sustainable Design Requirements".

G. Closeout Submittals: Submit for Department’s documentation.

1. Warranties: Special warranties as specified.

2. Maintenance Data: Submit three copies of manufacturer's printed instructions for operating, maintaining and repairing the window shades. Include complete parts list. Include methods for maintaining finishes and precautions for cleaning materials and methods that could be detrimental to finishes and performance.

1.4 QUALITY CONTROL

A. Qualified Installer: The window shade work shall be performed by a firm having 5 years of experience in the installation of specified materials on comparable projects. The firm shall have the approval of the window shade materials manufacturer. The applicator shall provide evidence of successful completion of work of similar scope to that shown and specified for this Project using similar window shade systems.

B. Sole Source Responsibility: Obtain window shades from one source of a single manufacturer. Obtain accessory products used in conjunction with window shades from the window shade manufacturer or from sources acceptable to the window shade manufacturer. The manufacturer shall furnish evidence that the specified materials have been manufactured by the same source and successfully utilized on a yearly basis for a minimum of 5 years on projects of a similar scope to that shown and specified for this Project.

C. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of Federal, State and Municipal authorities having jurisdiction. Obtain necessary approvals from authorities having jurisdiction

1. All electrical components and systems shall be Underwriters' Laboratories, Inc. (UL) Listed.

D. Fire-Test-Response Characteristics: Provide shade materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Flame-Resistance Ratings: Shade material and lining shall be flame resistant in accordance with NFPA 701, -Small Scale Test, washable, dimensionally stable and resistant to ultra-violet deterioration.

E. Visual Mock-Up(s)

1. Provide a visual mock-up of each type of window shade system, minimum 1 full assembly as selected by Professional, including hardware and other related components, in spaces within the building designated by the Professional. Mock-up(s) shall be representative of the finished work in all respects and upon acceptance, shall serve as the standard for the Work.

a. Mock-up shall include motorized components complete with installed control system.

2. Mock-up(s) may be installed in final locations and if accepted, may be utilized in the finished work.

F. Pre-Installation Meetings: Prior to the start of the Work, meet at the Project site to review methods and sequence of window shade installation, special details and conditions, standard of workmanship, testing and quality control requirements, job organization and other pertinent topics related to the Work.

1.5 PROJECT CONDITIONS

A. Do not install window shades until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.

1.6 DELIVERY, STORAGE AND HANDLING

A. Do not deliver window shades until rooms containing shades are painted, ready for their installation. Protect motorized black-out shades and all components from damage during delivery, handling, storage and installation.

1.7 WARRANTY

A. General: Warranties specified in this Article shall not deprive the Department of other rights the Department may have under other provisions of the Contract Documents and are in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

1. Special Warranty of Shade Fabric(s): Submit a written warranty stating that the shade fabric(s) will not change color, fade and shall remain dimensionally stable, will not warp, sag or distort for a period of five (5) years from the date of final acceptance and agreeing to correct or replace, complete with materials and installation, at the Department's convenience.

2. Special Warranty for Roller Shade Hardware and Chain Warranty: Submit a five (5) year written warranty, agreeing to remove, repair or replace roller shade hardware and control chain components that fail in materials or workmanship within specified warranty period.

3. Special Warranty: Submit a written warranty agreeing to repair or replace electrical components of the motor operated shade system, controls, fabrics and related accessories which have failed due to faulty materials or workmanship. The period of warranty shall be five (5) years and the warranty shall be signed by the manufacturer and the Contractor.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE REQUIREMENTS

A. Performance Requirements

1. Shade Material Fire-Test-Response Characteristics: Provide shade materials which pass NFPA 701 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.

2. Anti-Microbial Characteristics: Provide shade materials which are 'No Growth' per ASTM G21 results for fungi ATCC9642, ATCC 9644, ATCC9645.

3. Electrical Components: NFPA Article 100 listed and labeled by either UL or ETL or other testing agency acceptable to authorities having jurisdiction, marked for intended use, and tested as a system. Individual testing of components will not be acceptable in lieu of system testing.

B. Sustainable Design Requirements: Provide the Work, and submit documentation, as necessary for compliance with sustainable requirements specified in Section 018113, "Sustainable Design Requirements".

2.2 MANUFACTURER

A. General: Provide motorized and manually operated shade systems as produced by one manufacturer. Products specified herein by proprietary designation establish the quality standards required. Equivalent products of other manufacturers will be considered provided the meet those established standards and comply with the Contract Documents. Available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. MechoShade Systems, Inc.

2. DFB Sales.

3. Lutron Electronics Co., Inc.

4. Draper Inc.

5. Hunter Douglas Contract.

6. Nysan Solar Control Inc.; Hunter Douglas Company.

7. Silent Gliss USA, Inc.

2.3 MATERIALS

A. General: Provide factory assembled [motorized and] [manually] operated shade systems

designed for lifting shades of type, size, weight, construction, use, and operation frequency indicated. Provide operational systems of size and capacity and with features, characteristics, and accessories suitable for Project conditions, complete with operating parts, and accessories required for reliable operation without malfunction.

1. Provide motorized shade system complete with electric motors and factory prewired motor controls, remote control stations, remote control devices, power disconnect switches and enclosures protecting controls and including wiring from motor controls to motors. Coordinate operator wiring requirements and electrical characteristics with the building electrical system.

B. Manually Operated Shade Assembly: Provide manually operated shade assemblies where shown, including but not limited to, the following:

1. Rollers: Extruded aluminum, electrogalvanized steel or epoxy primed steel tube of diameter and wall thickness required to support and fit internal components of operating system and the weight and width of shade band material without sagging; designed to be easily removable from support brackets and providing for continuous attachment of shade fabric.

2. Spline: Fabric mounting spline constructed of extruded vinyl with asymmetrical locking guides and fabric guides.

3. Bottom Bar: Bottom hem of each shade shall enclose an aluminum bottom bar painted the same color as shade material.

4. Brackets: Manufacturer's standard brackets designed to suit application indicated and to provide a secure and concealed mounting of mechanism. Include all hardware, fittings and fasteners required for secure attachment of track. Design brackets to support safely the weight of the shade assemblies plus the forces applied to operate shades. In addition, design brackets for easy removal and reinstallation of shade fabric, for supporting roller and operating hardware and for hardware position and shade mounting method indicated. Provide no fewer than two fasteners per bracket, fabricated from metal noncorrosive to shade hardware and adjoining construction; type designed for securing to supporting substrate; and supporting shades and accessories under conditions of normal use.

5. Shade Operation: Manual; with continuous loop bead chain and clutch. Position of clutch right side of roller, as determined by hand of user facing shade from inside, unless otherwise indicated. Clutch: Capacity to lift size and weight of shade; sized to fit roller or provide adaptor.

    a. Loop Length: Length required to make operation convenient from floor level

    b. Bead Chain: Stainless steel.

6. Operating Function: Stop and hold shade at any position in ascending or descending travel.

7. Chain retainer: Manufacturer’s standard, designed to suit application indicated, and mounted as noted.

C. Motorized Shade Assemblies: Provide motorized shades where shown, including but not limited to, the following:

1. Rollers: Extruded aluminum, electrogalvanized steel or epoxy primed steel tube of diameter and wall thickness required to support and fit internal components of operating system and the weight and width of shade band material without sagging; designed to be easily removable from support brackets and providing for continuous attachment of shade fabric with internal keyway to receive tubular motor and providing for continuous attachment of shade fabric.

2. Spline: Fabric mounting spline constructed of extruded vinyl with asymmetrical locking guides and fabric guides.

3. Bottom Bar (Top Bar for Roll-up Units): Bottom hem of each shade shall enclose an aluminum bottom bar painted the same color as shade material.

4. Brackets: Manufacturer's standard, designed to suit application indicated and to provide a secure and concealed mounting of mechanism. Include all hardware, fittings and fasteners required for secure attachment of track. Design brackets to support safely the weight of the shade assemblies plus the forces applied to operate shades. In addition, design brackets for easy removal and reinstallation of shade, for supporting roller, and operating hardware and for hardware position and shade mounting method indicated. Provide no fewer than two fasteners per bracket, fabricated from metal noncorrosive to shade hardware and adjoining construction; type designed for securing to supporting substrate; and supporting shades and accessories under conditions of normal use.

5. Motor: Asynchronous motor with built-in reversible capacitor start and run, made to be operated with 120V-AC at 50 Hz, Single Phase (unless otherwise indicated); temperature Class A (maximum temperature rating 140 deg. C.); thermally protected, totally enclosed, maintenance free with locking disconnect plug assembly provided with each operator.

    a. Motor torque shall be sufficient for the size and weight of the shade without excessive wear, distortion affecting the shade operation or appearance.

    b. Internal limit switches controlling the extremes of travel.

    c. Solenoid disc brake which stops and holds in any position and automatically disengages when motor is operating.

6. Controls: Provide controls for each motorized shade or group of motorized shades including, but not limited to, the following:

    a. Manual switches and electronic relay for operating more than one motor, local control stations, and motor logic controls. Momentary contact, three position, rocker style, wall-switch-operated control station with open, close, and center off functions. Locate controls under common face plate with scene selectors.

    b. Provide motor logic controllers capable of controlling the opening and closing of banks of motorized shades.

D. Audiovisual Light-Blocking Shades: Designed for eliminating all visible light gaps when shades are fully closed; fabricated from blackout shade type material with [and bottom bar extended and formed for light-tight joints among shade components and between

shade components and adjacent construction.

1. Side Channels, either sill channel or angle, and perimeter seals: Manufacturer's standard design, including sill light seal attached to bottom bar, for eliminating light gaps when shades are closed.

2. Shade Retention System: Manufacturer's standard design for guiding shade band material through range of travel and holding shade band flat with edges of material within side channels.

E. Skylight Shades: Complete system for operable skylight shades, including operator, operating hardware, and accessories for smooth operation, designed for installation in either horizontal position or inclined position as indicated on Drawings.

1. Side Channels and Bottom Channel or Angle: Manufacturer's standard design for concealing rollers, operator take-up operating hardware, and accessories.

2. Shade Band Retention System: Manufacturer's standard design for guiding shade band material through range of travel and holding shade band flat and taut with edges of material within side channels and/or firmly attached to cables or wires; including concealed battens or rods connected to fabric guides or exposed idler rollers for stiffening shade band material across glazed opening.

F. Shade Material

1. General: Shade material is constructed of extruded vinyl over a polyester core woven into a fabric or laminated fiberglass fabric. Shade shall run from soffit to metal stool height unless otherwise shown and from reveal or column providing the maximum window coverage in one piece. Horizontal seams of not less than 72 in. in width will be accepted with high frequency welds. The width of the shade shall extend into the concealed 3 in. side channels provided within the scope of this Work.

a. Fabric shall be continuous horizontally for the full width of each shade. Seam fabric if required, inconspicuously. Seams shall be straight, uniform in both appearance and strength and shall be at least as strong as the fabric itself.

b. Finish fabric so that it will hang flat, without buckling or distortion. Edges, when trimmed, shall hang straight without unraveling.

c. Provide mill finish aluminum slat weight concealed in bottom hem of fabric.

G. Miscellaneous: Provide miscellaneous materials as required by the manufacturer for a complete installation.

H. Shade and Fabric Schedule:

1. **Type WTR-01**:

a. Manufacturer: MECHOSHADE

1) Manufacturer’s. Name: EUROTWILL

2) Color: SILVER DOVE 6459
3) Openness factor: 3%
4) Operation Type: **Manual**~~Motorized~~.

b. Manufacturer: PHIFER

1) Manufacturer's. Name: SHEERWEAVE STYLE 8000
2) Color: S04 SILVER
3) Openness factor: 3%
4) Operation Type: **Manual**~~Motorized~~.

c. Manufacturer: HUNTER DOUGLAS

1) Manufacturer's. Name: SHEER WEAVE INFINITY 2
2) Color: STONE
3) Openness factor: 3%
4) Operation Type: **Manual**~~Motorized~~.

2. **Type WTR-01A**:

a. Manufacturer: MECHOSHADE

1) Manufacturer's. Name: EUROTWILL
2) Color: SILVER DOVE 6459
3) Openness factor: 3%
4) Operation Type: **Motorized**~~Manual~~.

b. Manufacturer: PHIFER

1) Manufacturer's. Name: SHEERWEAVE STYLE 8000
2) Color: S04 SILVER
3) Openness factor: 3%
4) Operation Type: **Motorized**~~Manual~~.

c. Manufacturer: HUNTER DOUGLAS

1) Manufacturer's. Name: SHEER WEAVE INFINITY 2
2) Color: STONE
3) Openness factor: 3%
4) Operation Type: **Motorized**~~Manual~~.

3. **Type WTR-02**:

a. Manufacturer: MECHOSHADE

1) Color: 0702 LIGHT GRAY
2) Openness factor: Blackout
3) Operation Type: **Manual**~~Motorized~~.

b. Manufacturer: PHIFER

1) Manufacturer's. Name: SHEERWEAVE STYLE 7500
2) Color: R43 TUNDRA

3) Openness factor: Blackout
4) Operation Type: **Manual**~~Motorized~~.

c. Manufacturer: HUNTER DOUGLAS

1) Manufacturer's. Name: GLACIERSCREEN +RD
2) Color: GRAY
3) Openness factor: Blackout
4) Operation Type: **Manual**~~Motorized~~.

4. **Type WTR-02A**:

a. Manufacturer: MECHOSHADE

1) Color: 0702 LIGHT GRAY
2) Openness factor: Blackout
3) Operation Type: **Motorized**~~Manua~~l.

b. Manufacturer: PHIFER

1) Manufacturer's. Name: SHEERWEAVE STYLE 7500
2) Color: R43 TUNDRA
3) Openness factor: Blackout
4) Operation Type: **Motorized**~~Manual~~.

c. Manufacturer: HUNTER DOUGLAS

1) Manufacturer's. Name: GLACIERSCREEN +RD
2) Color: GRAY
3) Openness factor: Blackout
4) Operation Type: **Motorized**~~Manual~~.

5. **Type WTR-03**:

a. Manufacturer: MECHOSHADE

1) Manufacturer's. Name: EUROTWILL
2) Color: GRAPHITE 6011
3) Openness factor: 3%
4) Operation Type: **Manual**~~Motorized~~.

b. Manufacturer: PHIFER

1) Manufacturer's. Name: SHEERWEAVE STYLE 8000
2) Color: VG4 SLATE
3) Openness factor: 3%
4) Operation Type: **Manual**~~Motorized~~.

c. Manufacturer: HUNTER DOUGLAS

1) Manufacturer's. Name: SHEER WEAVE INFINITY 2
2) Color: SLATE
3) Openness factor: 3%
4) Operation Type: **Manual**~~Motorized~~.

I. Fascia:

1. **Type WTRA-01**: Extruded Front Fascia.

a. Manufacturer: Shade Manufacturer Standard
b. Color: Match Adjacent surface.

2.4 FABRICATION

A. General: All metal components shall be free of sharp edges, burrs and other defects which might be harmful to persons or materials coming into contact with them.

B. Prior to fabrication, verify actual opening dimensions by accurate site measurements. Adjust dimensions for proper fit at openings. Coordinate with other trades for securing brackets to substrates and other finished surfaces. Provide units fabricated in sizes to completely fill window and other openings.

C. Fabricate concealed components utilizing non-corrodible or corrosion-resistant-coated materials and lifting mechanisms with permanently lubricated moving parts.

D. Unit Sizes: Coordinate requirements for perimeter clearances with distance between shades and glass, glass type, and placement of heating/cooling air supplies to avoid heat build-up and possible damage to glass. Obtain units fabricated in sizes to fill window and other openings as follows, measured at 70 deg F. :

1. Shade Units Installed between (Inside) Jambs: Edge of shade not more than 1/4 in. from face of jamb. Length equal to head to sill dimension of opening in which each shade is installed.

2. Shade Units Installed Outside Jambs: Width and length as indicated, with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.

E. Installation Brackets: Fabricate installation brackets so as to allow for easy removal and reinstallation of shade, for supporting fascia, headbox, roller, and operating hardware and for hardware position and shade mounting method indicated.

F. Installation Fasteners: Provide no fewer than two fasteners per bracket, fabricated from metal noncorrosive to shade hardware and adjoining construction. Provide type designed for securing to supporting substrate; and supporting shades and accessories under conditions of normal use.

2.5 FINISHES

A. Finishes: All exposed metal aluminum materials shall have a baked-on enamel primer and a finish coat of baked enamel, color as selected by Professional. All exposed steel materials shall be bonderized and receive a finish coat of baked enamel, color as selected by Professional.

B. Colors of Plastic and Other Components Exposed to View: Matching or coordinating with shade color and as selected by Professional from manufacturer's full range of colors, unless otherwise indicated

2.6 SOURCE QUALITY CONTROL

A. Contractor’s Quality Control Responsibilities: Contractor is solely responsible for quality control of the Work.

PART 3 - EXECUTION

3.1 GENERAL

A. Manufacturer's Instructions: Prepare substrates, install the work of this Section, including equipment, components, and accessories in accordance with the manufacturer's instructions, except where more stringent requirements are shown or specified, and where project conditions require extra precautions or provisions to ensure satisfactory performance of the Work.

3.2 EXAMINATION

A. Verification of Conditions: Examine the areas to receive the Work and the conditions under which the Work would be performed. Remedy conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected. Commencement of installation shall constitute acceptance of substrate conditions by the Installer.

3.3 INSTALLATION

A. Do not install window shades until dirt producing construction work has been completed in that area.

B. Install window shades over or in each opening as shown providing suitable uniform clearances, in exact alignment with adjoining construction and adjacent shades.

C. Install shades so that shade fabric will hang flat, vertical and with edges aligned when rolled up. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range. Make height adjustments after installation with stop positions determined by Professional.

3.4 FIELD QUALITY CONTROL

A. Contractor’s Quality Control Responsibilities: Contractor is solely responsible for quality control of the Work.

3.5 ADJUSTING

A. At completion of the Work, adjust and test all shades in the presence of the Professional and the Department's Representative and demonstrate operation to their complete satisfaction. Replace units that cannot be field corrected.

3.6 CLEANING

A. After testing is performed clean all surfaces utilizing materials and methods as recommended.

END OF SECTION

SECTION 133419

METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Stipulations:

1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Division 01 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

B. General: Where indicated on the drawings, provide buildings consisting of faceted, rigid-frame-type pre-engineered metal building of the nominal length, width, eave height, and roof pitch indicated.

1. Pre-engineered metal building, complete with structural framing (columns, rafters, struts, purlins, girts); diagonal bracing; fasteners; and other components and material required for a complete installation.

2. Manufacturer's standard building components and accessories may be used, provided components, accessories, and complete structure conform to design indicated and specified requirements.

C. Related Work Specified Elsewhere

1. Metal roof panels are specified in Section 074113 “Metal Roof Panels”.

2. Metal wall panels are specified in Section 074213 “Metal Wall Panels”.

3. Sealants as specified in Section 07 92 00 “Joint Sealants”.

4. Metal doors are specified in Section 08 11 13 “Metal Doors and Frames”.

5. Expansion and movement joints for adjacent construction is specified in Section 07 95 13 “Expansion Joint Cover Assemblies”.

6. Requirements for exterior wall is specified in Section 08 35 00 "Exterior Enclosure, General”.

1.2 BUILDING TYPE

A. Building Type: Single span hip roof rigid frame structure with variable depth column and beam sections of shop welded steel plates.

1.3 REFERENCES

A. General: Comply with the applicable provisions of the referenced standards except as modified by governing codes and the Contract Documents. Where a recommendation or suggestion occurs in the referenced standards, such recommendation or suggestion shall be considered mandatory. In the event of conflict between referenced standards, this

specification or within themselves, the more stringent standard or requirement shall govern.

1. Structural Framing, Girts and Roof Panels: Design primary and secondary structural members and roof covering materials for applicable loads and combinations of loads in accordance with the Metal Building Manufacturers Association's (MBMA) "Design Practices Manual." and "Low Rise Building Systems Manual".

2. Structural Steel: Comply with the American Institute of Steel Construction's (AISC) "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings" for design requirements and allowable stresses.

3. Light Gage Steel: Comply with the American Iron and Steel Institute's (AISI) "Specification for the Design of Cold Formed Steel Structural Members" and "Design of Light Gage Steel Diaphragms" for design requirements and allowable stresses.

4. Welded Connections: Comply with the American Welding Society's (AWS) "AWS D1.1 "Structural Welding Code-Steel" for welding procedures.

5. SSPC "Steel Structures Painting Manual, Volume 2, Systems and Specifications".

6. Industrial Fasteners Institute "Fastener Standards Book".

7. AAMA 605.2 "Specification for High Performance Organic Coatings on Architectural Extrusions and Panels".

8. American Society for Testing and Materials (ASTM)

   a. ASTM A6 “Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.”

   b. ASTM A36 “Standard Specification for Carbon Structural Steel.”

   c. ASTM A53 “Specification for Pipe, Steel, Black and Hot-Dipped Zinc Coated, Welded and Seamless.”

   d. ASTM A500 “Specification for Cold Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.”

   e. ASTM A992 “Standard Specification for Steel for Structural Shapes for Use in Building Framing.”

   f. ASTM A588 “Standard Specification for High-Strength, Low-Alloy Structural Steel with 50 ksi Minimum Yield Point to 4 in. Thick.”

   g. ASTM A792 “Hot Dip Galvanizing.”

1.4 SYSTEM PERFORMANCE REQUIREMENTS

A. General: Engineer, design, fabricate and erect the pre-engineered metal building system to withstand loads from winds, gravity, seismic, structural movement including movement thermally induced, and to resist in-service use conditions that the building will experience,

including exposure to the weather, without failure.

1. Design each member to withstand stresses resulting from combinations of loads that produce the maximum allowable stresses in that member as prescribed in MBMA's "Design Practices Manual."

B. Structural Design Requirements

1. General: The design of the structural system shall be a clear span rigid frame with tapered columns and roof beams, as indicated on architectural and structural drawings.

   a. Components and parts of the structural system shall be as described on the shop drawings and/or specifications. Components and parts shall be clearly marked and erection drawings shall be supplied for identification and parts assembly.

   b. Connection of all major structural members will be made with A 325 high-tensile bolts through pre-punched or predrilled holes for exact alignment.

   c. Field modification of parts shall be in accordance with the best standard procedures, require the approval of the manufacturer, and be the responsibility of the building erector. Field modification of structure requires details signed and sealed by a Professional Engineer licensed in the Commonwealth of Pennsylvania.

2. Structural Steel Design: Structural mill sections or welded-up plate sections shall be designed in accordance with the AISC Load and Resistance Factor Design for Steel Building and all cold formed section to ASTM A606.

3. Rigid Frame Roof Structure

   a. Primary Structures: Frames shall consist of welded up plate section columns and roof beams, complete with necessary splice plates for bolted field assembly. Bolts for field assembly of frame members shall be high-strength bolts.

   b. Base plates, cap plates, compression splice plates and stiffener plates shall be factory welded into place and have the connection holes shop fabricated.

   c. Columns and roof beams shall be fabricated complete with holes in webs and flanges for the attachment of secondary structural members and bracing except for field work as noted on manufacturer’s erection drawings.

4. Endwall Structure

   a. The endwall structures shall be cold-formed channel members or welded-up plate sections designed, fabricated and supplied by the pre-engineered building manufacturer.

   b. Beam and post endwall frames will consist of endwall corner posts, endwall roof beams, and endwall posts as required by design criteria.

c. Exterior columns will be rolled wide flange sections.

d. Beams and posts shall be shop fabricated complete with holes for the attachment of secondary structural members except for field work as noted on manufacturer's erection drawings.

e. Splice plates and base clips shall be shop fabricated complete with bolt connection holes. Base plates, cap plates, compression splice plates and stiffener plates shall be factory welded into place and have the connection holes shop fabricated.

f. Necessary endwall posts and holes for connection to the intermediate frame used in the endwall shall be shop fabricated.

5. Secondary Structures

a. Secondary structures: shall be purlins or girts, and shall be designed for indicated design loads.

b. Bracing shall be located as indicated on drawings.

c. Diagonal bracing shall be hot-rolled rod and attached to columns and roof beams.

d. Flange braces, purlin braces, etc., when required, shall be cold-formed and installed as indicated on drawings.

6. Mezzanine Structures

a. Mezzanine structure shall consist of rolled steel floor framing, posts, and composite metal deck slab designed, fabricated, and supplied by the pre-engineered building manufacturer.

b. Posts shall be located as indicated on drawings.

c. The mezzanine structure shall be laterally tied to the building primary structure. Additional lateral bracing, if required, shall be coordinated with partitions and approved by the Professional.

7. Welding

a. Welding procedure and operator qualifications and welding quality standards shall be in accordance with the AWS D1.1.

C. Performance Criteria

7. General: Comply with the performance requirements and criteria as specified in Horace Mann School PPD – B20 "Exterior Enclosure" and as specified herein.

1. Design Loads: The structural design for the building to be provided by the Building Manufacturer will be in accordance with IBC 2015 - International Building Code ASCE 7-10, the more stringent shall govern. Refer to plans for live loads on mezzanine levels and mechanical platforms.

a. Basic design loads include live load, wind load, seismic, and snow load, in addition to the dead load. Consider all other design loads, whether they be of static or dynamic nature, as auxiliary loads.

b. Collateral loads include additional dead loads over and above the weight of the metal building system such as sprinkler systems, electrical systems, ceiling systems, mechanical systems, goal posts, scoreboards, play clocks, field lights, lightning protection system, parapet and snow guard, framing around door, louver, fans and other penetrations through walls and sliding door assemblies. A load of 20 psf shall be used.

c. Combined Loads: Load factors and load combinations shall be as specified in the AISC-LRFD.

2. Building Movement: Design building components to accommodate, by means of expansion joints and clips any structural movement in component itself, and between component and building structure without permanent distortion, damage to infills, racking of joints, breakage of seals, water penetration or glass breakage.

a. Calculations for deflections shall be done using only the bare frame method. Reductions based on engineering judgment using the assumed composite stiffness of the building envelope shall not be allowed. The use of composite stiffness for deflection calculations is permitted only when actual calculations for the stiffness are included with the design for the specific project.

b. The bases of frames are to be design assuming “pinned” connections to the foundations to prevent moment transfer to the foundations.

c. Lateral Deflections: Design, fabricate and install the building system to withstand building movements due to 10-year wind drift and gravity loads as follows: H/500 for BESO building. For all other buildings, H/200 in the frame direction and H/400 in the braced direction. (H=Height of the building eaves).

d. Lateral deflections of wall girts to be limited to L/180 where girts brace metal siding and L/360 where girts brace masonry walls, for 10-year wind load.

e. Deflections of roof purlins shall be limited to L/180 under snow and wind loading. Deflection of eave strut shall be limited to L/360 under snow and wind loading.

3. Roof system shall be designed and tested so as to comply with UL 90 wind uplift resistance classification as defined by UL 580.

4. Temperature Requirements: Design, fabricate and install component parts to provide for expansion and contraction over an ambient temperature range of 120 deg. F. and a surface temperature range of 180 deg. F. without buckling, sealed joint failure, undue stress on members or anchors, and other detrimental effects.

5. Design Modifications: Make design modifications of work shown only as may be necessary to meet performance requirements and coordinate the work.

Variations in details and materials which do not adversely affect appearance, durability or strength shall be submitted to the Professional for review.

1.5 **SUBMITTALS**

A. Product data consisting of metal building system manufacturer's product information for building components and accessories.

B. Shop Drawings and Calculations: Provide shop drawings for metal building structural framing system, roofing panels, and other metal building system components and accessories that are not fully detailed or dimensioned in manufacturer's product data. Show each type structural building frame required and their locations within structure; details of anchor bolt settings; and roof framing; diagonal bracing and location within structure; metal floor deck; roof insulation and types; longitudinal and transverse cross sections; details of curbs, roof jacks, and items penetrating roof; canopy framing and details; trim, gutters, downspouts, roof coverings, and all accessory items; materials; finishes; construction and installation details; and other pertinent information required for proper and complete fabrication, assembly and erection of metal building system.

1. Design Calculations and Erection Drawings: Furnish complete erection drawings and design calculations prepared by or under the supervision of a professional engineer licensed to practice in the State of Pennsylvania with all drawings and calculations bearing his seal.

2. Roofing Panels: Provide layouts of panels on roofs, details of edge conditions, joints, corners, custom profiles, supports, anchorages, trim, flashings, closures, and special details. Include transverse cross-sections.

3. Building Accessory Components: Provide details of metal building accessory components to clearly indicate methods of installation including the following:

a. Sheet Metal Accessories: Provide layouts at 1/4 in. scale. Provide details of gutters, downspouts, and other sheet metal accessories at not less than 1-1/2 in. scale showing profiles, methods of joining, and anchorages.

C. Samples for initial selection purposes in form of manufacturer's color charts or chips showing full range of colors, textures, and patterns available for metal roofing panels with factory-applied finishes.

D. Samples for verification purposes of roofing panels. Provide sample panels 12 in. long by actual panel width, in the profile, style, color, and texture indicated. Include clips, battens, fasteners, closures, and other panel accessories.

E. Statement of Application: Submit copy of statement, signed by Contractor and Subcontractor in an approved form, stating that the work complies with this Specification and that the installation methods comply with the manufacturer's printed instructions and were proper and adequate for the conditions of installation and use.

F. Professional engineer's certificate prepared and signed by a Professional Engineer, legally authorized to practice in the Commonwealth of Pennsylvania, verifying that the structural framing and covering panels meet indicated loading requirements and codes of authorities having jurisdiction.

G. Maintenance Manual: Submit two copies of an assembled and bound maintenance

manual, describing the materials, devices, and procedures to be followed in cleaning and maintaining the metal building system. Include manufacturer's brochures describing the actual materials used in the work, including metal alloys, finishes, and all other major components.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer to erect the pre-engineered metal building who has 10 years experience in the erection and installation of types of metal buildings systems similar to that required for this project and who is certified in writing by the metal building system manufacturer as qualified for erection of the manufacturer's products.

B. Manufacturer's Qualifications: Provide pre-engineered metal buildings manufactured by a firm experienced in manufacturing metal buildings systems that are similar to those indicated for this project and have a record of successful in-service performance. The manufacturer shall furnish evidence that the specified materials have been manufactured by the same source and successfully utilized on a yearly basis for a minimum of 10 years on projects of a similar scope to that shown and specified for this Project.

C. Single-Source Responsibility: Obtain the metal building system components, including structural framing, roof covering, and accessory components, from one source from a single manufacturer.

D. Design Criteria: The drawings indicate sizes, profiles, and dimensional requirements of the pre-engineered metal building system. Metal building systems meeting required performance characteristics with deviations from indicated dimensions and profiles may be considered, provided deviations do not change the design concept or intended performance.

E. Pre-Installation Meeting: Prior to the start of the Work, meet at the Project site to review material selections, methods and sequence of installation, special details and conditions, standard of workmanship, quality control requirements, job organization, coordination with other trades, and other pertinent topics related to the Work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver prefabricated components, sheets, panels, and other manufactured items so they will not be damaged or deformed. Package wall and roof panels for protection against transportation damage.

B. Handling: Exercise care in unloading, storing, and erecting roof covering panels to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight ventilated covering. Store metal wall and roof panels so that water accumulations will drain freely. Do not store panels in contact with other materials that might cause staining, denting or other surface damage.

1.8 WARRANTY

A. Warranties specified in this Article shall not deprive the Department of other rights the Department may have under other provisions of the Contract Documents and are in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

1. Special Warranty: Provide a written warranty, from the manufacturer (formulator) of coating system and the finisher, for a period of twenty (20) years, warranting against the loss of film integrity, chalking, fading, non-uniformity, corrosion and the overall performance of color of the coatings. Upon notification of such defects, within the warranty period, make the necessary replacements at the convenience of the Department.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Products specified herein by proprietary designation and/or physical characteristics are as manufactured by the following and establish the quality standards required.

1. Varco-Pruden (VP) Buildings
2. Steelsmith Engineered Steel Buildings
3. Chief Buildings
4. Schlosser Steel Buildings
5. **CECO Building Systems**
6. **Nucor Building Systems**
7. Approved equal

2.2 MATERIALS

A. Structural Steel: AISC, 50 ksi minimum yield, shop primed with 30 day primer.

B. Hot-Rolled Structural Steel Shapes: Comply with ASTM A36 or A529.

C. Steel Members Fabricated from Plate or Bar Stock: Provide 50,000 psi minimum yield strength. Comply with ASTM A529, ASTM A570, or ASTM A572.

D. Steel Members Fabricated by Cold Forming: Comply with ASTM A607, Grade 50.

E. Steel Decking, Galvanized: Hot dip galvanized in accordance with ASTM A653, Coating Designation G90. Provide tabs or clips for hanging loads.

F. Aluminum Coated Galvanized Steel Sheet: ASTM A446, Grade A, G90 coating. Coat with a proprietary corrosion resistant aluminum zinc coating (typical coating weight is 0.5 oz. per sq. ft. of coated sheet both sides) complying with ASTM A792; minimum yield strength of 50,000 psi; Provide "Galvalume" (BIEC International).

G. Bolts for Structural Framing: Comply with ASTM A325 as necessary for design loads and connection details; complete with nuts and washers. Provide galvanized fasteners for structural steel framing in GYM building adjacent to the pool.

H. Welding Electrodes and Filler Metal: Provide type and alloy of filler metal and electrodes

in accordance with AWS and as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.

2.3 PAINT MATERIALS

A. Paint and Coating Materials: Provide primer and finish paint supplied by a single manufacturer for the entire project.

1. Exterior and Wet Location Ferrous Metal Zinc Rich Primer: Compatible with finish coats. Provide the respective dry film thickness specified; satin gloss finish coat; one of the following:

a. 1st coat -

1) "Hi-Build Epoxoline II Series N69" (Tnemec Co. Inc.); 4.0 - 6.0 mils d.f.t.

2) "Carboguard 888 Series" (Carboline Co.); 4.0 - 6.0 mils d.f.t.

3) “Interseal 670HS (International Paint), 4.0-8.0 mils min d.f.t.

b. 2nd coat

1) "Carbothane 133 Series/833" (Carboline Co.). 3.0 - 5.0 mils d.f.t.

2) "Endura-Shield II 1075" (Tnemec Co. Inc.); 3.0 - 5.0 mils d.f.t.

3) “Interthane 870UHS” (International Paint), 5.0- 8.0 mils min d.f.t.

2. Interior Ferrous Metal Primer: Compatible with the finish coats of paint; one of the following or approved equal:

a. "4-55 Versare" (Tnemec Co. Inc.); 2.0 - 3.5 mils d.f.t.

b. "GP-818" (Carboline Co.); 2.0 mils d.f.t.

c. "Amercoat 5105" (Ameron Protective Coatings); 2.0 - 3.0 mils d.f.t.

d. "Dulux 67-Y-834" (DuPont Company); 2.0 mils d.f.t.

3. Shop Applied Finish Paint For Ferrous Metal: Color as selected. Shop apply to the respective dry film mil thickness specified; one of the following or approved equal:

a. "Series 73 Endura-Shield III" (Tnemec Co. Inc.); 3.0 - 5.0 mils d.f.t.

b. "No. 133HB Polyurethane" (Carboline Co.); 3.0 - 5.0 mils d.f.t.

c. "Amershield" (Ameron Protective Coatings); 3.0 - 5.0 mils d.f.t.

4. Galvanizing Repair Paint: Zinc rich paint for repairing galvanized surfaces and field welds complying with requirements of ASTM A780. Thickness of applied galvanizing repair paint shall be not less than coating thickness required by ASTM A123 or ASTM A153 as applicable.

5. Dielectric Separator: Cold applied, asphalt emulsion type complying with ASTM D1187, non-sagging, resistant to severe corrosion conditions; applied in two coats for an overall minimum dry film thickness of 25 mils or heavy coating of epoxy paint in minimum 2.0 mils dry film thickness.

6. Shop Primer for Galvanized Metal Surfaces: Standard with the manufacturer.

2.4 STRUCTURAL FRAMING

A. Rigid Frames: Fabricate from plate steel. Provide factory-welded, shop-painted, built-up "I-beam"-shape consisting of tapered or parallel flange beams and tapered columns. Furnish frames with attachment plates, bearing plates, anchor bolts, and splice members. Factory drill for field-bolted assembly.

1. Provide length of span and spacing of frames indicated. Slight variations in length of span and frame spacing may be acceptable if necessary to meet manufacturer's standard. Provide rigid frames at endwalls where indicated.

B. Primary Endwall Framing: Provide the following primary endwall framing members fabricated for field-bolted assembly:

1. Endwall Columns: Manufacturer's standard shop-painted, built-up factory-welded "I"-shape or rolled structural sections.

2. Endwall Beams: Manufacturer's standard shop-painted roll-formed sections.

C. Secondary Framing: Provide the following secondary framing members:

1. Roof Purlins, Sidewall and Endwall Girts: "C"-or "Z"-shaped sections fabricated from shop-painted roll-formed steel. Purlin spacers shall be fabricated from cold-formed galvanized steel sections.

2. Eave Struts: Unequal flange rolled structural sections formed to provide adequate backup for both wall and roof panels. Fabricate from shop-painted roll-formed steel.

3. Flange and Sag Bracing: angles fabricated from shop-painted roll-formed steel.

4. Base or Sill Angles: Fabricate from cold-formed galvanized steel sections.

5. Secondary endwall structural members, except columns and beams, shall be the manufacturer's standard sections fabricated from cold-formed galvanized steel.

D. Wind Bracing: Provide adjustable wind bracing using minimum 1/2 in. diameter threaded steel rods; comply with ASTM A36 or ASTM A572, Grade D. Locate interior end bay bracing only where indicated.

E. Bolts: Provide shop-painted bolts except when structural framing components are in direct contact with roofing and siding panels. Provide zinc-plated or cadmium-plated bolts when structural framing components are in direct contact with roofing and siding panels.

2.5 ROOF AND WALL SYSTEMS

A. Pre-Engineered Building Roofing and Wall Systems, see the following:

1. Metal roof panels are specified in Section 074113 “Metal Roof Panels”.

2. Metal wall panels are specified in Section 074213 “Metal Wall Panels”.

2.6 FABRICATION

A. General: Design prefabricated components and necessary field connections required for erection to permit easy assembly and disassembly.

1. Fabricate components in such a manner that once assembled, they may be disassembled, repackaged, and reassembled with a minimum amount of labor.

2. Clearly and legibly mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.

B. Structural Framing: Shop-fabricate framing components to indicated size and section with base plates, bearing plates, and other plates required for erection, welded in place. Provide holes for anchoring or connections shop-drilled or punched to template dimensions. Reinforce openings to maintain design strength.

1. Shop Connections: Provide power riveted, bolted, or welded shop connections.

2. Field Connections: Provide bolted field connections.

2.7 WELDING

B. Shop Welds: Design and detail to minimize the accumulation and concentration of through-thickness strains due to weld shrinkage. Provide welding sequences, preheat methods and joint configuration as required and in accordance with AWS standards, to reduce the residual welding stresses to a minimum value. If high residual stresses are present, stress relieve the joints as required. Establish welding procedures with consideration for the toughness and notch sensitivity of the steel to prevent brittle and premature fracture during fabrication and erection.

C. Do not begin structural welding until joint elements are bolted or tacked in intimate contact and adjusted to dimensions shown on Drawings, or both, with allowance for weld shrinkage that is expected. Weld heavy sections and those having a high degree of restraint with low hydrogen type electrodes. No members are to be spliced without prior review by the Professional.

D. Welding shall be in accordance with AWS D1.1 and be performed by operators who have been qualified within the preceding one year period under AWS standard qualification procedure for the type of work required.

2.8 SURFACE PREPARATION AND SHOP PAINTING

A. Structural Steel Framing Work: Shop paint structural steel framing work, except members or portions of members to be embedded in concrete or masonry, surfaces and edges to be field welded and stainless steel, unless otherwise specified.

B. Clean surfaces of loose mill scale, rust, dirt, oil, grease, and other matter precluding paint bond.

1. Removal of Oil, Grease and Similar Contaminants: Remove oil, grease and similar contaminants in accordance with SSPC SP-1 "Solvent Cleaning," prior to additional surface preparation specified.

2. Metal Surfaces: Clean and prepare metal surfaces before applying shop coat. Remove rust and mill scale in accordance with SSPC SP-3 "Power Tool Cleaning," and SSPC SP-6 for exterior exposed ferrous metal.

3. Clean frames and endwall structures in accordance with SSPC-SP6 Commercial Blast Cleaning, prior to painting with zinc-rich primer.

C. Prime all structural steel framing members with the primers as specified herein.

1. Prime galvanized members, after phosphoric acid pretreatment.

2. Prime structural steel framing in Gym building adjacent to pool with rust-inhibitive, zinc-rich primer

2. Application of Primer: Immediately after surface preparation, apply primer in accordance with manufacturer's instructions. Use painting methods which will result in full coverage and dry film thickness specified.

B. Procedures for Shop Applied Primer and Shop Applied Finish Paint: Apply one shop coat of primer to fabricated metal items, except apply 2 coats of primer to Exterior and Wet Location surfaces and surfaces inaccessible after assembly or erection. In addition, apply one shop coat of finish paint to entire surfaces of structural steel framing members. Change color of second or finish coat to distinguish it from the first coat. Color of paint shall be as selected by Professional. Use thinners only as specified by the coating manufacturer. The entire coating system shall be as supplied by a single manufacturer.

C. Dissimilar Materials: Separate dissimilar metals with coating of dielectric separator. Do not extend coating onto exposed or finished surfaces.

PART 3 - EXECUTION

3.1 GENERAL

A. Manufacturer's Instructions: Prepare substrates and install the work of this Section, including, components and accessories in accordance with the manufacturer's instructions, except where more stringent requirements are shown or specified, and where project conditions require extra precautions or provisions to ensure satisfactory performance of the Work.

3.2 EXAMINATION

A. Verification of Conditions: Examine the areas to receive the Work and the conditions under which the Work would be performed. Contractor shall remedy conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

3.3 COORDINATION

A. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with

integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

B. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

3.4 PREPARATION

A. Substrate Acceptability: Commencement of installation shall constitute acceptance of substrate conditions by the Installer

3.5 INSTALLATION

A. General: Install work as shown, plumb, level and in line with adjacent materials where required. Provide fastenings as indicated on the Drawings, specified herein or as shown on final shop drawings. Fit exposed connections accurately together to form tight hairline joints.

1. Steel Weld Plates and Angles: Coordinate installation of steel weld plates and angles for casting into concrete construction that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

2. Anchorages: Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions and directions for installation of anchorages, including steel weld plates and angles, concrete inserts, sleeves, anchor bolts and other miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to the project site. Deliver items which are to be built into the work of other Sections in time so as not to delay the progress of the Work.

B. Verify dimensions by field measurements so that metal building system and related items will be accurately designed, fabricated and fitted to the structure. Tolerances for supporting structure are specified in other Sections.

C. Installation of all metal building system components shall be performed by an erector approved by the manufacturer and in strict compliance with manufacturer's instructions and recommendations.

D. Field Welding: Comply with AWS Welding Code for procedures related to field welding as related to appearance and quality of welds made and for methods used in correcting welding work. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals. Obtain fusion without undercut or overlap. Remove welding flux immediately. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.

3.6 ERECTION

A. General: Erect structural frame in accordance with erection drawings and to AISC. Obtain written permission of steel building manufacturer prior to field cutting or altering of structural members.

1. Install all necessary closures, gaskets, caulking sealants and flashing as

recommended by steel building systems manufacturer.

2. Touch up with shop primer bolts, rivets, welds and burned or scratched surfaces where exposed at completion of erection.

B. Framing: Erect framing true to line, level, plumb, rigid, and secure. Level base plates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use a nonshrinking grout to obtain uniform bearing and to maintain a level base line elevation. Moist cure grout for not less than 7 days after placement. All framing members shall be erected plumb, level or aligned not to exceed a deviation 1:300.

C. Purlins and Girts: Provide rake or gable purlins with tight-fitting closure channels and fascias. Locate and space wall girts to suit door and window arrangements and heights. Secure purlins and girts to structural framing and hold rigidly to a straight line by sag rods.

D. Bracing: Provide diagonal rod or angle bracing in roof and sidewalls as indicated. Properly tighten rods to avoid excessive sag.

E. Framed Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to building structural frame.

3.7 FIELD PAINTING

A. Field Painting: After erection, clean exposed surfaces of field connections, unpainted areas adjacent to field connections and damaged areas in the shop coat to the same standards as required for the shop coat and paint with the same primer used in the shop coat.

1. Field Applied 2nd Finish Coat: See Section 099100 “Painting”.

3.8 DEPARTMENT’S QUALITY ASSURANCE SERVICES

A. Quality Assurance Services: Independent Testing and Inspection Agency(ies), engaged at the Department’s expense through the Professional, will perform the following activities to monitor the Contractor’s Quality Control Services. The Department's Quality Assurance Services monitoring of activities do not relieve the Contractor of responsibilities under the Contract.

B. Qualification for Field Welding: Qualify and certify the welding operators and welding procedures in accordance with AWS qualification procedures for the processes and welding positions that will be used. Welding procedures shall be in accordance with AWS D1.1 requirements, using the same type of equipment and welds to be used in the Work.

C. Visual Inspection of Steel Erection: Perform inspection of the field erection to verify compliance with the specification and the Contractor's erection procedures.

D. Visual Inspection of Field Connections: Perform inspection of bolted and welded connections in the Work. Examine the surfaces, size, quality and placement of each connection to verify installation in accordance with Contract Documents and accepted shop drawings.

E. Testing and Inspection of Fully Pretensioned and Slip-Critical High-Strength Bolted Field Connections: Test and inspect in accordance with RCSC Specification and as follows.

1. Observe the bolt installation demonstration testing and the calibration procedures.
2. Inspect all bolted connections to verify that the plies of the connected elements have been brought into firm contact at the faying surfaces.
3. Monitor the bolt installation to verify that the selected installation procedure has been used to tighten all bolts to the minimum pretensions in the RCSC Specification.

F. Magnetic Particle Testing of Field Welds (if required): Test in accordance with ASTM E709.
1. 10% of fillet welds and partial joint penetration welds.
2. 100% of fillet welds at hanger welds that are in direct tension.

G. Ultrasonic Testing of Field Welds (if required): Test in accordance with AWS D1.1 and ASTM E164.
1. 100% of CJP welds, thickness greater than or equal to 5/16 inch, full length.

H. Engineered Anchor Systems: Monitor installation of anchors and conduct pull-out tests of 10% of the anchors, at random and as indicated.

I. Testing of Non-Shrink Grout: Observe mixing and placement of grout to verify compliance with manufacturer's recommendations. Make grout samples at point of deposit, 1 set of three 2 inch grout cubes for each batch produced. Laboratory cure the cubes, test 1 sample at 7 days, and 2 samples at 28 days, in accordance with ASTM C1107/C1107M methods.

J. Schedule of Special Inspections: Refer to the attached schedule, listing inspections to be performed by the testing agency.

3.9 ADJUSTING

A. Touch-Up Painting: Field paint marred or abraded shop paint and welds after cleaning these areas. Separate dissimilar metals and metals in contact with concrete or masonry with dielectric separator or gaskets. Do not extend coatings onto exposed surfaces.

3.10 SCHEDULE OF SPECIAL INSPECTIONS: STEEL CONSTRUCTION

A. Summary: Verify steel construction for compliance with required inspection provisions of the construction documents and the approved submittals.
1. Inspector: ICC certified Structural Steel and Welding Special Inspector, AISC / AWS certified Structural Steel Inspector, AWS certified Welding Inspector.
2. Procedure:
a. Perform verification and inspection on a periodic basis during construction, and at other times as noted.
b. Comply with special inspection requirements of IBC Section 1705.2.

B. Structural Steel: Verify quality of structural steel construction.
1. Inspector: ICC certified Structural Steel and Welding Special Inspector.
2. Procedure:
a. Perform special inspection for structural steel in accordance with the quality insurance inspection requirements of AISC 360 (Specification for Structural Steel Buildings).

C. Cold-Formed Steel Deck: Verify quality of materials.
   1. Inspector: ICC certified Structural Steel and Welding Special Inspector.
   2. Procedure:
      a. Verify identification markings of steel deck components conform to ASTM standards specified in the approved construction documents. Verify manufacturers' certified test reports.
      b. Perform inspection of welding for floor deck and roof deck welds.

END OF SECTION

SECTION 220719

PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Stipulation:
   1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Division 01 – General Requirements” from a part of this section by this reference there to, and shall have the same force and effects as if printed herewith in full.

B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes insulating the following plumbing piping services:

   1. Domestic cold-water piping.
   2. Domestic hot-water piping.
   3. Domestic recirculating hot-water piping.
   4. Domestic chilled-water piping for drinking fountains.
   5. Sanitary waste piping exposed to freezing conditions.
   6. Storm-water piping exposed to freezing conditions.
   7. Roof drains and rainwater leaders.
   8. Supplies and drains for handicap-accessible lavatories and sinks.

B. Related Sections:

   1. Section 220716 "Plumbing Equipment Insulation."

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory- and field-applied, if any).

B. LEED Submittals:

   1. Product Data for Credit IEQ 4.1: For adhesives and sealants, documentation including printed statement of VOC content and chemical components.
   2. Laboratory Test Reports for Credit IEQ 4: For adhesives and sealants, documentation indicating that product complies with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
2. Detail attachment and covering of heat tracing inside insulation.
3. Detail insulation application at pipe expansion joints for each type of insulation.
4. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
5. Detail removable insulation at piping specialties, equipment connections, and access panels.
6. Detail application of field-applied jackets.
7. Detail application at linkages of control devices.

D. Samples: For each type of insulation and jacket indicated. Identify each Sample, describing product and intended use. Sample sizes are as follows:

1. Preformed Pipe Insulation Materials: 12 inches long by NPS 2.
2. Jacket Materials for Pipe: 12 inches long by NPS 2.
3. Sheet Jacket Materials: 12 inches square.
4. Manufacturer's Color Charts: For products where color is specified, show the full range of colors available for each type of finish material.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.

C. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84 by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

C. Mockups: Before installing insulation, build mockups for each type of insulation and finish listed below to demonstrate quality of insulation application and finishes. Build mockups in the location indicated or, if not indicated, as directed by Architect. Use materials indicated for the completed Work.

1. Piping Mockups:

a. One 10-foot section of NPS 2 straight pipe.
b. One each of a 90-degree threaded, welded, and flanged elbow.
c. One each of a threaded, welded, and flanged tee fitting.
d. One NPS 2 or smaller valve, and one NPS 2-1/2 or larger valve.
e. Four support hangers including hanger shield and insert.
f. One threaded strainer and one flanged strainer with removable portion of insulation.
g. One threaded reducer and one welded reducer.
h. One pressure temperature tap.
i. One mechanical coupling.

2. For each mockup, fabricate cutaway sections to allow observation of application details for insulation materials, adhesives, mastics, attachments, and jackets.
3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
4. Obtain Architect's approval of mockups before starting insulation application.
5. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
7. Demolish and remove mockups when directed.

D. Comply with the following applicable standards and other requirements specified for miscellaneous components:

1. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.7 COORDINATION

A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

1.8 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," "Outdoor, Aboveground Piping Insulation Schedule," and "Outdoor, Underground Piping Insulation Schedule" articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

F. Cellular Glass: Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Foamglas
    2) Frost King
    3) Grainger
2. Block Insulation: ASTM C 552, Type I.
3. Special-Shaped Insulation: ASTM C 552, Type III.
4. Preformed Pipe Insulation without Jacket: Comply with ASTM C 552, Type II, Class 1.
5. Preformed Pipe Insulation with Factory-Applied ASJ-SSL: Comply with ASTM C 552, Type II, Class 2.
6. Factory fabricate shapes according to ASTM C 450 and ASTM C 585.

G. Flexible Elastomeric Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Aeroflex
    2) Armacell
    3) K-Flex

H. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type I. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Owen’s Corning/Thermafiber
    2) Johns Manville
    3) Rockwool

I. Mineral-Fiber, Preformed Pipe Insulation:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Owen's Corning/Thermafiber
    2) Johns Manville
    3) Rockwool

2. Type I, 850 Deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ-SSL. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

J. Phenolic:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Distribution International Fabrication
    2) Johns Manville
    3) GLT Products
2. Preformed pipe insulation of rigid, expanded, closed-cell structure. Comply with ASTM C 1126, Type III, Grade 1.
3. Block insulation of rigid, expanded, closed-cell structure. Comply with ASTM C 1126, Type II, Grade 1.
4. Factory fabricate shapes according to ASTM C 450 and ASTM C 585.
5. Factory-Applied Jacket: ASJ. Requirements are specified in "Factory-Applied Jackets" Article.

K. Polyolefin: Unicellular, polyethylene thermal plastic insulation. Comply with ASTM C 534 or ASTM C 1427, Type I, Grade 1 for tubular materials.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Aerofoam
    2) Grainger
    3) LSP

2.2 INSULATING CEMENTS

A. Mineral-Fiber Insulating Cement: Comply with ASTM C 195.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Rutland
    2) Ramco
    3) Quikrete

B. Expanded or Exfoliated Vermiculite Insulating Cement: Comply with ASTM C 196.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) VITCAS
    2) Cary Company

C. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 449.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Quikrete
2) Rutland
3) Sikacrete

2.3 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

B. Cellular-Glass Adhesive: Two-component, thermosetting urethane adhesive containing no flammable solvents, with a service temperature range of minus 100 to plus 200 deg F.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Foamglas
    2) Foster
    3) Insultherm

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Armaflex
    2) Master Bond
    3) McMaster-Carr

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Foster
    2) Childers

2. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. Phenolic Adhesive: Solvent-based resin adhesive, with a service temperature range of minus 75 to plus 300 deg F.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Caseway
    2) Tesa Tape
    3) Hexcel

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

F. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Johns Manville
    2) Pro Tapes
    3) Echo Tape

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

G. PVC Jacket Adhesive: Compatible with PVC jacket.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Proto Corp
    2) PermaWeld
    3) Johns Manville

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.4 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.

1. For indoor applications, use mastics that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below-ambient services.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Childers
    2) Ellsworth Adhesives

3) AIM Building Materials
2. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.
4. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
5. Color: White.

C. Vapor-Barrier Mastic: Solvent based; suitable for indoor use on below-ambient services.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Childers
   2) Ellsworth Adhesives
   3) AIM Building Materials
2. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 35-mil dry film thickness.
3. Service Temperature Range: 0 to 180 deg F.
4. Solids Content: ASTM D 1644, 44 percent by volume and 62 percent by weight.
5. Color: White.

D. Vapor-Barrier Mastic: Solvent based; suitable for outdoor use on below-ambient services.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Childers
   2) Ellsworth Adhesives
   3) AIM Building Materials
2. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 30-mil dry film thickness.
3. Service Temperature Range: Minus 50 to plus 220 deg F.
4. Solids Content: ASTM D 1644, 33 percent by volume and 46 percent by weight.
5. Color: White.

E. Breather Mastic: Water based; suitable for indoor and outdoor use on above-ambient services.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Childers
   2) Ellsworth Adhesives
   3) AIM Building Materials
2. Water-Vapor Permeance: ASTM F 1249, 1.8 perms at 0.0625-inch dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.
4. Solids Content: 60 percent by volume and 66 percent by weight.
5. Color: White.

2.5 LAGGING ADHESIVES

A. Description: Comply with MIL-A-3316C, Class I, Grade A, and shall be compatible with insulation materials, jackets, and substrates.

1. For indoor applications, use lagging adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Vimasco
   2) Design Polymerics

3) Ductmate

3. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over pipe insulation.
4. Service Temperature Range: 0 to plus 180 deg F.
5. Color: White.

2.6 SEALANTS

A. Joint Sealants:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) 3M
   2) Henkel
   3) Sika

2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Permanently flexible, elastomeric sealant.
4. Service Temperature Range: Minus 100 to plus 300 deg F.
5. Color: White or gray.
6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. FSK and Metal Jacket Flashing Sealants:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Childers
   2) Foster
   3) Mon-Eco
2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: Aluminum.
6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. ASJ Flashing Sealants, and Vinyl, PVDC, and PVC Jacket Flashing Sealants:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Childers
   2) SPI

2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: White.

6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.7 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

2.8 FIELD-APPLIED FABRIC-REINFORCING MESH

A. Woven Glass-Fiber Fabric: Approximately 2 oz./sq. yd. with a thread count of 10 strands by 10 strands/sq. in. for covering pipe and pipe fittings.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Childers
    2) Fibreglast
    3) Rockwest

B. Woven Polyester Fabric: Approximately 1 oz./sq. yd. with a thread count of 10 strands by 10 strands/sq. in., in a Leno weave, for pipe.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Vimasco
    2) Foster
    3) Mutual

2.9 FIELD-APPLIED CLOTHS

A. Woven Glass-Fiber Fabric: Comply with MIL-C-20079H, Type I, plain weave, and presized a minimum of 8 oz./sq. yd..

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Alpha
    2) Tap Plastics

2.10 FIELD-APPLIED JACKETS

A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

B. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Johns Manville
    2) Proto Corporation
    3) PIC Plastics Inc
2. Adhesive: As recommended by jacket material manufacturer.
3. Color: White
4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.

    a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.

C. Metal Jacket:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) ITW Insulation Systems
    2) RPR Products
    3) Johns Manville
2. Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105, or 5005, Temper H-14.

    a. Sheet and roll stock ready for shop or field sizing
    b. Finish and thickness are indicated in field-applied jacket schedules.
    c. Moisture Barrier for Indoor Applications:3-mil- thick, heat-bonded polyethylene and kraft paper
    d. Moisture Barrier for Outdoor Applications: 3-mil- thick, heat-bonded polyethylene and kraft paper
    e. Factory-Fabricated Fitting Covers:

        1) Same material, finish, and thickness as jacket.
        2) Preformed 2-piece or gore, 45- and 90-degree, short- and long-radius elbows.
        3) Tee covers.
        4) Flange and union covers.
        5) End caps.
        6) Beveled collars.
        7) Valve covers.
        8) Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

3. Stainless-Steel Jacket: ASTM A 167 or ASTM A 240/A 240M.

    a. Sheet and roll stock ready for shop or field sizing
    b. Material, finish, and thickness are indicated in field-applied jacket schedules.
    c. Moisture Barrier for Indoor Applications: 3-mil- thick, heat-bonded polyethylene and kraft paper
    d. Moisture Barrier for Outdoor Applications: 3-mil- thick, heat-bonded polyethylene and kraft paper
    e. Factory-Fabricated Fitting Covers:

1) Same material, finish, and thickness as jacket.
2) Preformed 2-piece or gore, 45- and 90-degree, short- and long-radius elbows.
3) Tee covers.
4) Flange and union covers.
5) End caps.
6) Beveled collars.
7) Valve covers.
8) Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

D. Underground Direct-Buried Jacket: 125-mil- thick vapor barrier and waterproofing membrane consisting of a rubberized bituminous resin reinforced with a woven-glass fiber or polyester scrim and laminated aluminum foil.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Pittsburg Corning
   2) Polyguard Products

2.11 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) 3M
   2) Avery Dennison Corporation, Specialty Tapes Div.
   3) Ideal Tape Co.
2. Width: 3 inches.
3. Thickness: 11.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) 3M
   2) Avery Dennison Corporation, Specialty Tapes Div.
   3) Ideal Tape Co.
2. Width: 3 inches.
3. Thickness: 6.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

C. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) 3M
    2) Ideal Tape Co.
    3) Scapa
2. Width: 2 inches.
3. Thickness: 6 mils.
4. Adhesion: 64 ounces force/inch in width.
5. Elongation: 500 percent.
6. Tensile Strength: 18 lbf/inch in width.

D. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) 3M
    2) Ideal Tape Co.
    3) Nashua
2. Width: 2 inches.
3. Thickness: 3.7 mils.
4. Adhesion: 100 ounces force/inch in width.
5. Elongation: 5 percent.
6. Tensile Strength: 34 lbf/inch in width.

2.12 SECUREMENTS

A. Bands:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) ITW Insulation Systems
    2) RPR Products Inc
    3) Ideal Tape Co.

2. Stainless Steel: ASTM A 167 or ASTM A 240/A 240M, Type 3040.015 inch thick, 3/4 inch wide with wing seal
3. Aluminum: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 3/4 inch wide with wing seal

B. Staples: Outward-clinching insulation staples, nominal 3/4-inch- wide, stainless steel or Monel.

C. Wire: 0.080-inch nickel-copper alloy

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) C&F Wire
    2) WireCrafters

2.13 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers,

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) McGuire Manufacturing
    2) Buckaroos
    3) Zurn
    4) Just Manufacturing
2. Description: Manufactured plastic wraps for covering plumbing fixture hot-water supply] and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.

B. Protective Shielding Piping Enclosures :

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Truebro
    2) Zurn
2. Description: Manufactured plastic enclosure for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with ADA requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

B. Surface Preparation: Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:

1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils thick and an epoxy finish 5 mils thick if operating in a temperature range between 140 and 300 deg F. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
2. Carbon Steel: Coat carbon steel operating at a service temperature between 32 and 300 deg F with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.

C. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

D. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Keep insulation materials dry during application and finishing.

H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

I. Install insulation with least number of joints practical.

J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

L. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 4 inches o.c.

    a. For below-ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.

5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.

M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

P. For above-ambient services, do not install insulation to the following:

1. Vibration-control devices.
2. Testing agency labels and stamps.
3. Nameplates and data plates.
4. Cleanouts.

3.4 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.

C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
4. Seal jacket to wall flashing with flashing sealant.

D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.

F. Insulation Installation at Floor Penetrations:

1. Pipe: Install insulation continuously through floor penetrations.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:

1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
9. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.

C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.

D. Install removable insulation covers at locations indicated. Installation shall conform to the following:

1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.6 INSTALLATION OF CELLULAR-GLASS INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient services, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below-ambient services, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of cellular-glass block insulation of same thickness as pipe insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available. Secure according to manufacturer's written instructions.

2. When preformed sections of insulation are not available, install mitered sections of cellular-glass insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of cellular-glass insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.

3.7 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION

A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed valve covers manufactured of same material as pipe insulation when available.
2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.8 INSTALLATION OF MINERAL-FIBER INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.

3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.9 INSTALLATION OF PHENOLIC INSULATION

A. General Installation Requirements:

1. Secure single-layer insulation with stainless-steel bands at 12-inch intervals and tighten bands without deforming insulation materials.
2. Install 2-layer insulation with joints tightly butted and staggered at least 3 inches. Secure inner layer with 0.062-inch wire spaced at 12-inch intervals. Secure outer layer with stainless-steel bands at 12-inch intervals.

B. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient services, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets with vapor retarders on below-ambient services, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as

recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

C. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of block insulation of same material and thickness as pipe insulation.

D. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed insulation sections of same material as straight segments of pipe insulation. Secure according to manufacturer's written instructions.

E. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed insulation sections of same material as straight segments of pipe insulation. Secure according to manufacturer's written instructions.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.

3.10 INSTALLATION OF POLYOLEFIN INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Seal split-tube longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of polyolefin sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of polyolefin pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install cut sections of polyolefin pipe and sheet insulation to valve body.

2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.11 FIELD-APPLIED JACKET INSTALLATION

A. Where glass-cloth jackets are indicated, install directly over bare insulation or insulation with factory-applied jackets.

1. Draw jacket smooth and tight to surface with 2-inch overlap at seams and joints.
2. Embed glass cloth between two 0.062-inch- thick coats of lagging adhesive.
3. Completely encapsulate insulation with coating, leaving no exposed insulation.

B. Where FSK jackets are indicated, install as follows:

1. Draw jacket material smooth and tight.
2. Install lap or joint strips with same material as jacket.
3. Secure jacket to insulation with manufacturer's recommended adhesive.
4. Install jacket with 1-1/2-inch laps at longitudinal seams and 3-inch- wide joint strips at end joints.
5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-barrier mastic.

C. Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints. Seal with manufacturer's recommended adhesive.

1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.

D. Where metal jackets are indicated, install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches o.c. and at end joints. For exposed piping, apply up to 8 feet AFF.

3.12 FINISHES

A. Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.

a. Finish Coat Material: Interior, flat, latex-emulsion size.

B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.

C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

D. Do not field paint aluminum or stainless-steel jackets.

3.13 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, two locations of threaded strainers, two locations of welded strainers, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.

D. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.14 PIPING INSULATION SCHEDULE, GENERAL

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:

1. Drainage piping located in crawl spaces.
2. Underground piping.
3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.15 INDOOR PIPING INSULATION SCHEDULE

A. Domestic Cold Water:

1. NPS 1 and Smaller: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inch thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch]thick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

2. NPS 1-1/4 and Larger: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inch thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

B. Domestic Hot and Recirculated Hot Water:

1. NPS 1-1/4 and Smaller: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inch thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inchthick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

2. NPS 1-1/2 and Larger: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inch thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

C. Stormwater and Overflow:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inch thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

D. Roof Drain and Overflow Drain Bodies:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inchthick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

E. Exposed Sanitary Drains, Domestic Water, Domestic Hot Water, and Stops for Plumbing Fixtures for People with Disabilities:

1. All Pipe Sizes: Insulation shall be[one of]the following:

a. Flexible Elastomeric: 1 inch thick.
b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
c. Polyolefin: 1 inch thick.

F. Sanitary Waste Piping Where Heat Tracing Is Installed:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 2 inches thick.
b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1-1/2 inches thick.
c. Phenolic: 1-1/2 inchesthick.

G. Floor Drains, Traps, and Sanitary Drain Piping within 10 Feet of Drain Receiving Condensate and Equipment Drain Water below 60 Deg F:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inch thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

H. Hot Service Drains:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Mineral-Fiber, Preformed Pipe, Type I or II: 1 inch thick.

I. Hot Service Vents:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Mineral-Fiber, Preformed Pipe, Type I or II: 1 inch thick.

3.16 OUTDOOR, ABOVEGROUND PIPING INSULATION SCHEDULE

A. Domestic Water Piping:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 2 inches thick.
b. Flexible Elastomeric: 2 inches thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 2 inches thick.
d. Phenolic: 2 inches thick.
e. Polyolefin: 2 inches thick.

B. Domestic Hot and Recirculated Hot Water:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 2 inches thick.
b. Flexible Elastomeric: 2 inches thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 2 inches thick.
d. Phenolic: 2 inches thick.
e. Polyolefin: 2 inches thick.

C. Sanitary Waste Piping Where Heat Tracing Is Installed:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 2 inches thick.
b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 2 inches thick.
c. Phenolic: 2 inchesthick.

D. Hot Service Drains:

1. All Pipe Sizes: Insulation shall beone of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

E. Hot Service Vents:

1. All Pipe Sizes: Insulation shall beone of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Mineral-Fiber, Preformed Pipe Insulation, Type II: 1 inch

3.17 OUTDOOR, UNDERGROUND PIPING INSULATION SCHEDULE

A. Sanitary Waste Piping, All Sizes, Where Heat Tracing Is Installed: Cellular glass, 2 inches thick.

3.18 INDOOR, FIELD-APPLIED JACKET SCHEDULE

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

B. If more than one material is listed, selection from materials listed is Contractor's option.

C. Piping, Concealed:

1. PVC: 20 mils

D. Piping, Exposed:
1. Stainless Steel, Type 304 Smooth 2B Finish: 0.024 inch thick ~~for~~ upto 8 feet AFF and PVC 20 mils for 8 feet and above

3.19 OUTDOOR, FIELD-APPLIED JACKET SCHEDULE

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

B. If more than one material is listed, selection from materials listed is Contractor's option.

C. Piping, Exposed:
1. Stainless Steel, Type 304 Smooth 2B Finish 0.024 inch thick.

3.20 UNDERGROUND, FIELD-INSTALLED INSULATION JACKET

A. For underground direct-buried piping applications, install underground direct-buried jacket over insulation material.

END OF SECTION 220719

SECTION 220719

PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Stipulation:
   1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Division 01 – General Requirements” from a part of this section by this reference there to, and shall have the same force and effects as if printed herewith in full.

B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes insulating the following plumbing piping services:

   1. Domestic cold-water piping.
   2. Domestic hot-water piping.
   3. Domestic recirculating hot-water piping.
   4. Domestic chilled-water piping for drinking fountains.
   5. Sanitary waste piping exposed to freezing conditions.
   6. Storm-water piping exposed to freezing conditions.
   7. Roof drains and rainwater leaders.
   8. Supplies and drains for handicap-accessible lavatories and sinks.

B. Related Sections:

   1. Section 220716 "Plumbing Equipment Insulation."

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory- and field-applied, if any).

B. LEED Submittals:

   1. Product Data for Credit IEQ 4.1: For adhesives and sealants, documentation including printed statement of VOC content and chemical components.
   2. Laboratory Test Reports for Credit IEQ 4: For adhesives and sealants, documentation indicating that product complies with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
2. Detail attachment and covering of heat tracing inside insulation.
3. Detail insulation application at pipe expansion joints for each type of insulation.
4. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
5. Detail removable insulation at piping specialties, equipment connections, and access panels.
6. Detail application of field-applied jackets.
7. Detail application at linkages of control devices.

D. Samples: For each type of insulation and jacket indicated. Identify each Sample, describing product and intended use. Sample sizes are as follows:

1. Preformed Pipe Insulation Materials: 12 inches long by NPS 2.
2. Jacket Materials for Pipe: 12 inches long by NPS 2.
3. Sheet Jacket Materials: 12 inches square.
4. Manufacturer's Color Charts: For products where color is specified, show the full range of colors available for each type of finish material.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.

C. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84 by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

C. Mockups: Before installing insulation, build mockups for each type of insulation and finish listed below to demonstrate quality of insulation application and finishes. Build mockups in the location indicated or, if not indicated, as directed by Architect. Use materials indicated for the completed Work.

1. Piping Mockups:

a. One 10-foot section of NPS 2 straight pipe.
b. One each of a 90-degree threaded, welded, and flanged elbow.
c. One each of a threaded, welded, and flanged tee fitting.
d. One NPS 2 or smaller valve, and one NPS 2-1/2 or larger valve.
e. Four support hangers including hanger shield and insert.
f. One threaded strainer and one flanged strainer with removable portion of insulation.
g. One threaded reducer and one welded reducer.
h. One pressure temperature tap.
i. One mechanical coupling.

2. For each mockup, fabricate cutaway sections to allow observation of application details for insulation materials, adhesives, mastics, attachments, and jackets.
3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
4. Obtain Architect's approval of mockups before starting insulation application.
5. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
7. Demolish and remove mockups when directed.

D. Comply with the following applicable standards and other requirements specified for miscellaneous components:

1. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.7 COORDINATION

A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

1.8 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," "Outdoor, Aboveground Piping Insulation Schedule," and "Outdoor, Underground Piping Insulation Schedule" articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

F. Cellular Glass: Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Foamglas
    2) Frost King
    3) Grainger
2. Block Insulation: ASTM C 552, Type I.
3. Special-Shaped Insulation: ASTM C 552, Type III.
4. Preformed Pipe Insulation without Jacket: Comply with ASTM C 552, Type II, Class 1.
5. Preformed Pipe Insulation with Factory-Applied ASJ-SSL: Comply with ASTM C 552, Type II, Class 2.
6. Factory fabricate shapes according to ASTM C 450 and ASTM C 585.

G. Flexible Elastomeric Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Aeroflex
    2) Armacell
    3) K-Flex

H. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type I. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Owen’s Corning/Thermafiber
    2) Johns Manville
    3) Rockwool

I. Mineral-Fiber, Preformed Pipe Insulation:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Owen's Corning/Thermafiber
    2) Johns Manville
    3) Rockwool

2. Type I, 850 Deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ-SSL. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

J. Phenolic:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Distribution International Fabrication
    2) Johns Manville
    3) GLT Products
2. Preformed pipe insulation of rigid, expanded, closed-cell structure. Comply with ASTM C 1126, Type III, Grade 1.
3. Block insulation of rigid, expanded, closed-cell structure. Comply with ASTM C 1126, Type II, Grade 1.
4. Factory fabricate shapes according to ASTM C 450 and ASTM C 585.
5. Factory-Applied Jacket: ASJ. Requirements are specified in "Factory-Applied Jackets" Article.

K. Polyolefin: Unicellular, polyethylene thermal plastic insulation. Comply with ASTM C 534 or ASTM C 1427, Type I, Grade 1 for tubular materials.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Aerofoam
    2) Grainger
    3) LSP

2.2 INSULATING CEMENTS

A. Mineral-Fiber Insulating Cement: Comply with ASTM C 195.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Rutland
    2) Ramco
    3) Quikrete

B. Expanded or Exfoliated Vermiculite Insulating Cement: Comply with ASTM C 196.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) VITCAS
    2) Cary Company

C. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 449.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Quikrete
2) Rutland
3) Sikacrete

2.3 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

B. Cellular-Glass Adhesive: Two-component, thermosetting urethane adhesive containing no flammable solvents, with a service temperature range of minus 100 to plus 200 deg F.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Foamglas
   2) Foster
   3) Insultherm

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Armaflex
   2) Master Bond
   3) McMaster-Carr

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Foster
   2) Childers

2. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. Phenolic Adhesive: Solvent-based resin adhesive, with a service temperature range of minus 75 to plus 300 deg F.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Caseway
    2) Tesa Tape
    3) Hexcel

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

F. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Johns Manville
    2) Pro Tapes
    3) Echo Tape

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

G. PVC Jacket Adhesive: Compatible with PVC jacket.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Proto Corp
    2) PermaWeld
    3) Johns Manville

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.4 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.

1. For indoor applications, use mastics that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below-ambient services.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Childers
    2) Ellsworth Adhesives

3) AIM Building Materials

2. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.
4. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
5. Color: White.

C. Vapor-Barrier Mastic: Solvent based; suitable for indoor use on below-ambient services.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Childers
   2) Ellsworth Adhesives
   3) AIM Building Materials
2. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 35-mil dry film thickness.
3. Service Temperature Range: 0 to 180 deg F.
4. Solids Content: ASTM D 1644, 44 percent by volume and 62 percent by weight.
5. Color: White.

D. Vapor-Barrier Mastic: Solvent based; suitable for outdoor use on below-ambient services.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Childers
   2) Ellsworth Adhesives
   3) AIM Building Materials
2. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 30-mil dry film thickness.
3. Service Temperature Range: Minus 50 to plus 220 deg F.
4. Solids Content: ASTM D 1644, 33 percent by volume and 46 percent by weight.
5. Color: White.

E. Breather Mastic: Water based; suitable for indoor and outdoor use on above-ambient services.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Childers
   2) Ellsworth Adhesives
   3) AIM Building Materials
2. Water-Vapor Permeance: ASTM F 1249, 1.8 perms at 0.0625-inch dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.
4. Solids Content: 60 percent by volume and 66 percent by weight.
5. Color: White.

2.5 LAGGING ADHESIVES

A. Description: Comply with MIL-A-3316C, Class I, Grade A, and shall be compatible with insulation materials, jackets, and substrates.

1. For indoor applications, use lagging adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Vimasco
   2) Design Polymerics

3) Ductmate

3. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over pipe insulation.
4. Service Temperature Range: 0 to plus 180 deg F.
5. Color: White.

2.6 SEALANTS

A. Joint Sealants:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) 3M
   2) Henkel
   3) Sika

2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Permanently flexible, elastomeric sealant.
4. Service Temperature Range: Minus 100 to plus 300 deg F.
5. Color: White or gray.
6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. FSK and Metal Jacket Flashing Sealants:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Childers
   2) Foster
   3) Mon-Eco
2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: Aluminum.
6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. ASJ Flashing Sealants, and Vinyl, PVDC, and PVC Jacket Flashing Sealants:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Childers
   2) SPI

2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: White.

6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.7 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

2.8 FIELD-APPLIED FABRIC-REINFORCING MESH

A. Woven Glass-Fiber Fabric: Approximately 2 oz./sq. yd. with a thread count of 10 strands by 10 strands/sq. in. for covering pipe and pipe fittings.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Childers
    2) Fibreglast
    3) Rockwest

B. Woven Polyester Fabric: Approximately 1 oz./sq. yd. with a thread count of 10 strands by 10 strands/sq. in., in a Leno weave, for pipe.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Vimasco
    2) Foster
    3) Mutual

2.9 FIELD-APPLIED CLOTHS

A. Woven Glass-Fiber Fabric: Comply with MIL-C-20079H, Type I, plain weave, and presized a minimum of 8 oz./sq. yd..

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Alpha
    2) Tap Plastics

2.10 FIELD-APPLIED JACKETS

A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

B. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Johns Manville
    2) Proto Corporation
    3) PIC Plastics Inc
2. Adhesive: As recommended by jacket material manufacturer.
3. Color: White
4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.

    a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.

C. Metal Jacket:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) ITW Insulation Systems
    2) RPR Products
    3) Johns Manville
2. Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105, or 5005, Temper H-14.

    a. Sheet and roll stock ready for shop or field sizing
    b. Finish and thickness are indicated in field-applied jacket schedules.
    c. Moisture Barrier for Indoor Applications:3-mil- thick, heat-bonded polyethylene and kraft paper
    d. Moisture Barrier for Outdoor Applications: 3-mil- thick, heat-bonded polyethylene and kraft paper
    e. Factory-Fabricated Fitting Covers:

        1) Same material, finish, and thickness as jacket.
        2) Preformed 2-piece or gore, 45- and 90-degree, short- and long-radius elbows.
        3) Tee covers.
        4) Flange and union covers.
        5) End caps.
        6) Beveled collars.
        7) Valve covers.
        8) Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

3. Stainless-Steel Jacket: ASTM A 167 or ASTM A 240/A 240M.

    a. Sheet and roll stock ready for shop or field sizing
    b. Material, finish, and thickness are indicated in field-applied jacket schedules.
    c. Moisture Barrier for Indoor Applications: 3-mil- thick, heat-bonded polyethylene and kraft paper
    d. Moisture Barrier for Outdoor Applications: 3-mil- thick, heat-bonded polyethylene and kraft paper
    e. Factory-Fabricated Fitting Covers:

1) Same material, finish, and thickness as jacket.
2) Preformed 2-piece or gore, 45- and 90-degree, short- and long-radius elbows.
3) Tee covers.
4) Flange and union covers.
5) End caps.
6) Beveled collars.
7) Valve covers.
8) Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

D. Underground Direct-Buried Jacket: 125-mil- thick vapor barrier and waterproofing membrane consisting of a rubberized bituminous resin reinforced with a woven-glass fiber or polyester scrim and laminated aluminum foil.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) Pittsburg Corning
   2) Polyguard Products

2.11 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) 3M
   2) Avery Dennison Corporation, Specialty Tapes Div.
   3) Ideal Tape Co.
2. Width: 3 inches.
3. Thickness: 11.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1) 3M
   2) Avery Dennison Corporation, Specialty Tapes Div.
   3) Ideal Tape Co.
2. Width: 3 inches.
3. Thickness: 6.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

C. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) 3M
    2) Ideal Tape Co.
    3) Scapa
2. Width: 2 inches.
3. Thickness: 6 mils.
4. Adhesion: 64 ounces force/inch in width.
5. Elongation: 500 percent.
6. Tensile Strength: 18 lbf/inch in width.

D. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) 3M
    2) Ideal Tape Co.
    3) Nashua
2. Width: 2 inches.
3. Thickness: 3.7 mils.
4. Adhesion: 100 ounces force/inch in width.
5. Elongation: 5 percent.
6. Tensile Strength: 34 lbf/inch in width.

2.12 SECUREMENTS

A. Bands:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) ITW Insulation Systems
    2) RPR Products Inc
    3) Ideal Tape Co.

2. Stainless Steel: ASTM A 167 or ASTM A 240/A 240M, Type 3040.015 inch thick, 3/4 inch wide with wing seal
3. Aluminum: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 3/4 inch wide with wing seal

B. Staples: Outward-clinching insulation staples, nominal 3/4-inch- wide, stainless steel or Monel.

C. Wire: 0.080-inch nickel-copper alloy

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) C&F Wire
    2) WireCrafters

2.13 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers,

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) McGuire Manufacturing
    2) Buckaroos
    3) Zurn
    4) Just Manufacturing
2. Description: Manufactured plastic wraps for covering plumbing fixture hot-water supply] and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.

B. Protective Shielding Piping Enclosures :

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Truebro
    2) Zurn
2. Description: Manufactured plastic enclosure for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with ADA requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

B. Surface Preparation: Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:

1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils thick and an epoxy finish 5 mils thick if operating in a temperature range between 140 and 300 deg F. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
2. Carbon Steel: Coat carbon steel operating at a service temperature between 32 and 300 deg F with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.

C. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

D. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Keep insulation materials dry during application and finishing.

H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

I. Install insulation with least number of joints practical.

J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

L. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 4 inches o.c.

    a. For below-ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.

5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.

M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

P. For above-ambient services, do not install insulation to the following:

1. Vibration-control devices.
2. Testing agency labels and stamps.
3. Nameplates and data plates.
4. Cleanouts.

3.4 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.

C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
4. Seal jacket to wall flashing with flashing sealant.

D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.

F. Insulation Installation at Floor Penetrations:

1. Pipe: Install insulation continuously through floor penetrations.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:

1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
9. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.

C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.

D. Install removable insulation covers at locations indicated. Installation shall conform to the following:

1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.6 INSTALLATION OF CELLULAR-GLASS INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient services, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below-ambient services, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of cellular-glass block insulation of same thickness as pipe insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available. Secure according to manufacturer's written instructions.

2. When preformed sections of insulation are not available, install mitered sections of cellular-glass insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of cellular-glass insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.

3.7 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION

A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed valve covers manufactured of same material as pipe insulation when available.
2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.8 INSTALLATION OF MINERAL-FIBER INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.

3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.9 INSTALLATION OF PHENOLIC INSULATION

A. General Installation Requirements:

1. Secure single-layer insulation with stainless-steel bands at 12-inch intervals and tighten bands without deforming insulation materials.
2. Install 2-layer insulation with joints tightly butted and staggered at least 3 inches. Secure inner layer with 0.062-inch wire spaced at 12-inch intervals. Secure outer layer with stainless-steel bands at 12-inch intervals.

B. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient services, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets with vapor retarders on below-ambient services, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as

recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

C. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of block insulation of same material and thickness as pipe insulation.

D. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed insulation sections of same material as straight segments of pipe insulation. Secure according to manufacturer's written instructions.

E. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed insulation sections of same material as straight segments of pipe insulation. Secure according to manufacturer's written instructions.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.

3.10 INSTALLATION OF POLYOLEFIN INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Seal split-tube longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of polyolefin sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of polyolefin pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install cut sections of polyolefin pipe and sheet insulation to valve body.

2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.11 FIELD-APPLIED JACKET INSTALLATION

A. Where glass-cloth jackets are indicated, install directly over bare insulation or insulation with factory-applied jackets.

1. Draw jacket smooth and tight to surface with 2-inch overlap at seams and joints.
2. Embed glass cloth between two 0.062-inch- thick coats of lagging adhesive.
3. Completely encapsulate insulation with coating, leaving no exposed insulation.

B. Where FSK jackets are indicated, install as follows:

1. Draw jacket material smooth and tight.
2. Install lap or joint strips with same material as jacket.
3. Secure jacket to insulation with manufacturer's recommended adhesive.
4. Install jacket with 1-1/2-inch laps at longitudinal seams and 3-inch- wide joint strips at end joints.
5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-barrier mastic.

C. Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints. Seal with manufacturer's recommended adhesive.

1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.

D. Where metal jackets are indicated, install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches o.c. and at end joints. For exposed piping, apply up to 8 feet AFF.

3.12 FINISHES

A. Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.

a. Finish Coat Material: Interior, flat, latex-emulsion size.

B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.

C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

D. Do not field paint aluminum or stainless-steel jackets.

3.13 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, two locations of threaded strainers, two locations of welded strainers, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.

D. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.14 PIPING INSULATION SCHEDULE, GENERAL

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:

1. Drainage piping located in crawl spaces.
2. Underground piping.
3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.15 INDOOR PIPING INSULATION SCHEDULE

A. Domestic Cold Water:

1. NPS 1 and Smaller: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inch thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch]thick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

2. NPS 1-1/4 and Larger: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inch thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

B. Domestic Hot and Recirculated Hot Water:

1. NPS 1-1/4 and Smaller: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inch thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inchthick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

2. NPS 1-1/2 and Larger: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inch thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

C. Stormwater and Overflow:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inch thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

D. Roof Drain and Overflow Drain Bodies:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inchthick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

E. Exposed Sanitary Drains, Domestic Water, Domestic Hot Water, and Stops for Plumbing Fixtures for People with Disabilities:

1. All Pipe Sizes: Insulation shall be[one of]the following:

a. Flexible Elastomeric: 1 inch thick.
b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
c. Polyolefin: 1 inch thick.

F. Sanitary Waste Piping Where Heat Tracing Is Installed:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 2 inches thick.
b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1-1/2 inches thick.
c. Phenolic: 1-1/2 inchesthick.

G. Floor Drains, Traps, and Sanitary Drain Piping within 10 Feet of Drain Receiving Condensate and Equipment Drain Water below 60 Deg F:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inch thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

H. Hot Service Drains:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Mineral-Fiber, Preformed Pipe, Type I or II: 1 inch thick.

I. Hot Service Vents:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Mineral-Fiber, Preformed Pipe, Type I or II: 1 inch thick.

3.16 OUTDOOR, ABOVEGROUND PIPING INSULATION SCHEDULE

A. Domestic Water Piping:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 2 inches thick.
b. Flexible Elastomeric: 2 inches thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 2 inches thick.
d. Phenolic: 2 inches thick.
e. Polyolefin: 2 inches thick.

B. Domestic Hot and Recirculated Hot Water:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 2 inches thick.
b. Flexible Elastomeric: 2 inches thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 2 inches thick.
d. Phenolic: 2 inches thick.
e. Polyolefin: 2 inches thick.

C. Sanitary Waste Piping Where Heat Tracing Is Installed:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 2 inches thick.
b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 2 inches thick.
c. Phenolic: 2 inchesthick.

D. Hot Service Drains:

1. All Pipe Sizes: Insulation shall beone of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

E. Hot Service Vents:

1. All Pipe Sizes: Insulation shall beone of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Mineral-Fiber, Preformed Pipe Insulation, Type II: 1 inch

3.17 OUTDOOR, UNDERGROUND PIPING INSULATION SCHEDULE

A. Sanitary Waste Piping, All Sizes, Where Heat Tracing Is Installed: Cellular glass, 2 inches thick.

3.18 INDOOR, FIELD-APPLIED JACKET SCHEDULE

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

B. If more than one material is listed, selection from materials listed is Contractor's option.

C. Piping, Concealed:

1. PVC: 20 mils

D. Piping, Exposed:
1. Stainless Steel, Type 304 Smooth 2B Finish: 0.024 inch thick ~~for~~ upto 8 feet AFF and PVC 20 mils for 8 feet and above

3.19 OUTDOOR, FIELD-APPLIED JACKET SCHEDULE

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

B. If more than one material is listed, selection from materials listed is Contractor's option.

C. Piping, Exposed:
1. Stainless Steel, Type 304 Smooth 2B Finish 0.024 inch thick.

3.20 UNDERGROUND, FIELD-INSTALLED INSULATION JACKET

A. For underground direct-buried piping applications, install underground direct-buried jacket over insulation material.

END OF SECTION 220719

SECTION 263213

ENGINE GENERATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

A. Stipulations:
1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Division 01 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

B. This Section includes packaged engine-generator sets for Standby power supply with the following features:

1. Diesel engine generator set
2. Unit Mounted Cooling System
3. DGC 2020 - Level 1 Expanded
4. Level 2 - Basic Sound Attenuation (Steel)
5. Performance Requirements for Sensitive Loads
6. Fuel system.
7. Load banks.
8. Outdoor enclosure.

C. Related Sections include the following:

Section 263600 “Transfer Switches” for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine-generator sets.

1.3 DEFINITIONS

A. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over a range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

B. LP: Liquid Petroleum.

C. Standby Rating: Power output rating equal to the power the generator set delivers continuously under normally varying load factors for the duration of the power outage.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of packaged engine generator indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. In addition, include the fol lowing:

1. Thermal Damage curve for generator.
2. Time-current characteristic of curves for generator protective device.

B. Shop Drawings: Detailed equipment assemblies and indicate dimensions, weights, loads, re quired clearances, method of field assembly, components, and location and size of each field connection.

1. Dimensioned outline plan and elevation drawing of engine-generator set and other compo nents specified.
2. Design Calculations: Signed and sealed by a qualified engineer. Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
3. Vibration Isolation Base Details: Signed and sealed by a qualified engineer. Detail fabriction, including anchorages and attachments to structure and to supported equipment. Include base weights.
4. Wiring Diagrams: Power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. The manufacturer shall be regularly engaged in the production of engine-generator sets and associated controls for a minimum of twenty years, thereby identifying one source of supply and responsibility. Equal means having the same system configuration, operation, and foot print of the engine-generator set with the same sizing solution. Alternate offerings must be submitted for approval 14 days prior to bid.
2. The manufacturer shall provide factory-trained service and parts support through a factory authorized dealer/supplier that is regularly doing business in the area of installation.
3. The manufacturer shall have printed literature and brochures describing the standard system specified, not a one of a kind fabrication.
4. As part of qualification process; an authorized dealer/supplier, herein known as the dealer shall represent the manufacturer. To qualify as the dealer/supplier, it must be a “Full Product Line Sales and Service Dealer” and shall have 24-hour service availability. The dealer/supplier must have certified generator service technicians, inventory of parts to support after sales service and can prove 5 years of experience in the engine-generator field.

B. Source quality-control test reports.

1. Certified summary of prototype-unit test report.
2. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
3. Certified Summary of Performance Tests: Certify compliance with specified requirement to meet performance criteria for sensitive loads.
4. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
5. Report of sound generation.
6. Report of exhaust emissions showing compliance with applicable regulations.

7. Certified Torsional Vibration Compatibility: Comply with NFPA 110.
8. Operation and Maintenance Data: For packaged engine-generator sets to include emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section “Closeout Procedures” include the following:

a. List of tools and replacement items recommended to be stored at the Project for ready access. Including part and drawing numbers, current prices, and source of supply.

C. Field quality-control test reports

D. Warranty: Special warranty specified in this Section

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For packaged engine-generator sets to include emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section “Close out Procedures” include the following:

1. List of tools and replacement items recommended to be stored at the Project for ready access, including part and drawing numbers, current prices, and source of supply.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses: One for every ten of each type and rating, but no less than one of each.
2. Indicator Lamps: Two for every six of teach type used, but no fewer than two of each.
3. Filters: One set each of lubricating oil, fuel, and combustion-air filters.
4. Belts: One set of each generator and fan belt.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer’s authorized representative who is trained and approved for installation of units required for this Project.

1. Maintenance Proximity: Not more than 4 hours normal travel time from Installer’s place of business to Project site.

2. Engineering Responsibility: Preparation of data for vibration isolators and seismic restraints of engine skid mounts, including Shop Drawings, based on the testing and engineering anal ysis of manufacturer’s standard units in assemblies similar to those indicated for this Project.

B. Manufacturer Qualifications: A qualified manufacturer. Maintain within 50 of Project site, a ser vice center capable of providing training, parts, and emergency maintenance repairs.

C. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL), and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association (NETA) or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

D. Source Limitations: Obtain packaged engine-generator sets and auxiliary components through one source from a single manufacturer.

E. Product Options: Drawings indicate size, profiles, and dimensional requirements of packaged generator sets and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

F. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

G. Comply with ASME B15.1.

H. Comply with NFPA 37.

I. Comply with NFPA 30.

J. Comply with NFPA 70.

K. Comply with NFPA 99.

L. Comply with NFPA 110 requirements for Level 1 emergency power supply system.

M. Comply with UL 2200.

N. Engine Exhaust Emissions: Comply with applicable state and local government requirements.

O. Noise Emission: Comply with applicable State or Town noise variances, 55dba for maximum noise level at property line due to sound emitted by generator set including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation. Generator set shall be tested with professional grade sound metering at each 8 points, 5 feet above grade to ensure compliance with specification and project site requirements.

1.9 PROJECT CONDITIONS

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:

1. Notify Engineer & Owner no fewer than 5 days in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without written permission.

B. Environmental Conditions: Engine-generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:

1. Minimum Temperature: 0 °F / -18 °C
2. Maximum Temperature: 100 °F / 38 °C
3. Relative Humidity: 0 - 95 percent
4. Altitude: 1000 feet / 305 meters

1.10 COORDINATION

A. Coordinate size and location of concrete bases for package engine-generator sets. Concrete, reinforcement, and formwork requirements are specified with concrete.

B. Coordinate size and location of roof curbs, equipment supports, and roof penetrations for remote radiators. These items are specified in Division 07 Section "Roof Accessories."

1.11 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or re place components of packaged engine-generator sets and associated auxiliary components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 2 Yr - 3000 Hr Basic Standby Limited warranty from date of Substantial Completion.

1.12 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, provide twelve (12) months' full maintenance by skilled employees of manufacturer's designated service organization. Include quarterly exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Provide parts and supplies same as those used in the manufacture and installation of original equipment. Maintenance service contract shall be provided under a separate cover, and broken out for bid process.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable prod uct by one of the following:

MTU Onsite Energy
Caterpillar
Cummins
Generac

Any changes to the generator set installation requirements due to manufacturers' products differing from the Basis-of-Design Product are the responsibility of the contractor. Only those manufacturer's listed above are permitted to provide a bid. Any manufacturer not listed seeking to provide a quotation must submit a full Comply, Deviate & Exception to this complete specification and provide submittal for Engineer written approval at least two (2) weeks prior to bid date.

2.2 ENGINE-GENERATOR SET (SEPARATELY-DERIVED SOURCE)

(1)3.25 MVA, 277/480 Volt 3 Phase 4w 60Hz packaged engine generator set shall be a coordinated assembly of compatible components. Manufacturer's unable to obtain 3.25 MVA, by means of standard product line shall submit their next highest rated

engine generator set model. (**Belly Tank Source)**

(1) 750 KVA, 277/480 Volt 3 Phase 4w 60Hz packaged engine generator set shall be a coordinated assembly of compatible components. Manufacturer's unable to obtain 750 KVA, by means of standard product line shall submit their next highest rated engine generator set model. (Belly Tank Source)

Factory-assembled and -tested, engine-generator set.

Mounting Frame: Maintain alignment of mounted components without depending on concrete foundation; and have lifting attachments.

Capacities and Characteristics:

1. Power Output Ratings: Nominal ratings as indicated, with capacity as required to operate as a unit as evidence by records of prototype testing.
2. Output Connections: 277/480 Volt 3 Phase 4w 60Hz
3. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.

Generator-Set Performance with PMG excitation:

1. Oversizing generator compared with the rated power output of the engine is permissible to meet specified performance.

    a. Nameplate Data for Oversized Generator: Show rating required by the Contract Documents rather than ratings that would normally be applied to the generator size installed.

2. Steady-State Voltage Operational Bandwidth: .25 percent of rated output voltage from no load to full load.
3. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within three to four seconds.
4. Steady-State Frequency Operational Bandwidth: Plus or minus 0.25 percent of rated frequency from no load to full load.
5. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variation outside the steady-state operational band and no hunting or surging of speed.
6. Transient Frequency Performance: Less than 5 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within five se conds.
7. Sustained Short-Circuit Current: For a 3-phase, bolted short circuit at system output terminals, system shall supply minimum of 300 percent of rated full-load current for not less than 10 seconds without damage to winding insulation or other generator system components.
8. Excitation System: Performance shall be unaffected by voltage distortion caused by nonlinear load.

    a. Provide permanent magnet generator for power source to voltage regulator.

9. Start Time: Comply with NFPA 110, Type 10, system requirements.

2.3 ENGINE

A. Basic Engine: 8-V or 6 Cyc, In-Line configuration, 14.6L Turbo engine charge air cooling with minimum 238HP (NG) with 892 cubic inch displacement. Cast-iron, Oil pan, Wet exhaust manifold and vibration damper**.**

B. Rated Engine Speed: 1800RPM

C. Starter: One electric starter 24v DC.

D. Fuel System: Controlled by a microprocessor-based engine control module (ECM) and a high speed electronic fuel pressure regulator (EPR). The ECM and EPR work with a three-way catalyst and pre and post catalyst O2 sensors for feedback control. The system operates on the basis of a stoichiometric air fuel ratio.

E. Generator: Engine mounted belt drive.

F. Lube Oil System: Forced feed lubrication, Lube oil filter, Lube oil heat exchanger, Filler neck and dip stick.

G. Combustion Air System: Dry type air filter.

H. Cooling System: Coolant circulation pump and Pusher fan rated 122 degrees F with .5" external static restriction

I. Governor: Electronic Control through ECU, with speed sensing as manufactured by Bosch

J. Engine Fuel System:

1. Electronic Pressure Regulator: Regulates the fuel mixture based on Intake Air Temperature, Load, Etc.
2. ECU: Coupled into the generator set control panel interface to allow direct control from the panel.
3. System Control: Closed Loop fuel system using readings from O2 senor(s) to maintain proper fuel mixture through control of the Electronic Pressure Regulator.

K. Coolant Jacket Heater: An electric water heater with integral thermostatic control, properly sized to maintain engine jacket water at 90 degrees and suitable for operation in an ambient temperature of -20°F (-29°C). Comply with NFPA 110 requirements for Level 1 equipment for heater capacity.

L. Cooling system: Closed loop, liquid cooled, with radiator factory mounted on engine-generator set mounting frame and integral engine-driven coolant pump.

1. Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
2. Size of radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent of load condition.
3. Expansion Tank: Constructed withstand maximum closed-loop coolant system pressure for engine used.
4. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.

5. Coolant Hose: Flexible assembly with inside surface of nonporous rubber.

a. Rating: 50-psig (345-kPa) maximum working pressure with coolant at a temperature of 180°F (82°C), and non-collapsible under vacuum.
b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

M. Internal silencer: The internal silencer shall attenuate exhaust noise to a Critical level.

An exhaust silencer and flexible stainless steel fitting shall be furnished factory installed inside the enclosure. Pipe size shall be sufficiently large to handle the engine exhaust gas flow at full rated load without causing back pressure in excess of that allowed by the engine manufacturer. Exhaust system shall include all elbows and fittings to form a complete exhaust piping system. Rain collar and roof penetration protection shall be included. Exhaust pipe shall be equipped with rain cap to prevent precipitation from collecting in the exhaust system.

N. Air-Intake Filter: Standard-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.

O. Starting System: 24 volt electric, with negative ground.

1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in Part 1 "Project Conditions" Article.
2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
3. Cranking Cycle: As required by NFPA 110 for system level specified.
4. Battery: Adequate capacity within ambient temperature range specified in Part 1 "Project Conditions" Article to provide at least three (3) cranking cycles without recharging.
5. Battery Cable: Sized as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
6. Battery Compartment: Battery rack floor mounted constructed of steel, gloss black finish. Include accessories required to support and fasten batteries in place.
7. Battery Charger: 12 or 24VDC, current-limiting, automatic-equalizing and float-charging type. Unit shall comply with UL 1236 and include the following features:

a. Operation: Minimum equalizing-charging rate of 10 amps shall be initiated automatically after battery has lost charge until and adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
b. Automatic Temperature Compensation: Must be equipped with temperature compensation to assure correct charging in all conditions.
c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus .5 percent.
d. Ammeter and Voltmeter: Digital display shall indicate charging rates.
e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of AC input or DC output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
f. Enclosure and Mounting: NEMA-1.

Ignition: Coil on plug electronic ignition.

2.4 FUEL STORAGE

A. No additional storage options for gaseous units. Not Applicable.

2.5 CONTROLS AND MONITORING

A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more sepa rate automatic transfer switches initiate starting and stopping of generator set. When mode-selector switch is switched to the on position, the generator set starts. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.

B. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts the generator set. The off position of same switch initiates genera tor-set shutdown. When generator set is running, specified system or equipment failures or de rangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.

C. Configuration: Operating and safety indications, protective devices, basic system controls, en gine gages, instrument transformers, generator disconnect switch or circuit breaker, and other indicated components shall be grouped in a combination control and power panel. Rigidly mounted to the generator set.

D. Digital Generator Controller

Generator Mounted Control Panel: Provide a generator mounted control panel MTU DGC 2020 Level 1

Communication: USB, RS485 using Modbus (Slave), and internal industrial grade Modem with dial out and dial in capability, SAE J1939 engine ECU capability and separate RS485 for providing communications to a remote display panel for NFPA 110 indication

Generator Control Panel Protection Features: kWH/kVARH meter, Engine (Over speed, Battery Over/Under Voltage, Auxiliary Excitation and Speed/Frequency Mismatch), Generator (Over/Under Voltage, Over/Under Frequency, Unbalanced Voltage, Dead Bus Detection, Overload, Reverse/Reduced Power)

Agency Approvals:

Conforms to UL 508, Industrial Control Equipment – UL Recognized Component
Conforms to CSA Std. C22.2 No. 14, Industrial Control Equipment – CSA Certified
Complies with NFPA 110, Standard for Emergency and Standby Power Systems

CE Compliance:

This product complies with the requirements of the following EC Directives:
Low Voltage Directive (LVD) - 73/23/EEC as amended by 93/68/EEC
Electromagnetic Compatibility (EMC) - 89/336/EEC as amended by 92/31/EEC and 93/68/EEC
EN 50178:1997 - Electronic Equipment for use in Power Installations
EN 61000-6-4:2001 - Electromagnetic Compatibility (EMC), Generic Standards, Emission Standard for Industrial Environments

EN 61000-6-2:2001 - Electromagnetic Compatibility (EMC), Generic Standards, Immunity for Industrial Environments

Environmental:

Operating: -40° to 158°F (-40° to 70°C), Storage: -40° to 185°F (-40° to 85°C)
Humidity: IEC 68-2-38
Salt Fog: ASTM B 17-73, IEC 68-2-11 (tested while operational)
Ingress Protection: IEC IP54 for front panel
Shock: 15 G in 3 perpendicular planes
Vibration:
5 to 29 to 5 Hz: 1.5 G peak for 5 min.
29 to 52 to 29 Hz: 0.036" DECS-A for 2.5 min.
52 to 500 to 52 Hz: 5 G peak for 7.5 min.

Engine Control:

Cranking Control: Cycle or Continuous (Quantity and Duration Fully Programmable)
Engine Cool down
Successful Start Counter: Counts and records successful engine starts

Timers including, but not limited to:
Engine Cool down Timer
Engine Maintenance Timer
Pre-Alarm Time Delays for Weak/Low Battery Voltage
Alarm Time Delay for Over speed
Alarm Time Delay for Sender Failure.
Arming Time Delays after Crank Disconnect:
Low Oil Pressure
High Coolant Temperature

Alarms:

Low Oil Pressure
High Coolant Temperature
Low Coolant Level
Low Fuel Level
Over speed
Over crank
Engine Sender Unit Failure
Emergency Stop
Battery Charger Failure

Pre-Alarms:

Low Oil Pressure
High Coolant Temperature
Low Coolant Temperature
Battery Overvoltage
Weak Battery

Battery Charger Failure
Engine Sender Unit Failure
Engine kW Overload (3 levels)
Maintenance Interval Timer
Low Coolant Level

Generator Protection ANSI Functions:

Under voltage (27)
Overvoltage (59)
ANSI Codes Reverse Power (32)
Over frequency (81O)
Loss of Excitation (40Q)
Under frequency (81U)
Ground Fault

E. Indicating and Protective Devices and Controls: As required by NFPA 110 for Level 1 system, and the following accessories:

Analog Meters: An Analog AC meter package to include meters for reading the following generator electrical
output parameters:
AC Voltage
AC Current
Frequency

Meters are provided with a rotary selector switch to read line to line voltage, Hz and current on all phases.

Voltmeters and Ammeters are analog type with moving iron, rectified meter movement, with a minimum of 1-1/2% accuracy and true RMS measurement. Frequency meters have a 1 mA/3.5 ohm DC moving coil movement driven by an EMC hard frequency conversion circuit. Meters have a minimum 90 degree movement from zero to full scale. Voltmeters and Ammeters scale are incremented for approximately 80% scale movement for rated value to be measured. Meters are 2-!/2 inch case size, rectangular, panel mount. Meters are compliant with ANSI C39.1-1981, IEC 51, UL3111-1, UL and CUL. Meters are Crompton “Challenger Series”, Yokogawa, or equal.

Voltage Adjust Potentiometer: Solid-state type, separate from exciter, providing performance as specified. Adjusting rheostat on control and monitoring panel shall provide plus or minus 5 percent adjustment of out put-voltage operating band.

Frequency Adjust Potentiometer: Solid-state type, separate from governor, providing performance as specified. Adjusting rheostat on control and monitoring panel shall provide plus or minus 5 percent adjustment of output-frequency operating band.

4-Relay: The 4-relay board includes (4) 10 amp form C relays customizable for user defined functionality requirements. Standard outputs as follows:
Engine Run
Engine Fail
Minor Alarm
Spare

F. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator, unless otherwise indicated.

G. Connection to Data Link: A separate terminal block, factor wired to Form C dry contacts, for each alarm and status indication is reserved for connections for data-link transmission of indications to remote data terminals. Data system connections to terminals are covered in Section 260913 “electrical Power Monitoring and Control.”

H. Common Remote Audible Alarm: Comply with NFPA 110 requirements for Level 1 systems. In clude necessary contacts and terminals in control and monitoring panel.

1. Overcrank Shutdown.
2. Coolant Low-temperature Alarm.
3. Control Switch Not in Auto Position.
4. Battery-charger Malfunction Alarm.
5. Battery Low-voltage Alarm.

I. Common Remote Audible Alarm: Signal the occurrence of any event listed below without differ entiating between event types. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset.

1. Engine High-temperature Shutdown.
2. Lube-oil, Low-pressure Shutdown.
3. Overspeed Shutdown.
4. Remote Emergency-stop Shutdown.
5. Engine High-temperature Pre-alarm.
6. Lube-oil, Low-pressure Pre-alarm.
7. Fuel Tank, Low-fuel Level.
8. Low Coolant Level.

J. Remote Alarm Annunciator: Designed for compliance with NFPA 110. LEDs labeled with proper alarm conditions identify each alarm as well as an audible signal for each alarm condition. Si lencing switch in face of panel silences signal without altering visual indication. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.

LED indications are provided for the following:

Alarms:

Low Coolant Level
High Coolant Temperature
Low Oil Pressure
Overcrank
Overspeed
Emergency Stop Activated
Fuel Leak
Sender Failure

Pre-alarms:

High Coolant Temperature
Low Coolant Temperature

Low Oil Pressure
Low Fuel Level
Battery Overvoltage
Weak Battery
Battery charger Failure

Operational status:

Switch Not in Auto
Display Panel On
EPS Supplying Load

K. Remote Emergency-Stop Switch: Flush; wall mounted, unless otherwise indicated; and labeled. Push button is protected from accidental operation.

2.6 GENERATOR OVERCURRENT AND FAULT PROTECTION

A. Product Description: Enclosed, molded-case circuit breaker conforming to NEMA AB 1 and FS-W-

B. Accessories: Conform to NEMA AB 1.

Shunt Trip Device: 24 volts, DC.
Under-voltage Trip Device.
Auxiliary Switch: 120 volts, AC.
Alarm Switch: 120 volts, AC.
Handle Lock: Provisions for padlocking.
Enclosure: NEMA ICS 6, Type 1 mounted on the engine-generator set.

C. Generator Protection: Microprocessor-based device shall continuously monitor the total kVA level of the generator output, annunciating conditions that may result in generator damage.

Protective devices shall perform the following functions:

1. Initiates a generator overload pre-alarm when generator has operated at an overload equivalent to 105 percent of full-rated load for 5 seconds. Indication for this alarm is integrated with other generator set malfunction pre-alarms.

2. Indicates a generator overload alarm when generator has operated at an overload equivalent to 105 percent of full-rated load for 300 seconds. Indication for this alarm is integrated with other generator set malfunction alarms.

D. Generator, Exciter, and Voltage Regulator

E. Comply with NEMA MG 1.

F. Drive: Generator shaft shall be directly connected to the engine shaft. Exciter shall be rotated integrally with
generator rotor.

G. Electrical Insulation: Class H or Class F. Not to exceed 130 degrees C over 40 degrees C ambient.

H. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if
required.

I. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed upto125 percent of rating, and heat during operation at 110 percent of rated capacity.

J. Enclosure: Drip proof.

K. Instrument Transformers: Mounted within generator enclosure.

L. Voltage Regulator:

True RMS Sensing – One or Three Phase Connect the sensing mode you prefer. Senses 95 to 600 volts
±10% at 50/60 hertz. Patented circuitry senses true RMS voltage rather than average for superior load
regulation.
Soft-Start Ramp on Initial Start-Up Controlled increase to rated voltage. Limits overshoot of voltage during
voltage build-up.
Engine Unloading Monitors the rate of frequency change during transient conditions. Provides additional
voltage dip during speed drop to allow engine to recover faster.
Overvoltage Shutdown Provides generator protection during sustained overvoltage. The overvoltage point is
preset at 20% over normal generator operating voltage, with a preset timeout of 0.75 seconds.

M. Strip Heater: A properly sized manufacturer's recommended strip heater shall be mounted permanently in the generator winding or outlet box to prevent condensation in the generator. The strip heater shall be wired to a terminal strip for connection to the generator auxiliary equipment distribution panel.

2.7 OUTDOOR GENERATOR-SET ENCLOSURE

A. Description: Enclosure to be rated minimum 75dba @ 23feet based on free field environment conditions when measure as an 8 point average, 5 feet above grade. Enclosure shall be Level II (2) attenuation as manufactured by MTU Onsite Energy. 130MPH Wind rating, or better. Comply with, and provide proper labeling for UL2200

B. Description: Steel enclosure with the following features:

1. Construction: Formed and/or welded steel.
2. Hinged double doors for access with lockable latches.
3. Louvered and/or baffled air inlet. Grated air outlet.
4. Interior lined with acoustical 1.5" foam for sound attenuation.
5. Pitched roof with rain shroud and rain cap.
6. Rodent barriers

7. Choice of standard colors. Custom colors available upon request.
8. Provide a diamond plate sound floor so that no sound or air escapes through enclosure bottom when mounted on spring vibration isolators.
9. Additional Enclosure Features:

Sound Attenuation
Application of foam material to reduce noise emissions to meet aforementioned minimum required sound rating. Ensure enclosure being quoted will comply with local and state codes for noise emissions at property line.

Door Restraints
Hardware installed to secure doors in the open position to aide in service and operation.

AC Lighting
Consists of one or more (dependent upon enclosure size) vapor-proof UL listed light fixtures prewired in conduit to a customer connection point.

Operates on 120Vac and is controlled by a prewired SPST switch.

2.8 VIBRATION ISOLATION DEVICES

Seismic Spring Vibration Isolator

1. Freestanding, steel, open-spring isolators with positive restraint in all directions. Required in earthquake-prone areas.
2. Housing

a. Steel
b. Restraints in vertical (upward) and shear (longitudinal and transverse) directions in excess of 3300 pounds
c. ¼ inch thick elastomeric pad bonded to bottom of base plate.
d. Leveling bolt.

3. Sizing involves attempting to achieve all of the following:

a. Outside spring diameter not less than 80 percent of compressed height of spring at rated maximum load
b. Minimum additional travel equal to 50 percent of required deflection at rated load.
c. Overload capacity: Support 200 percent of rated load without deformation or failure

2.9 FINISHES

A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

2.10 SOURCE QUALITY CONTROL

A. Prototype Testing: factory test engine-generator set using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.

1. Tests: Comply with NFPA 110, Level 1 Energy Converters and with IEEE 115.

B. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:

1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
2. Full Load Run.
3. Maximum Power.
4. Voltage Regulation.
5. Transient and Steady-State Governing.
6. Single-Step Load Pickup.
7. Safety Shutdown.
8. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's repre sentative.
9. Report factory test results within 10 days of completion of test.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine-generator set performance.

B. Examine roughing-in of piping systems and electrical connections. Verify actual locations of connections before packaged engine-generator installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with packaged engine-generator manufacturers' written installation and alignment instructions and with NFPA 110.

B. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

C. Install packaged engine-generator with VMC Group OSHPD pre-approved vibration spring isolators having a minimum deflection of 1.07 inches on a 10 inch high concrete base. Secure sets to anchor bolts installed in concrete bases. Concrete base construction is specified in Section 260548 "Vibration and Seismic Controls for Electrical Systems."

D. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

3.3 CONNECTIONS

A. Coordinate piping installations and specialty arrangements with schematics on Drawings and with requirements specified in piping systems. If Drawings are explicit enough, these requirements may be reduced or omitted.

B. Piping installation requirements are specified in Division 23 Sections. Drawings indicate general arrangement of piping and specialties.

C. Connect fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow service and maintenance.

D. Connect fuel piping to engines with a gate valve and union and flexible connector.

1. Diesel storage tanks, tank accessories, piping, valves, and specialties for fuel systems are specified in Division 23 Section "Facility Fuel-Oil Piping."
2. LP-gas piping, valves, and specialties for gas piping are specified in Division 23 Section "Facility Liquefied-Petroleum Gas Piping."

E. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

F. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.4 IDENTIFICATION

A. Identify system components according to Division 23 Section "Identification for HVAC Piping and Equipment" and Division 26 Section "Identification for Electrical Systems."

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.

B. Perform tests and inspections and prepare test reports.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

1. Perform tests recommended by manufacturer and each electrical test and visual and me chanical inspection for "AC Generators and for Emergency Systems" specified by NETA Ac ceptance Testing Specification. Certify compliance with test parameters.
2. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here including, but not limited to, single-step full-load pickup test.
3. Battery Tests: Equalize charging of battery cells according to manufacturer's written instruct tions. Record individual cell voltages.

a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.

b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
c. Verify acceptance of charge for each element of the battery after discharge.
d. Verify that measurements are within manufacturer's specifications.

4. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
5. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine-generator system before and during system operation. Check for air, exhaust, and fluid leaks.
6. Exhaust-System Back-Pressure Test: Use a manometer with a scale exceeding 40-inch wg (120kPa). Connect to exhaust line close to engine exhaust manifold. Verify that back pres sure at full-rated load is within manufacturer's written allowable limits for the engine.
7. Exhaust Emissions Test: Comply with applicable government test criteria.
8. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
9. Noise Level Tests: Provide calculated noise measurement of the complete generator pack age.

D. Coordinate tests for transfer switches and run them concurrently.

E. Test instruments shall have been calibrated within the last 12 months, traceable to standards of NIST, and adequate for making positive observation of test results. Make calibration records available for examination on request.

F. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

G. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.

H. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equip ment.

I. Remove and replace malfunctioning units and retest as specified above.

J. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.

K. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.

L. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Ac ceptance, perform an infrared scan of each power wiring termination and each buss connection. Remove all access panels so terminations and connections are accessible to a portable scanner. To be provided by the installing contractor.

1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan 11 months after date of Substantial Completion.
2. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
3. Record of Infrared Scanning: Prepare a certified report that identifies terminations and con nections checked and that describes scanning results. Include notation of deficiencies de tected, remedial action taken, and observations after remedial action taken.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner’s maintenance personnel to adjust, operate, and maintain packaged engine generators. Provide a minimum of three (3) days training for owner's maintenance personnel.

END OF SECTION

SECTION 263213

ENGINE GENERATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

A. Stipulations:
1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Division 01 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

B. This Section includes packaged engine-generator sets for Standby power supply with the following features:

1. Diesel engine generator set
2. Unit Mounted Cooling System
3. DGC 2020 - Level 1 Expanded
4. Level 2 - Basic Sound Attenuation (Steel)
5. Performance Requirements for Sensitive Loads
6. Fuel system.
7. Load banks.
8. Outdoor enclosure.

C. Related Sections include the following:

Section 263600 “Transfer Switches” for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine-generator sets.

1.3 DEFINITIONS

A. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over a range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

B. LP: Liquid Petroleum.

C. Standby Rating: Power output rating equal to the power the generator set delivers continuously under normally varying load factors for the duration of the power outage.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of packaged engine generator indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. In addition, include the fol lowing:

1. Thermal Damage curve for generator.
2. Time-current characteristic of curves for generator protective device.

B. Shop Drawings: Detailed equipment assemblies and indicate dimensions, weights, loads, re quired clearances, method of field assembly, components, and location and size of each field connection.

1. Dimensioned outline plan and elevation drawing of engine-generator set and other compo nents specified.
2. Design Calculations: Signed and sealed by a qualified engineer. Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
3. Vibration Isolation Base Details: Signed and sealed by a qualified engineer. Detail fabriction, including anchorages and attachments to structure and to supported equipment. Include base weights.
4. Wiring Diagrams: Power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. The manufacturer shall be regularly engaged in the production of engine-generator sets and associated controls for a minimum of twenty years, thereby identifying one source of supply and responsibility. Equal means having the same system configuration, operation, and foot print of the engine-generator set with the same sizing solution. Alternate offerings must be submitted for approval 14 days prior to bid.
2. The manufacturer shall provide factory-trained service and parts support through a factory authorized dealer/supplier that is regularly doing business in the area of installation.
3. The manufacturer shall have printed literature and brochures describing the standard system specified, not a one of a kind fabrication.
4. As part of qualification process; an authorized dealer/supplier, herein known as the dealer shall represent the manufacturer. To qualify as the dealer/supplier, it must be a “Full Product Line Sales and Service Dealer” and shall have 24-hour service availability. The dealer/supplier must have certified generator service technicians, inventory of parts to support after sales service and can prove 5 years of experience in the engine-generator field.

B. Source quality-control test reports.

1. Certified summary of prototype-unit test report.
2. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
3. Certified Summary of Performance Tests: Certify compliance with specified requirement to meet performance criteria for sensitive loads.
4. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
5. Report of sound generation.
6. Report of exhaust emissions showing compliance with applicable regulations.

7. Certified Torsional Vibration Compatibility: Comply with NFPA 110.
8. Operation and Maintenance Data: For packaged engine-generator sets to include emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section “Closeout Procedures” include the following:

a. List of tools and replacement items recommended to be stored at the Project for ready access. Including part and drawing numbers, current prices, and source of supply.

C. Field quality-control test reports

D. Warranty: Special warranty specified in this Section

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For packaged engine-generator sets to include emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section “Close out Procedures” include the following:

1. List of tools and replacement items recommended to be stored at the Project for ready access, including part and drawing numbers, current prices, and source of supply.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses: One for every ten of each type and rating, but no less than one of each.
2. Indicator Lamps: Two for every six of teach type used, but no fewer than two of each.
3. Filters: One set each of lubricating oil, fuel, and combustion-air filters.
4. Belts: One set of each generator and fan belt.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer’s authorized representative who is trained and approved for installation of units required for this Project.

1. Maintenance Proximity: Not more than 4 hours normal travel time from Installer’s place of business to Project site.

2. Engineering Responsibility: Preparation of data for vibration isolators and seismic restraints of engine skid mounts, including Shop Drawings, based on the testing and engineering anal ysis of manufacturer’s standard units in assemblies similar to those indicated for this Project.

B. Manufacturer Qualifications: A qualified manufacturer. Maintain within 50 of Project site, a ser vice center capable of providing training, parts, and emergency maintenance repairs.

C. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL), and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association (NETA) or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

D. Source Limitations: Obtain packaged engine-generator sets and auxiliary components through one source from a single manufacturer.

E. Product Options: Drawings indicate size, profiles, and dimensional requirements of packaged generator sets and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

F. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

G. Comply with ASME B15.1.

H. Comply with NFPA 37.

I. Comply with NFPA 30.

J. Comply with NFPA 70.

K. Comply with NFPA 99.

L. Comply with NFPA 110 requirements for Level 1 emergency power supply system.

M. Comply with UL 2200.

N. Engine Exhaust Emissions: Comply with applicable state and local government requirements.

O. Noise Emission: Comply with applicable State or Town noise variances, 55dba for maximum noise level at property line due to sound emitted by generator set including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation. Generator set shall be tested with professional grade sound metering at each 8 points, 5 feet above grade to ensure compliance with specification and project site requirements.

1.9 PROJECT CONDITIONS

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:

1. Notify Engineer & Owner no fewer than 5 days in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without written permission.

B. Environmental Conditions: Engine-generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:

1. Minimum Temperature: 0 °F / -18 °C
2. Maximum Temperature: 100 °F / 38 °C
3. Relative Humidity: 0 - 95 percent
4. Altitude: 1000 feet / 305 meters

1.10 COORDINATION

A. Coordinate size and location of concrete bases for package engine-generator sets. Concrete, reinforcement, and formwork requirements are specified with concrete.

B. Coordinate size and location of roof curbs, equipment supports, and roof penetrations for remote radiators. These items are specified in Division 07 Section "Roof Accessories."

1.11 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or re place components of packaged engine-generator sets and associated auxiliary components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 2 Yr - 3000 Hr Basic Standby Limited warranty from date of Substantial Completion.

1.12 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, provide twelve (12) months' full maintenance by skilled employees of manufacturer's designated service organization. Include quarterly exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Provide parts and supplies same as those used in the manufacture and installation of original equipment. Maintenance service contract shall be provided under a separate cover, and broken out for bid process.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable prod uct by one of the following:

MTU Onsite Energy
Caterpillar
Cummins
Generac

Any changes to the generator set installation requirements due to manufacturers' products differing from the Basis-of-Design Product are the responsibility of the contractor. Only those manufacturer's listed above are permitted to provide a bid. Any manufacturer not listed seeking to provide a quotation must submit a full Comply, Deviate & Exception to this complete specification and provide submittal for Engineer written approval at least two (2) weeks prior to bid date.

2.2 ENGINE-GENERATOR SET (SEPARATELY-DERIVED SOURCE)

(1)3.25 MVA, 277/480 Volt 3 Phase 4w 60Hz packaged engine generator set shall be a coordinated assembly of compatible components. Manufacturer's unable to obtain 3.25 MVA, by means of standard product line shall submit their next highest rated

engine generator set model. (**Belly Tank Source)**

(1) 750 KVA, 277/480 Volt 3 Phase 4w 60Hz packaged engine generator set shall be a coordinated assembly of compatible components. Manufacturer's unable to obtain 750 KVA, by means of standard product line shall submit their next highest rated engine generator set model. (Belly Tank Source)

Factory-assembled and -tested, engine-generator set.

Mounting Frame: Maintain alignment of mounted components without depending on concrete foundation; and have lifting attachments.

Capacities and Characteristics:

1. Power Output Ratings: Nominal ratings as indicated, with capacity as required to operate as a unit as evidence by records of prototype testing.
2. Output Connections: 277/480 Volt 3 Phase 4w 60Hz
3. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.

Generator-Set Performance with PMG excitation:

1. Oversizing generator compared with the rated power output of the engine is permissible to meet specified performance.

    a. Nameplate Data for Oversized Generator: Show rating required by the Contract Documents rather than ratings that would normally be applied to the generator size installed.

2. Steady-State Voltage Operational Bandwidth: .25 percent of rated output voltage from no load to full load.
3. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within three to four seconds.
4. Steady-State Frequency Operational Bandwidth: Plus or minus 0.25 percent of rated frequency from no load to full load.
5. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variation outside the steady-state operational band and no hunting or surging of speed.
6. Transient Frequency Performance: Less than 5 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within five se conds.
7. Sustained Short-Circuit Current: For a 3-phase, bolted short circuit at system output terminals, system shall supply minimum of 300 percent of rated full-load current for not less than 10 seconds without damage to winding insulation or other generator system components.
8. Excitation System: Performance shall be unaffected by voltage distortion caused by nonlinear load.

    a. Provide permanent magnet generator for power source to voltage regulator.

9. Start Time: Comply with NFPA 110, Type 10, system requirements.

2.3 ENGINE

A. Basic Engine: 8-V or 6 Cyc, In-Line configuration, 14.6L Turbo engine charge air cooling with minimum 238HP (NG) with 892 cubic inch displacement. Cast-iron, Oil pan, Wet exhaust manifold and vibration damper**.**

B. Rated Engine Speed: 1800RPM

C. Starter: One electric starter 24v DC.

D. Fuel System: Controlled by a microprocessor-based engine control module (ECM) and a high speed electronic fuel pressure regulator (EPR). The ECM and EPR work with a three-way catalyst and pre and post catalyst O2 sensors for feedback control. The system operates on the basis of a stoichiometric air fuel ratio.

E. Generator: Engine mounted belt drive.

F. Lube Oil System: Forced feed lubrication, Lube oil filter, Lube oil heat exchanger, Filler neck and dip stick.

G. Combustion Air System: Dry type air filter.

H. Cooling System: Coolant circulation pump and Pusher fan rated 122 degrees F with .5" external static restriction

I. Governor: Electronic Control through ECU, with speed sensing as manufactured by Bosch

J. Engine Fuel System:

1. Electronic Pressure Regulator: Regulates the fuel mixture based on Intake Air Temperature, Load, Etc.
2. ECU: Coupled into the generator set control panel interface to allow direct control from the panel.
3. System Control: Closed Loop fuel system using readings from O2 senor(s) to maintain proper fuel mixture through control of the Electronic Pressure Regulator.

K. Coolant Jacket Heater: An electric water heater with integral thermostatic control, properly sized to maintain engine jacket water at 90 degrees and suitable for operation in an ambient temperature of -20°F (-29°C). Comply with NFPA 110 requirements for Level 1 equipment for heater capacity.

L. Cooling system: Closed loop, liquid cooled, with radiator factory mounted on engine-generator set mounting frame and integral engine-driven coolant pump.

1. Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
2. Size of radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent of load condition.
3. Expansion Tank: Constructed withstand maximum closed-loop coolant system pressure for engine used.
4. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.

5. Coolant Hose: Flexible assembly with inside surface of nonporous rubber.

a. Rating: 50-psig (345-kPa) maximum working pressure with coolant at a temperature of 180°F (82°C), and non-collapsible under vacuum.
b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

M. Internal silencer: The internal silencer shall attenuate exhaust noise to a Critical level.

An exhaust silencer and flexible stainless steel fitting shall be furnished factory installed inside the enclosure. Pipe size shall be sufficiently large to handle the engine exhaust gas flow at full rated load without causing back pressure in excess of that allowed by the engine manufacturer. Exhaust system shall include all elbows and fittings to form a complete exhaust piping system. Rain collar and roof penetration protection shall be included. Exhaust pipe shall be equipped with rain cap to prevent precipitation from collecting in the exhaust system.

N. Air-Intake Filter: Standard-duty, engine-mounted air cleaner with replaceable dry-filter element and
"blocked filter" indicator.

O. Starting System: 24 volt electric, with negative ground.

1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in Part 1 "Project Conditions" Article.
2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
3. Cranking Cycle: As required by NFPA 110 for system level specified.
4. Battery: Adequate capacity within ambient temperature range specified in Part 1 "Project Conditions" Article to provide at least three (3) cranking cycles without recharging.
5. Battery Cable: Sized as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
6. Battery Compartment: Battery rack floor mounted constructed of steel, gloss black finish. Include accessories required to support and fasten batteries in place.
7. Battery Charger: 12 or 24VDC, current-limiting, automatic-equalizing and float-charging type. Unit shall comply with UL 1236 and include the following features:

a. Operation: Minimum equalizing-charging rate of 10 amps shall be initiated automatically after battery has lost charge until and adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
b. Automatic Temperature Compensation: Must be equipped with temperature compensation to assure correct charging in all conditions.
c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus .5 percent.
d. Ammeter and Voltmeter: Digital display shall indicate charging rates.
e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of AC input or DC output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
f. Enclosure and Mounting: NEMA-1.

Ignition: Coil on plug electronic ignition.

2.4 FUEL STORAGE

A. No additional storage options for gaseous units. Not Applicable.

2.5 CONTROLS AND MONITORING

A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more sepa rate automatic transfer switches initiate starting and stopping of generator set. When mode-selector switch is switched to the on position, the generator set starts. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.

B. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts the generator set. The off position of same switch initiates genera tor-set shutdown. When generator set is running, specified system or equipment failures or de rangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.

C. Configuration: Operating and safety indications, protective devices, basic system controls, en gine gages, instrument transformers, generator disconnect switch or circuit breaker, and other indicated components shall be grouped in a combination control and power panel. Rigidly mounted to the generator set.

D. Digital Generator Controller

Generator Mounted Control Panel: Provide a generator mounted control panel MTU DGC 2020 Level 1

Communication: USB, RS485 using Modbus (Slave), and internal industrial grade Modem with dial out and dial in capability, SAE J1939 engine ECU capability and separate RS485 for providing communications to a remote display panel for NFPA 110 indication

Generator Control Panel Protection Features: kWH/kVARH meter, Engine (Over speed, Battery Over/Under Voltage, Auxiliary Excitation and Speed/Frequency Mismatch), Generator (Over/Under Voltage, Over/Under Frequency, Unbalanced Voltage, Dead Bus Detection, Overload, Reverse/Reduced Power)

Agency Approvals:

Conforms to UL 508, Industrial Control Equipment – UL Recognized Component
Conforms to CSA Std. C22.2 No. 14, Industrial Control Equipment – CSA Certified
Complies with NFPA 110, Standard for Emergency and Standby Power Systems

CE Compliance:

This product complies with the requirements of the following EC Directives:
Low Voltage Directive (LVD) - 73/23/EEC as amended by 93/68/EEC
Electromagnetic Compatibility (EMC) - 89/336/EEC as amended by 92/31/EEC and 93/68/EEC
EN 50178:1997 - Electronic Equipment for use in Power Installations
EN 61000-6-4:2001 - Electromagnetic Compatibility (EMC), Generic Standards, Emission Standard for Industrial Environments

EN 61000-6-2:2001 - Electromagnetic Compatibility (EMC), Generic Standards, Immunity for Industrial Environments

Environmental:

Operating: -40° to 158°F (-40° to 70°C), Storage: -40° to 185°F (-40° to 85°C)
Humidity: IEC 68-2-38
Salt Fog: ASTM B 17-73, IEC 68-2-11 (tested while operational)
Ingress Protection: IEC IP54 for front panel
Shock: 15 G in 3 perpendicular planes
Vibration:
5 to 29 to 5 Hz: 1.5 G peak for 5 min.
29 to 52 to 29 Hz: 0.036" DECS-A for 2.5 min.
52 to 500 to 52 Hz: 5 G peak for 7.5 min.

Engine Control:

Cranking Control: Cycle or Continuous (Quantity and Duration Fully Programmable)
Engine Cool down
Successful Start Counter: Counts and records successful engine starts

Timers including, but not limited to:
Engine Cool down Timer
Engine Maintenance Timer
Pre-Alarm Time Delays for Weak/Low Battery Voltage
Alarm Time Delay for Over speed
Alarm Time Delay for Sender Failure.
Arming Time Delays after Crank Disconnect:
Low Oil Pressure
High Coolant Temperature

Alarms:

Low Oil Pressure
High Coolant Temperature
Low Coolant Level
Low Fuel Level
Over speed
Over crank
Engine Sender Unit Failure
Emergency Stop
Battery Charger Failure

Pre-Alarms:

Low Oil Pressure
High Coolant Temperature
Low Coolant Temperature
Battery Overvoltage
Weak Battery

Battery Charger Failure
Engine Sender Unit Failure
Engine kW Overload (3 levels)
Maintenance Interval Timer
Low Coolant Level

Generator Protection ANSI Functions:

Under voltage (27)
Overvoltage (59)
ANSI Codes Reverse Power (32)
Over frequency (81O)
Loss of Excitation (40Q)
Under frequency (81U)
Ground Fault

E. Indicating and Protective Devices and Controls: As required by NFPA 110 for Level 1 system, and the following accessories:

Analog Meters: An Analog AC meter package to include meters for reading the following generator electrical
output parameters:
AC Voltage
AC Current
Frequency

Meters are provided with a rotary selector switch to read line to line voltage, Hz and current on all phases.

Voltmeters and Ammeters are analog type with moving iron, rectified meter movement, with a minimum of 1-1/2% accuracy and true RMS measurement. Frequency meters have a 1 mA/3.5 ohm DC moving coil movement driven by an EMC hard frequency conversion circuit. Meters have a minimum 90 degree movement from zero to full scale. Voltmeters and Ammeters scale are incremented for approximately 80% scale movement for rated value to be measured. Meters are 2-!/2 inch case size, rectangular, panel mount. Meters are compliant with ANSI C39.1-1981, IEC 51, UL3111-1, UL and CUL. Meters are Crompton “Challenger Series”, Yokogawa, or equal.

Voltage Adjust Potentiometer: Solid-state type, separate from exciter, providing performance as specified. Adjusting rheostat on control and monitoring panel shall provide plus or minus 5 percent adjustment of out put-voltage operating band.

Frequency Adjust Potentiometer: Solid-state type, separate from governor, providing performance as specified. Adjusting rheostat on control and monitoring panel shall provide plus or minus 5 percent adjustment of output-frequency operating band.

4-Relay: The 4-relay board includes (4) 10 amp form C relays customizable for user defined functionality requirements. Standard outputs as follows:
Engine Run
Engine Fail
Minor Alarm
Spare

F. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator, unless otherwise indicated.

G. Connection to Data Link: A separate terminal block, factor wired to Form C dry contacts, for each alarm and status indication is reserved for connections for data-link transmission of indications to remote data terminals. Data system connections to terminals are covered in Section 260913 “electrical Power Monitoring and Control.”

H. Common Remote Audible Alarm: Comply with NFPA 110 requirements for Level 1 systems. In clude necessary contacts and terminals in control and monitoring panel.

1. Overcrank Shutdown.
2. Coolant Low-temperature Alarm.
3. Control Switch Not in Auto Position.
4. Battery-charger Malfunction Alarm.
5. Battery Low-voltage Alarm.

I. Common Remote Audible Alarm: Signal the occurrence of any event listed below without differ entiating between event types. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset.

1. Engine High-temperature Shutdown.
2. Lube-oil, Low-pressure Shutdown.
3. Overspeed Shutdown.
4. Remote Emergency-stop Shutdown.
5. Engine High-temperature Pre-alarm.
6. Lube-oil, Low-pressure Pre-alarm.
7. Fuel Tank, Low-fuel Level.
8. Low Coolant Level.

J. Remote Alarm Annunciator: Designed for compliance with NFPA 110. LEDs labeled with proper alarm conditions identify each alarm as well as an audible signal for each alarm condition. Si lencing switch in face of panel silences signal without altering visual indication. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.

LED indications are provided for the following:

Alarms:

Low Coolant Level
High Coolant Temperature
Low Oil Pressure
Overcrank
Overspeed
Emergency Stop Activated
Fuel Leak
Sender Failure

Pre-alarms:

High Coolant Temperature
Low Coolant Temperature

Low Oil Pressure
Low Fuel Level
Battery Overvoltage
Weak Battery
Battery charger Failure

Operational status:

Switch Not in Auto
Display Panel On
EPS Supplying Load

K. Remote Emergency-Stop Switch: Flush; wall mounted, unless otherwise indicated; and labeled. Push button is protected from accidental operation.

2.6 GENERATOR OVERCURRENT AND FAULT PROTECTION

A. Product Description: Enclosed, molded-case circuit breaker conforming to NEMA AB 1 and FS-W-

B. Accessories: Conform to NEMA AB 1.

Shunt Trip Device: 24 volts, DC.
Under-voltage Trip Device.
Auxiliary Switch: 120 volts, AC.
Alarm Switch: 120 volts, AC.
Handle Lock: Provisions for padlocking.
Enclosure: NEMA ICS 6, Type 1 mounted on the engine-generator set.

C. Generator Protection: Microprocessor-based device shall continuously monitor the total kVA level of the generator output, annunciating conditions that may result in generator damage.

Protective devices shall perform the following functions:

1. Initiates a generator overload pre-alarm when generator has operated at an overload equivalent to 105 percent of full-rated load for 5 seconds. Indication for this alarm is integrated with other generator set malfunction pre-alarms.

2. Indicates a generator overload alarm when generator has operated at an overload equivalent to 105 percent of full-rated load for 300 seconds. Indication for this alarm is integrated with other generator set malfunction alarms.

D. Generator, Exciter, and Voltage Regulator

E. Comply with NEMA MG 1.

F. Drive: Generator shaft shall be directly connected to the engine shaft. Exciter shall be rotated integrally with
generator rotor.

G. Electrical Insulation: Class H or Class F. Not to exceed 130 degrees C over 40 degrees C ambient.

H. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if
required.

I. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed upto125 percent of rating, and heat during operation at 110 percent of rated capacity.

J. Enclosure: Drip proof.

K. Instrument Transformers: Mounted within generator enclosure.

L. Voltage Regulator:

True RMS Sensing – One or Three Phase Connect the sensing mode you prefer. Senses 95 to 600 volts
±10% at 50/60 hertz. Patented circuitry senses true RMS voltage rather than average for superior load
regulation.
Soft-Start Ramp on Initial Start-Up Controlled increase to rated voltage. Limits overshoot of voltage during
voltage build-up.
Engine Unloading Monitors the rate of frequency change during transient conditions. Provides additional
voltage dip during speed drop to allow engine to recover faster.
Overvoltage Shutdown Provides generator protection during sustained overvoltage. The overvoltage point is
preset at 20% over normal generator operating voltage, with a preset timeout of 0.75 seconds.

M. Strip Heater: A properly sized manufacturer's recommended strip heater shall be mounted permanently in the generator winding or outlet box to prevent condensation in the generator. The strip heater shall be wired to a terminal strip for connection to the generator auxiliary equipment distribution panel.

2.7 OUTDOOR GENERATOR-SET ENCLOSURE

A. Description: Enclosure to be rated minimum 75dba @ 23feet based on free field environment conditions when measure as an 8 point average, 5 feet above grade. Enclosure shall be Level II (2) attenuation as manufactured by MTU Onsite Energy. 130MPH Wind rating, or better. Comply with, and provide proper labeling for UL2200

B. Description: Steel enclosure with the following features:

1. Construction: Formed and/or welded steel.
2. Hinged double doors for access with lockable latches.
3. Louvered and/or baffled air inlet. Grated air outlet.
4. Interior lined with acoustical 1.5" foam for sound attenuation.
5. Pitched roof with rain shroud and rain cap.
6. Rodent barriers

7. Choice of standard colors. Custom colors available upon request.
8. Provide a diamond plate sound floor so that no sound or air escapes through enclosure bottom when mounted on spring vibration isolators.
9. Additional Enclosure Features:

Sound Attenuation
Application of foam material to reduce noise emissions to meet aforementioned minimum required sound rating. Ensure enclosure being quoted will comply with local and state codes for noise emissions at property line.

Door Restraints
Hardware installed to secure doors in the open position to aide in service and operation.

AC Lighting
Consists of one or more (dependent upon enclosure size) vapor-proof UL listed light fixtures prewired in conduit to a customer connection point.

Operates on 120Vac and is controlled by a prewired SPST switch.

2.8 VIBRATION ISOLATION DEVICES

Seismic Spring Vibration Isolator

1. Freestanding, steel, open-spring isolators with positive restraint in all directions. Required in earthquake-prone areas.
2. Housing

a. Steel
b. Restraints in vertical (upward) and shear (longitudinal and transverse) directions in excess of 3300 pounds
c. ¼ inch thick elastomeric pad bonded to bottom of base plate.
d. Leveling bolt.

3. Sizing involves attempting to achieve all of the following:

a. Outside spring diameter not less than 80 percent of compressed height of spring at rated maximum load
b. Minimum additional travel equal to 50 percent of required deflection at rated load.
c. Overload capacity: Support 200 percent of rated load without deformation or failure

2.9 FINISHES

A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

2.10 SOURCE QUALITY CONTROL

A. Prototype Testing: factory test engine-generator set using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.

1. Tests: Comply with NFPA 110, Level 1 Energy Converters and with IEEE 115.

B. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:

1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
2. Full Load Run.
3. Maximum Power.
4. Voltage Regulation.
5. Transient and Steady-State Governing.
6. Single-Step Load Pickup.
7. Safety Shutdown.
8. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's repre sentative.
9. Report factory test results within 10 days of completion of test.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine-generator set performance.

B. Examine roughing-in of piping systems and electrical connections. Verify actual locations of connections before packaged engine-generator installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with packaged engine-generator manufacturers' written installation and alignment instructions and with NFPA 110.

B. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

C. Install packaged engine-generator with VMC Group OSHPD pre-approved vibration spring isolators having a minimum deflection of 1.07 inches on a 10 inch high concrete base. Secure sets to anchor bolts installed in concrete bases. Concrete base construction is specified in Section 260548 "Vibration and Seismic Controls for Electrical Systems."

D. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

3.3 CONNECTIONS

A. Coordinate piping installations and specialty arrangements with schematics on Drawings and with requirements specified in piping systems. If Drawings are explicit enough, these requirements may be reduced or omitted.

B. Piping installation requirements are specified in Division 23 Sections. Drawings indicate general arrangement of piping and specialties.

C. Connect fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow service and maintenance.

D. Connect fuel piping to engines with a gate valve and union and flexible connector.

1. Diesel storage tanks, tank accessories, piping, valves, and specialties for fuel systems are specified in Division 23 Section "Facility Fuel-Oil Piping."
2. LP-gas piping, valves, and specialties for gas piping are specified in Division 23 Section "Facility Liquefied-Petroleum Gas Piping."

E. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

F. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.4 IDENTIFICATION

A. Identify system components according to Division 23 Section "Identification for HVAC Piping and Equipment" and Division 26 Section "Identification for Electrical Systems."

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.

B. Perform tests and inspections and prepare test reports.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

1. Perform tests recommended by manufacturer and each electrical test and visual and me chanical inspection for "AC Generators and for Emergency Systems" specified by NETA Ac ceptance Testing Specification. Certify compliance with test parameters.
2. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here including, but not limited to, single-step full-load pickup test.
3. Battery Tests: Equalize charging of battery cells according to manufacturer's written instruct tions. Record individual cell voltages.

a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.

b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
c. Verify acceptance of charge for each element of the battery after discharge.
d. Verify that measurements are within manufacturer's specifications.

4. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
5. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine-generator system before and during system operation. Check for air, exhaust, and fluid leaks.
6. Exhaust-System Back-Pressure Test: Use a manometer with a scale exceeding 40-inch wg (120kPa). Connect to exhaust line close to engine exhaust manifold. Verify that back pres sure at full-rated load is within manufacturer's written allowable limits for the engine.
7. Exhaust Emissions Test: Comply with applicable government test criteria.
8. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
9. Noise Level Tests: Provide calculated noise measurement of the complete generator pack age.

D. Coordinate tests for transfer switches and run them concurrently.

E. Test instruments shall have been calibrated within the last 12 months, traceable to standards of NIST, and adequate for making positive observation of test results. Make calibration records available for examination on request.

F. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

G. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.

H. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equip ment.

I. Remove and replace malfunctioning units and retest as specified above.

J. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.

K. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.

L. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Ac ceptance, perform an infrared scan of each power wiring termination and each buss connection. Remove all access panels so terminations and connections are accessible to a portable scanner. To be provided by the installing contractor.

1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan 11 months after date of Substantial Completion.
2. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
3. Record of Infrared Scanning: Prepare a certified report that identifies terminations and con nections checked and that describes scanning results. Include notation of deficiencies de tected, remedial action taken, and observations after remedial action taken.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner’s maintenance personnel to adjust, operate, and maintain packaged engine generators. Provide a minimum of three (3) days training for owner's maintenance personnel.

END OF SECTION

SECTION 264113

LIGHTNING PROTECTION FOR STRUCTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes lightning protection system for the following:

1. Ordinary structures.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Include layouts of the lightning protection system, with details of the components to be used in the installation.
2. Include raceway locations needed for the installation of conductors.
3. Details of air terminals, ground rods, ground rings, conductor supports, splices, and terminations, including concealment requirements.
4. Calculations required by NFPA 780 for bonding of metal bodies.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Lightning protection system Shop Drawings, drawn to scale, coordinated with each other, using input from installers of the items involved:

B. Qualification Data: For Installer.

C. Product certificates.

D. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

B. Completion Certificate:

1.5 QUALITY ASSURANCE

A. Installer Qualifications: LPI Master Installer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Lightning Protection Standard: Comply with NFPA 780 requirements for buildings.

B. UL Lightning Protection Standard: Comply with UL 96A requirements buildings.

C. Lightning Protection Components, Devices, and Accessories: Listed and labeled by a qualified testing agency as complying with UL 96, and marked for intended location and application.

2.2 MATERIALS

A. Air Terminals:

1. Copper unless otherwise indicated.

B. Class 1 Main Conductors:

1. Stranded Copper: 57,400 circular mils in diameter.

C. Class II Main Conductors:

1. Stranded Copper: 115,000 circular mils in diameter.

D. Secondary Conductors:

1. Stranded Copper: 26,240 circular mils in diameter.

E. Ground Loop Conductor: Stranded copper.

F. Ground Rods:

1. Material: Solid copper

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install lightning protection components and systems according to NFPA 780.

B. Install conductors with direct paths from air terminals to ground connections. Avoid bends less than 90 degrees and 8 inches (203 mm) in radius and narrow loops.

C. Conceal conductors within normal view from exterior locations at grade within 200 feet (60 m) of building. Comply with requirements for concealed systems in NFPA 780.

D. Ground Ring Electrode: The conductor shall be not less than the main-size lightning conductor.

3.2 CONNECTIONS

A. Aboveground concealed connections, and connections in earth or concrete, shall be done by exothermic welds or by high-compression fittings listed for the purpose.

B. Aboveground exposed connections shall be done using the following types of connectors, listed and labeled for the purpose: [**bolted connectors**] [**exothermic weld**] [**high compression**] [**crimp**].

C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.

3.3 FIELD QUALITY CONTROL

A. Special Inspections: a qualified special inspector to perform the following special inspections:

1. Perform inspections as required to obtain a UL Master Label for system.
2. Perform inspections to obtain an LPI certification.

B. Prepare test and inspection reports and certificates.

END OF SECTION 264113

SECTION 264113

LIGHTNING PROTECTION FOR STRUCTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes lightning protection system for the following:

1. Ordinary structures.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Include layouts of the lightning protection system, with details of the components to be used in the installation.
2. Include raceway locations needed for the installation of conductors.
3. Details of air terminals, ground rods, ground rings, conductor supports, splices, and terminations, including concealment requirements.
4. Calculations required by NFPA 780 for bonding of metal bodies.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Lightning protection system Shop Drawings, drawn to scale, coordinated with each other, using input from installers of the items involved:

B. Qualification Data: For Installer.

C. Product certificates.

D. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

B. Completion Certificate:

1.5 QUALITY ASSURANCE

A. Installer Qualifications: LPI Master Installer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Lightning Protection Standard: Comply with NFPA 780 requirements for buildings.

B. UL Lightning Protection Standard: Comply with UL 96A requirements buildings.

C. Lightning Protection Components, Devices, and Accessories: Listed and labeled by a qualified testing agency as complying with UL 96, and marked for intended location and application.

2.2 MATERIALS

A. Air Terminals:

1. Copper unless otherwise indicated.

B. Class 1 Main Conductors:

1. Stranded Copper: 57,400 circular mils in diameter.

C. Class II Main Conductors:

1. Stranded Copper: 115,000 circular mils in diameter.

D. Secondary Conductors:

1. Stranded Copper: 26,240 circular mils in diameter.

E. Ground Loop Conductor: Stranded copper.

F. Ground Rods:

1. Material: Solid copper

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install lightning protection components and systems according to NFPA 780.

B. Install conductors with direct paths from air terminals to ground connections. Avoid bends less than 90 degrees and 8 inches (203 mm) in radius and narrow loops.

C. Conceal conductors within normal view from exterior locations at grade within 200 feet (60 m) of building. Comply with requirements for concealed systems in NFPA 780.

D. Ground Ring Electrode: The conductor shall be not less than the main-size lightning conductor.

3.2 CONNECTIONS

A. Aboveground concealed connections, and connections in earth or concrete, shall be done by exothermic welds or by high-compression fittings listed for the purpose.

B. Aboveground exposed connections shall be done using the following types of connectors, listed and labeled for the purpose: [**bolted connectors**] [**exothermic weld**] [**high compression**] [**crimp**].

C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.

3.3 FIELD QUALITY CONTROL

A. Special Inspections: a qualified special inspector to perform the following special inspections:

1. Perform inspections as required to obtain a UL Master Label for system.
2. Perform inspections to obtain an LPI certification.

B. Prepare test and inspection reports and certificates.

END OF SECTION 264113

SECTION 329113

PLANTING SOILS

PART 1 - GENERAL

1.1 SUMMARY

A. Stipulations:

1. The specifications sections “General Conditions to the Construction Contract”, “Special Conditions” and “Division 01 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

B. General: Provide Planting Soils in accordance with requirements of the Contract Documents.

C. Section Includes the Following:

1. Amended Topsoil

2. Bioretention Soil

D. Related Requirements:

1. Section 321400 – Unit Paving

2. Section 329300 – Plants

1.2 SCOPE OF WORK

A. This Section specifies administrative and procedural requirements for manufactured planting soils (planting soils) including, but not limited, to the following:

1. Inspection and Approval of waterproofing, insulation and other structural and protective components.
2. Planting soil base material acquisition and manufacture of soil blends.
3. Testing and analysis for specification conformance.
4. Preparation of mixes and testing for conformance.
5. Installation and placement of soils.
6. Compaction and testing of planting soils.
7. Final in-place testing of soils.
8. Coordination with other contractors.
9. Clean-up.

B. References to other Sections are given that would duplicate provisions in this Section.

1.3 QUALITY ASSURANCE/DEFINITIONS

A. Quality Assurance: Comply with applicable requirements of:

1. American Association of Nurserymen, American Standards for Nursery Stock, (ANSI Z60.1), latest edition, published by the American Association of Nurserymen, 1250 I Street, N.W., Suite 500 Washington, D.C. 20005.
2. ASTM: American Society of Testing Materials.
3. ANSI: American National Standards Institute.
4. AOAC: Association of Official Agricultural Chemists.
5. USDA: United Stated Department of Agriculture.

B. Definitions:

1. Refer to Section 329300 Planting
2. ASA: American Society of Agronomy.
3. Soil Scientist: The project Soil Scientist shall be Pine and Swallow Environmental, 867 Boston Rd., Groton, MA 01450, 978-448-9511, www.pineandswallow.com
4. Planting Soils: Planting Soils are composed of a blend of three base components: base loam, organic material and sand. The quality of the blend depends on the quality of the original components. Locate and obtain approval of sources for base loam, organic material and sand that meet the Specification requirements. Contractor is then responsible for mixing the components. Approximate mixing ratios are provided, but may require adjustment, depending on the final materials and with the approval of the Professional or their representative, in order to meet Specification requirements for each blend.
5. Lightweight Planting Soils: Planting Soils to be used for on-structure applications. Lightweight Planting Soils must be compliant for the saturated unit weight of the soil mixes, and shall be tested according to Designation: E 2399 – 05, Standard Test Method for Maximum Media Density for Dead Load Analysis of Green Roof Systems. Lightweight Planting Soil Blends shall not exceed 55 lbs. per cubic foot.

C. Testing/Testing Agency

1. Refer to Section 32 9300 Plants
2. Refer to this section, 1.5 B.

D. Contractor is solely responsible for quality control of the Work.

E. The installer shall be a firm having at least 5 years of successful experience of a scope similar to that required for the Work, including the preparation, mixing and installation of custom Planting Soil and planting mixes in urban locations.

1. The installing Contractor shall be the same firm that is installing planting as described in Section 32 9300 – Plants.
2. Installer Field Supervision: Installer to maintain an experienced full-time supervisor on Project site when any Planting Soil preparation work is in progress.
3. The installer's crew shall be experienced in the installation of soil, grading and interpretation of grading plans in urban areas.

F. Soil work shall be performed by a firm that has sufficient earthwork machinery at the job site simultaneously to amply provide for the vigorous execution of the site work without interruption or delay, except for unforeseen circumstances, such as weather. Machinery operators shall be well experienced in this type of work.

G. Comply with applicable requirements of the laws, codes, ordinances and regulations of Federal, State and municipal authorities having jurisdiction. Obtain necessary approvals from all such authorities.

H. Comply with all requirements for control of silt and sediment during soil installation work as indicated in the contract documents. Provide additional silt and sediment control to maintain silt and sediments within the working area as required by the progress of the work or as directed by the Professional and Soil Scientist.

I. Pre-installation Conference: Conduct conference at project site prior to the start of any work related to Planting Soil preparation and shall meet the requirements of this Section 3.1(D).

J. Layout and Grading: The Contractor shall be responsible to install soil profiles at the elevations and thickness shown on the Plans.

1.4 TESTING, SUBMITTALS, MOCK-UPS AND INSPECTIONS

A. Testing for Subgrade, Planting Soil Components and Lawn and Planting Soil Mixes: Testing is required at the following intervals:

1. Testing of individual components (Base Loam, Sand, and Compost) for planting soil mixes prior to blending of any soils for use at the Project Site. Tests are as described in this Section.
2. After test results for components have been accepted, create sample Planting Soil Mixes of each planting soil mix and perform tests described in this Section.
3. After the test results for each Planting Soil Mix have been accepted, and during the production of planting soils, test every 5,000 cubic yards of Planting Soil Mixes blended for: organic matter content, gradation, and pH. Before shipping of any Planting Soil Mix, the Contractor shall confirm that the Soil Scientist has accepted the mix. Testing applies to all soil layers of the planting profile.
4. In-place tests: Compaction tests of each type of material (soil layer) placed shall be in accordance with this Section. Infiltration tests shall be in accordance with this Section.

B. Test Reports: Submit certified reports for tests as described in this Section.

1. Mechanical gradation (sieve analysis) shall be performed for sand, silt, and clay content and compared to the USDA Soil Classification System using sieve size numbers: 10, 18, 35, 60, 140 and 270. The silt and clay (0.002 mm) content shall be determined by a Hydrometer Test (ASTM D-422-63) of soil passing the #270 sieve.
2. Chemical analysis shall be undertaken for Phosphorus, Potassium, Calcium, Magnesium, Aluminum, Iron, Manganese, Lead, Cation Exchange Capacity, Soluble Salts, organic matter content, acidity (pH) and buffer pH.
3. Tests shall be conducted in accordance with Recommended Soil Testing Procedures for the Northeastern United States, 2nd Edition, Northeastern Regional Publication No. 493; Agricultural Experiment. Tests include the following:

    a. Test for soil Organic Matter by loss of weight on ignition, as described in Northeastern Regional Publication No. 493.
    b. Test for soil CEC by exchangeable acidity method as described in Northeastern Regional Publication No. 493.
    c. Test for soil Soluble Salts shall be by the 1:2 (v:v) soil:water Extract Method as described in Northeastern Regional Publication No. 493.

d. Test for Buffer pH by the SMP method as described in Northeastern Regional Publication No. 493.
e. Tests for pH shall be conducted on a 1:1 soil to distilled water ratio.

4. Certified reports on analyses from producers of composted organic materials shall be required and new test reports shall be submitted when compost sources are changed. Analyses shall include all tests for criteria specified in 2.1, K.
5. Saturated Hydraulic Conductivity: Test procedure ASTM D5856-95 (2000).

   a. Hydraulic Conductivity tests shall be performed on samples during QA/QC testing at the Soil Supplier's facility.

6. Testing Agencies: The following firms are acceptable testing agencies for the various components and blends.

   a. Leaf Yard Waste Compost, all tests including Stability: Woods End Research Laboratory, P.O. Box 297, Mt. Vernon, ME, 04352, tel: 201.293.2457, or alternate STA Certified testing laboratory by the US Composting Council, www.compostcouncil.org.

   b. Mechanical Gradation, Chemical Analysis and Organic Matter Content, All Soil Components and Planting Soil Mixes: University of Massachusetts, West Experiment Station, Amherst, MA 01003, tel: 413.545.2311, fax: 413.545.1931 or approved equal.

   c. Penn State Department of Agriculture
   Agricultural Analytical Services Lab
   aaslab@psu.edu
   Tel 814-863-0841
   Fax 814-863-4540

7. Laboratory Density Testing: ASTM Designation: E 2399 – 05, Standard Test Method for Maximum Media Density for Dead Load Analysis of Green Roof Systems. Lightweight Planting Soil Blends shall not exceed 55 lbs. per cubic foot.

   a. Recommended Laboratories for Standard Proctor Test (ASTM 698), Saturated Hydraulic Conductivity Testing (ASTM D5856) and Standard Test Method for Maximum Media Density for Dead Load Analysis of Green Roof Systems (ASTM E 2399): MT Group, 145 Sherwood Avenue, Farmingdale NY, 11735, 631-815-1900, www.mtgroup.com or Certified Testing Laboratory, Bordentown, NJ, 609-298-3225

C. In-Place Testing

1. In-place infiltration tests shall be performed using Turf-Tec IN2-W Infiltrometer utilizing manufacturer's operating instructions, or approved equivalent method.
2. At the direction of the Professional and Soil Scientist, in-place planting soil blends shall be sampled and tested by the Department for compliance with gradation and organic matter content as specified herein. Non-compliant materials shall be removed from the site or amended as specified by the Soil Scientist.

D. Samples: Prior to ordering the below listed materials, submit representative composite samples to the Professional and Soil Scientist for selection and approval. Representative composite samples shall be composed of at least five equal-sized subsamples mixed thoroughly and resampled for submittal. Do not order materials until Professional's, and Soil

Scientist's acceptance has been obtained. The Soil Scientist may approve test results with minor deviations from Specification Requirements if it is determined that the material will perform as required fpr the project. Delivered materials shall closely match the approved samples.

1. Components

    a. Compost: duplicate samples of 1 gallon.
    b. Base Loam: duplicate samples of 1 gallon.
    c. Sand: duplicate samples of 1 gallon.
    d. Perlite: duplicate samples of 1 gallon.

2. Test Blends

    a. Standard Planting Bed Soil: duplicate samples of 1 gallon.
    b. Lightweight Planting Bed Soil: duplicate samples of 1 gallon.

3. Mulch -: 1-quart volume of each mulch required; in sealed plastic bags labeled with composition of materials; percentage of weight of component materials; and source of mulch. Sample should indicate the length of time mulch has been stockpiled for decomposition. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.

E. Sources for Base Loam, Sand, Compost and Perlite: Submit information identifying sources for all soil components and the firm responsible for mixing of planting soil mixes.

1. Professional, Soil Scientist, and Department shall have the right to reject any soil supplier or mixing facility.
2. Soil mix supplier shall have a minimum of five years experience at supplying custom planting soil mixes.
3. Submit supplier name, address, telephone and fax numbers and contact name.
4. Submit certification that accepted supplier/ mixer is able to provide sufficient quantities and qualities of materials for the entire project.
5. Final approval of soil supplier/ mixer shall be made after on-site review of supplier’s and mixer’s facility(ies) by the Soil Scientist.

F. Inspection

1. The Contractor is responsible for inspection and written approval of all on structure systems for insulation, waterproofing, drainage and any other work prior to placing Planting Soils. No work of Planting Soils shall be conducted until written approval to place planting soils is obtained.
2. The Contractor shall not place Planting Soils on drainage layer prior to inspection and approval of Professional and Soil Scientist. The Contractor shall request inspection before proceeding at least ten working days prior to placement of soils.
3. The Contractor shall not plant any plant material prior to inspection and approval of Professional and Soil Scientist for compliance with soil depth and compaction specifications. The Contractor shall request inspection before proceeding at least ten working days prior to placement of soils.

G. Mock Ups

1. Contractor shall coordinate mock up with Professional, Soil Scientist, geotechnical testing agency, and all appropriate other parties.

a. Soil must be between 60% and 100% optimal moisture content prior to beginning Mock-up as described in this Section.
b. Geotechnical testing agency must have appropriate equipment on-site to conduct density tests as described in this Section.
c. Approved Horticultural Tests and Approved Test report for ASTM 698 Standard Proctor test must be submitted and approved by the Soil Scientist prior to beginning Mock-up as described in this Section.
d. Allow sufficient time for Mock Up to be reviewed and approved prior to continuing with additional soil work.

2. Upon acceptance of all materials and drainage preparations and prior to installing Sand-Based Structural Soil, the Contractor shall construct mock-up on site as indicated below. Build mock-up of Structural Soil that will support Concrete Pavement a minimum of 10 feet long to allow the Professional to review the installation methods. Approved materials required include Drainage Layer, Sand-Based Structural Soil, 3/8" Crushed Stone and Aeration Pipe as specified.
3. Contractor shall provide for moisture and density testing at the time of the mock up and all subsequent installations as provided in this Section.
4. If the original mock-up is not approved, the Contractor shall provide additional mock-ups, as required, at no cost to the Department until an approved mock-up is obtained. Mock-up shall be approved before final soil placement is begun. The approved mock-up shall become the standard for the entire job. Mock-up shall be built in a location as directed by Professional and may be constructed on a location becoming part of the final work, unless otherwise noted, and shall remain undisturbed until all work is completed. When so requested, build mock-ups of different materials simultaneously to allow the Professional to review all elements at once. Demolish and remove mockups when directed. Build mockups to comply with the following requirements, using materials indicated for the completed Work, including the same base construction.

1.5 DELIVERY, STORAGE AND HANDLING

A. In addition, the following provision is established: Material shall not be handled or hauled, placed or compacted when it is wet as after a heavy rainfall, early spring or if frozen. Soil shall be handled only when the moisture content is compliant with Section 329113 1.6.H. The Professional, the Soil Scientist and the Department shall be consulted to determine if the soil is too wet to handle.

B. Store and handle packaged materials in strict compliance with manufacturer's instructions and recommendations. Protect all materials from weather, damage, injury and theft.

C. Sequence deliveries to avoid delay. On-site storage space is permissible only with written notice from Department. Deliver materials only after preparations for placement of planting soil have been completed.

D. Prohibit vehicular and pedestrian traffic on or around stockpiled planting soil.

E. Planting Soil that is to be stockpiled longer than two weeks, whether on or off site, shall not be placed in mounds greater than six feet high.

F. Vehicular access to the site is restricted. Before construction, the Contractor shall submit for approval a plan showing proposed routing for deliveries and site access.

G. Soil Moisture Content

1. Contractor shall not move, blend or grade soil when moisture content is so great that free moisture is apparent, nor when it is so dry that dust will form in the air or that clods will not break readily, nor when it is frozen.
2. Field Soil Moisture Test procedure is applicable for general soil moving and placement only and shall not be considered appropriate for compaction of soils, nor is a replacement for the above testing procedure.

    a. Form soil in palm of hand, if soil retains shape and crumbles upon touching, the soil may be worked.
    b. If the soil will not retain shape it is too dry and should not be worked.
    c. If the soil retains shape and will not crumble, it is too wet and should not be worked.
    d. If the soil glistens or free water is observed when the sample is patted in the palm of hand the soil is too wet and should not be worked.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General

1. All plant mix material shall be imported and fulfill the requirements as specified and be tested to confirm the specified characteristics.
2. Samples of individual components of soil mixes, in addition to blended soil mixes, including mulch materials, shall be submitted by the Contractor for testing and analysis to the approved testing laboratory. Comply with specific materials requirements specified.

    a. No base component material or soil components for soil mixes shall be used until certified test reports by an approved soil testing laboratory have been received and approved by the Professional and Soil Scientist.
    b. As necessary, make any and all soil mix amendments and resubmit test reports indicating amendments until approved.
    c. Horticultural parameters for soil mixes shall be tested and submitted for approval prior to adding perlite to the soil blends for saturated weight testing and final approval.

3. The Professional and Soil Scientist may request additional testing by Contractor for confirmation of mix quality and/or soil mix amendments at any time until completion. Changes in mix ratios may be required.

B. Soil Testing and Soils Testing Report Submittal

1. All testing of the soil mix components shall be carried out by the Soils Testing Laboratory. Recommendations for amending and/or correcting the soil mix will be provided to the Contractor by the Soil Scientist after approval by the Professional and Soil Scientist.
2. Failure of any material by testing and/or amendment procedure to meet Specification requirements shall require the Contractor to seek another source for the failed material and the initiation of all testing procedures for the new replacement material shall immediately take place.

3. The Contractor shall be responsible for recognizing that these critical project materials warrant timely and serious attention, that the testing process to achieve Approved materials should be considered a lead time item, and that under no circumstance shall failure to comply with all specification requirements be an excuse for “staying on project construction schedule.”

C. Soil Samples: Contractor is responsible for paying costs for testing. Submit 1 gallon planting soil samples in two phases. Submit samples concurrent with horticultural soil test reports in both phases. Submit as phase one, planting soil base components for approval. Only after approval of phase one components, submit as phase two, soil blend mixes / mediums for approval. All reports must be from recent analyses, less than 90 days old, and represent materials that are available for delivery to the site.

1. Phase One Submittals of Planting Soil Base Components:

    a. Base Loam (Imported Topsoil)
    b. Organic Amendment Materials (Compost)
    c. Sand
    d. Calcined Diotomaceous Earth for Protection of Drainage Board
    e. Perlite

2. Phase Two Submittals of Planting Mediums: mixing and batching of soil mediums to be submitted in the same manner as bulk soils.

    a. Standard Planting Bed Soil

3. Phase Three Submittals: mixing and batching of soil mediums to be submitted in the same manner as bulk soils and will be prepared prior to delivery to site.

    a. Lightweight Planting Bed Soil

4. Submit reports for each of the above samples: Submit sample from each proposed source for testing and approval. Deliver samples to both the testing laboratory and the project soil scientist and pay costs. Send report directly to Professional and Soil Scientist.
5. Soil Sample Submittals: Sampling shall be done by the Contractor. The size of the samples and method of sampling shall be as follows: Samples shall be representative of the material to be brought to the site. Each sample shall be a Composite Sample, which consists of 5 separate sub samples taken from a minimum of (5) different locations at each source and mixed together to make the test sample.
6. The Contractor shall schedule this testing in order to permit reasonable time for testing, evaluation, and approvals prior to scheduled installation. Allow for a minimum of 4 weeks to perform testing and obtain approvals.

D. Imported Base Loam

1. Imported Base Loam, as required for blending with sand and compost, shall be a naturally occurring soil formed from geologic soil forming processes without admixtures of sand or organic matter sources (composts). Base Loam, which has been contaminated by incorporation of subsoil, shall not be acceptable for use. Base Loam as required for the work shall be free of subsoil, large stones, earth clods, sticks, stumps, clay lumps, roots or other objectionable, extraneous matter or debris. Base Loam shall also be free of quack-grass rhizomes, Agropyron Repens, and the nut-like tubers of nutgrass, Cyperus Esculentus, and all other primary

noxious weeds. Base Loam shall not be delivered or used for planting while in a frozen or muddy condition. Base Loam for mixing shall conform to the following grain size distribution for material passing the #10 sieve:

U.S. Sieve Size Number	Percent Passing Minimum	Maximum
10	---	100
18	85	100
35	70	95
60	50	85
140	42	53
270	32	60
0.002mm	3	12

2. Maximum size shall be one-inch largest dimension. The maximum retained on the #10 sieve shall be 20% by weight of the total sample. Tests shall be by combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition.
3. Base loam with more than 46% passing the 270 sieve or with more than 8 percent clay must have a well developed and stable crumb (ped) structure as determined by an agricultural chemist. Base Loam with greater than 60% passing the 270 sieve may be considered for approval by the Soil Consultant if an aggregate stability test indicates a strong crumb structure.
4. The organic content shall be between 3.0 and 8.0 percent by weight.
5. pH shall be between 5.8 and 7.0.
6. Chemical analysis shall be undertaken for Phosphorus, Potassium, Calcium Magnesium, Aluminum, Iron, Manganese, Lead, Cation Exchange Capacity, Soluble Salts, acidity (pH) and buffer pH.

E. Medium to Coarse Sand

1. Sand for protection of filter fabric and for drainage as required, shall be uniformly graded medium to coarse sand consisting of clean, inert, rounded to sub-angular grains of quartz or other durable rock free from loam or clay, mica, surface coatings and deleterious materials with the following grain size distribution for material passing the #10 sieve:

U.S. Sieve Size Number	Percent Passing Minimum	Maximum
10	100	--
18	60	80
35	25	45
60	8	20
140	0	8
270	0	3
0.002mm	0	0.5

2. Maximum size shall be one-inch largest dimension. The maximum retained on the #10 sieve shall be 20% by weight of the total sample.
3. The ratio of the particle size for 70% passing (D_{70}) to the particle size for 20% passing (D_{20}) shall be 3.0 or less (D_{70}/D_{20} <3.0). Tests shall be by combined hydrometer and wet sieving in compliance with ASTM D422.
4. pH shall be less than 7.5.
5. Sand shall not be derived from serpentine.

F. Organic Amendment (Compost)

1. Organic Matter for amending planting soils shall be a stable, humus-like material produced from the aerobic decomposition and curing of Leaf Yard Waste Compost, composted for a minimum of one year (12 months). The leaf yard waste compost shall be free of debris such as plastics, metal, concrete or other debris. The leaf yard waste compost shall be free of stones larger than 1/2", larger branches and roots. Wood chips over 1" in length or diameter shall be removed by screening. The compost shall be a dark brown to black color and be capable of supporting plant growth with appropriate management practices in conjunction with addition of fertilizer and other amendments as applicable, with no visible free water or dust, with no unpleasant odor, and meeting the following criteria as reported by laboratory tests.

    a. The ratio of carbon to nitrogen shall be in the range of 12:1 to 25:1.
    b. Stability shall be assessed by the Solvita procedure. Protocols are specified by the Solvita manual (version 4.0). The compost must achieve a maturity index of 6 or more as measured by the Solvita scale. Stability tests shall be conducted by Woods End Research Laboratory, Mt. Vernon, Maine.
    c. Organic Content shall be at least 20 percent (dry weight). One hundred percent of the material shall pass a 1/2-inch (or smaller) screen. Debris such as metal, glass, plastic, wood (other than residual chips), asphalt or masonry shall not be visible and shall not exceed one percent dry weight. Organic content shall be determined by weight loss on ignition for particles passing a number 10 sieve.
    d. pH: The pH shall be between 6.5 to 7.4 as determined from a 1:1 soil-distilled water suspension using a glass electrode pH meter American Society of Agronomy Methods of Soil Analysis.
    e. Salinity: Electrical conductivity of a one to five soil to water ratio extract shall not exceed 2.5 mmhos/cm (dS/m).
    f. The compost shall be screened to 1/2-inch maximum particle size and shall contain not more that 3 percent material finer that 0.002mm as determined by hydrometer test on ashed material.
    g. Nutrient content shall be determined by the Soil Testing Laboratory and utilized to evaluate soil-required amendments for the mixed soils. Chemical analysis shall be undertaken for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Magnesium, Iron, Manganese, Lead, Soluble Salts, Cation Exchange Capacity, soil reaction (pH), and buffer pH.

G. Decomposed Granite

1. Decomposed granite shall be friable natural granite meeting the following gradation. Blends of coarse sand and stone dust are not acceptable

Sieve Size	% Passing by Weight
No. 4	100
No. 8	90-100
No. 40	20-50
No. 100	10-30
No. 200	0-20

2. Decomposed granite color shall be approved by the Professional.

H. Stabilizer for Decomposed Granite

1. Stabilizer shall be "Stabilizer", a non-toxic, colorless, odorless, concentrated powder organic binder capable of binding crushed aggregate screenings, manufactured by Stabilizer, Phoenix, AZ 85018, or approved equal.

I. Filter Fabric, as required, shall be Mirafi 140N or approved equivalent.

J. Perlite

1. Perlite, as required for lightweight soil blends shall consist of horticultural grade Perlite with the following properties or approved equivalent:

   a. Maximum bulk density: 8 pounds per cubic foot.
   b. The gradation by volume shall be within the following limits:

U.S Sieve Size	Percent retained by volume
8	10-25
12	45-75
16	70-85
20	80-90
30	90-98
-30	up to 10%

K. Calcined Diatomaceous Earth:

1. Calcined Diatomaceous Earth for drainage filtration layer over drainage boards shall be a porous soil amendment derived from sedimentary ore, formed by the accumulation of porous diatom structures which are the skeletal remains of plankton.
2. Opaline Silica shall be approximately 90%, dry bulk density 26 lb/cf, water absorption (Westinghouse) 130 lbs./100, hardness 221 psi, pore size 0.1-1.0 micron, pH 7.
3. Gradation shall be as follows
   a. -12 + 65 mesh: 98.5%
   b. -65 mesh: 1.5%
   c. -80 mesh: 0.5%
4. Calcined Diatomaceous Earth Amendment shall be AXIS “fine” supplied by EnviroTech Soil Solutions, Inc., 866-546-3722, www.axisplayball.com; or approved equal.

L. Mulch

1. Mulch shall be Composted Pine bark with long, fibrous nature, 2” to 4” in length. It shall consist of minimum 90 percent of composted Pine bark and no more than 10 percent of cellulose and hemicellulose materials. It shall be free from deleterious materials and suitable as top dressing of trees and shrubs. Dark brown in color, free of chunks and pieces of wood thicker than one quarter inch and over 3 inches in width. It shall not contain excess of fine particles. It shall be aged minimum of six months and not longer than 2 years.

2. Supplier or approved equal: Shredded Pine Bark Mulch from Grant County Mulch, 181 Mulch Drive, Petersburg WV 26847.

M. ¾-Inch Crushed Stone

1. Crushed stone (3/4 inch) shall consist of washed, durable crushed rock consisting of the angular fragments obtained by breaking and crushing solid or shattered rock and free from a detrimental quantity of thin, flat or elongated or other objectionable

pieces. Crushed stone shall be reasonably free from clay, loam or deleterious material and shall conform to the following:

	Percent Passing	
U.S. Sieve Size Number	Minimum	Maximum
1 inch	100	-
¾ inch	90	100
1/2 inch	10	50
3/8 inch	0	20
# 4 Sieve	0	5

2.2 PLANTING SOIL MIXES

A. All existing vegetation shall be removed from stockpiles prior to blending. Uniformly mix ingredients by windrowing/tilling on an approved hard surface area or by alternately processing materials through a screening plant. All soil components and Organic Amendment shall be maintained moist, not wet, during mixing. Amendments shall not be added unless approved to extent and quantity by the Department and additional tests have been conducted to verify type and quantity of amendment is acceptable. Percentages of components are approximate, and will be verified upon completion of individual test results for components of the various mixes. Due to variability of soil materials, mix ratios may require adjustment and re-submittal at the expense of the Contractor.

B. After component percentages are determined by the Soil Scientist, each planting soil mix shall be tested for physical and chemical analysis. Component percentages may be modified at any time by the soil scientist dependent upon the results of testing of the various components or final blends.

C. Standard Planting Bed Soil

1. Standard Planting Bed Soil shall consist of approximately equal parts by volume of Imported Base Loam, Sand, Organic Amendment/Compost (1L:1S:1C) to create a uniform blend which meets the following requirements.

a. Gradation for material passing a Number 10 Sieve shall be achieved in the final mix.

	Percent Passing	
U.S. Sieve Size No.	Minimum	Maximum
10	100	
18	85	95
35	60	85
60	42	65
140	21	44
270	18	24
0.002 mm	2	4

b. Maximum size shall be one half-inch largest dimension. The maximum retained on the #10 sieve shall be 10% by weight of the total sample. Tests shall be by combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition.

c. The final mix shall have an organic content between 5 and 7 percent by weight.

d. Chemical analysis shall be undertaken for Phosphorus, Potassium, Calcium Magnesium, Aluminum, Iron, Manganese, Lead, Cation Exchange Capacity, Soluble Salts, acidity (pH) and buffer pH

D. Lightweight Planting Bed Soil

1. After approval of Standard Planting Bed Soil, Lightweight Planting Bed Soil shall be blended, consisting of 2 parts by volume Standard Planting Bed Soil with 1 part by volume Perlite.

a. The final mix shall have a hydraulic conductivity of not less that 2 inches per hour according to test procedure ASTM D5856-95 (2000) when compressed in a damp condition under a static load of 2,000 pounds per square foot.
b. The unit weight of the soil mix shall be not more than 55 pounds per cubic foot when tested according to ASTM Designation: E 2399 – 05, Standard Test Method for Maximum Media Density for Dead Load Analysis of Green Roof Systems.
c. If the requirements of 2.02 (C)(3) a and b are not met, additional Perlite shall be added to meet saturated hydraulic conductivity and saturated unit weight requirements.

PART 3 – EXECUTION

3.1 PRE-INSTALLATION EXAMINATION AND PREPARATION

A. Reference Other Sections as necessary.

B. Coordinate activities with other project contractors so that there is no soil disturbance from traffic or other construction activities subsequent to placement.

C. Pre-Installation Examination Required: The Contractor shall examine previous work, related work, and conditions under which this work is to be performed and shall notify Professional and Soil Scientist in writing of all deficiencies and conditions detrimental to the proper completion of this work. Beginning work means Contractor accepts substrates, previous work, and conditions. The Contractor shall not place any planting soil until all work in adjacent areas is complete and approved by the Department, the Professional and Soil Scientist.

D. Kickoff Meeting: At least 10 working days prior to the start of work, the contractor shall request a landscape construction kickoff meeting with the Department's representative, Professional, soil scientist and any other parties involved with landscape construction. The contractor must demonstrate familiarity with this Section 329113 Planting Soils, and other relevant sections of the construction documents. The contractor shall articulate the means and methods of soil blending, subgrade preparation, soil placement and other steps outlined in the Specification.

E. Do not proceed with the installation of Planting Soils until all utility work in the area has been installed.

F. Planting Soil Preparation: Refer to Section 329113, 2.2 for planting soil and mixtures. Examine soil and remove foreign materials, stones and organic debris over 1/2" in size. Remove all vegetation from stockpiles prior to blending. Mix-in fertilizers and amendments as required by tests and as approved by the Professional and Soil Scientist. All preparation and mixing shall be accomplished when the soil moisture content is compliant

with Section 329113, 1.6.H and at a moisture content approved by the Professional and Soil Scientist. If lime is to be added, it shall be mixed with dry soil before fertilizer is added and mixed.

3.2 EXCAVATION AND REMOVAL

A. Refer to Division 31 Earthwork

3.3 MIXING OF PLANTING SOIL MIXES

A. Soil blends shall be produced with equipment that blends together each component in a thorough and uniform manner. This may be accomplished by a minimum of three handling events on a hard surface area with earth moving equipment or by alternately passing soil components through a screener.

3.4 WORKING AROUND UTILITIES

A. Perform work in a manner that will protect utilities from damage. Hand excavate as required and provide adequate means of support and protection of utilities during soil installation operations. The Contractor shall repair all utilities damaged by soil operations at the Contractor's expense.

3.5 BACKFILLING OF HORTICULTURAL SOIL LAYERS

A. Soil Placement Preparation:

1. Verify that the plumbing and drainage have been installed and accepted.
2. Notify the Professional and Soil Scientist of soil placement operations at least seven calendar days prior to the beginning of work.
3. Verify that the on-structure systems are installed, inspected and written approval is obtained to begin installation of Planting Soils.
4. Do not proceed with the installation of Planting Soils, until all utility work in the area has been installed.
5. Protect adjacent walls, walks and utilities from damage or staining by the soil. Use plywood and/or plastic sheeting as directed to cover existing asphalt, concrete, metal and masonry work.

    a. Clean up any soil or dirt spilled on any paved surface, including at the end of each working day.
    b. Any damage to the paving or Professionalural work shall be repaired by the Contractor at the Contractor's expense.

3.6 OVER-STRUCTURE CONDITIONS

A. Soil over structure shall be installed only at the depth specified. Soil media shall be dispensed in a manner that will not suddenly increase load to structure below. It shall be immediately spread to specified thickness. Coordinate with general contractor, structural engineer, Professional, and Professional in locating loading extent and location to prevent overloading of structural members.

B.. After the drainage board has been installed and approved, install Calcined Diatomaceous Earth protection layer in thicknesses provided on the Plans. Planting Soil may be installed after approval of the Calcined Diatomaceous Earth protection layer.

C. Placement of Lightweight Planting Soils (Lightweight Planting Bed Soil and Lightweight Horticultural Subsoil:

1. Placement of Lightweight Planting Soils and plant stock shall be carried out simultaneously to prevent excessive traffic over soil lifts and to maintain the integrity of the soil layers. The contractor shall install plants simultaneously with the installation of the lower soil layers. The upper soil layers shall not be installed before all plants are installed and before the acceptance by the Professional and Soil Scientist.

    a. Place plantings in locations shown on the plans and at the proper elevations.

2. Lightweight Planting Soils shall be placed in lifts not to exceed 6 inches in thickness and compacted to meet minimum and maximum requirements as specified below:

    a. Lightweight Planting Soils shall be compressed by rolling or light tamping.
    b. Planting Soils shall **NOT** be compacted with vibratory equipment.
    c. Loosen and recompress soils that have become excessively compact as determined by the Professional or Soil Scientist.

3. In all cases, the soil being placed shall be in a damp condition. No wet soils shall be placed.
4. Prevention of compacted soils can be accomplished by beginning the work in corner, against walls, or the center of isolated beds, and progressing outwards towards the borders.
5. Planting Soils shall never be moved or worked when wet or frozen.
6. The Contractor shall place barricades or steel plates as required to prevent any unnecessary compaction of planting soil from vehicles, equipment, or pedestrian traffic.
7. After Planting Soils have been spread, they shall be carefully prepared by hand raking. Stones and debris over one inch in any direction shall be removed from the premises. Fine grade Lightweight Planting Beds to a smooth even surface with loose uniformly fine texture. Remove ridges and fill depressions as required to meet finish grades. Limit fine grading to areas that can be planted immediately after grading. Maintain the finished surfaces at the grades shown and spread additional soil to correct settlement or erosion. Surface drainage shall be maintained. Soil shall be damp and free from frost during fine grading operations.

3.7 PROTECTION

A. The Contractor shall protect landscape work and materials from damage due to landscape operations, operations by other Contractors or trespassers. Maintain protection during installation until acceptance. Treat, repair or replace damaged Planting Soil installation work immediately. Do not traverse placed horticultural soils with construction equipment without adequate protection.

B. Provide all means necessary, including fences, to protect all soil areas from compaction and contamination by trash, dust, debris, and any toxic material harmful to plants or humans after placement. Any area that becomes compacted, shall be de-compacted and tilled to the extent determined by the soil scientist and recompressed to the density ranges specified. Any uneven or settled areas shall be filled, re-graded and re-compacted to meet the requirements of this Specification. Soil that becomes contaminated shall be removed and replaced with specified soil material.

C. Apply filter fabric covering and planking or other engineering controls over soil to minimize compaction and collect dust and debris in any area where the Contractor must work after the installation of Planting Soil.

D. Till compacted Planting Soil and replace Planting Soil that has become contaminated as determined by the Professional. Planting Soil shall be tilled or replaced by the Contractor at no expense to the Department.

3.8 CLEAN-UP

A. During installation, keep all areas clean and the work area in an orderly condition.
B. Keep the site free of trash and debris at all times. Immediately dispose of wrappings or waste materials associated with products necessary for the completion of the work.
C. All trash and debris shall be kept in a central collection container. Do not bury trash and debris in back-fill.
D. Once installation is complete, remove any excess soil from pavements or embedded in fixtures.

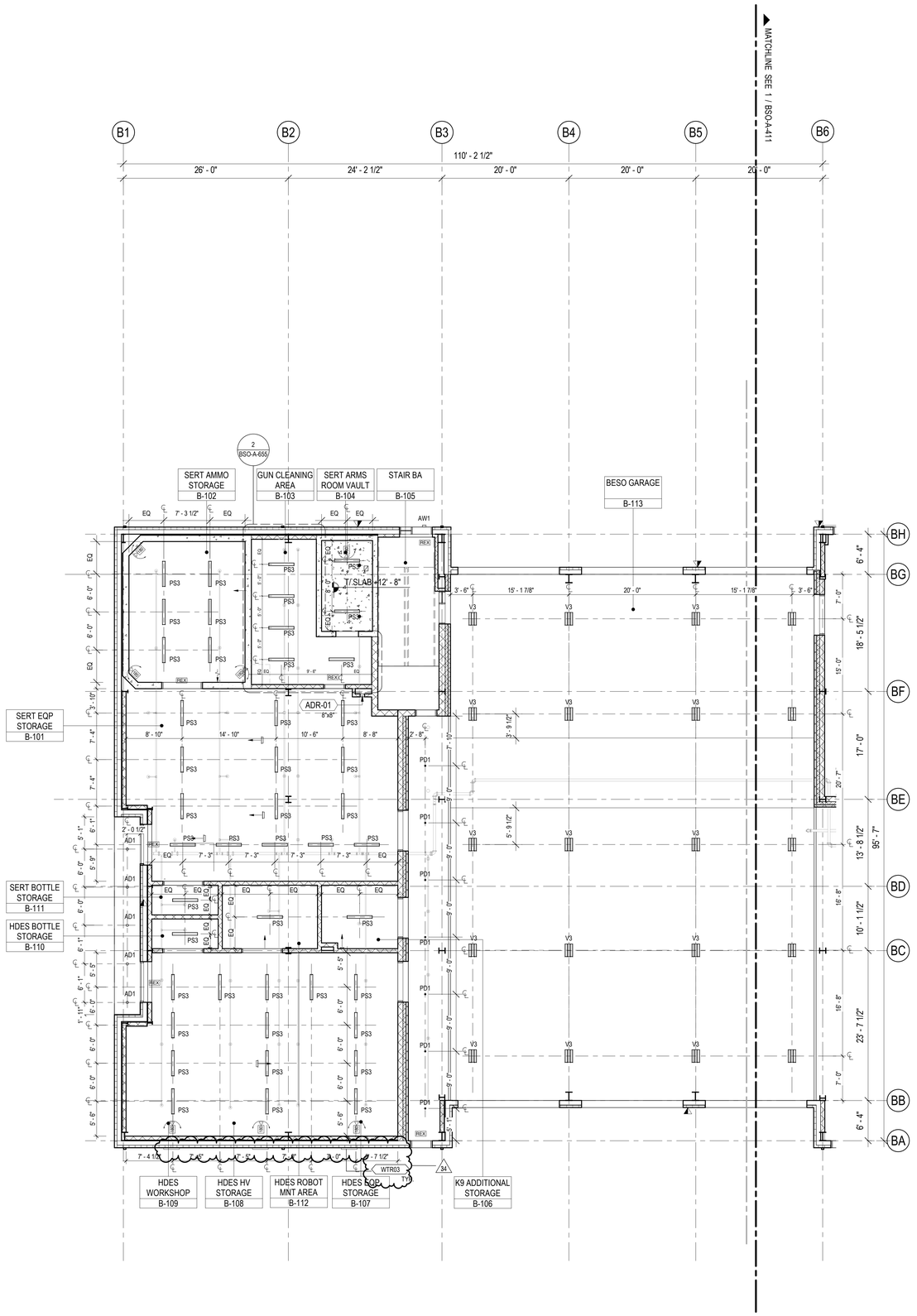
3.9 COORDINATION AND EXCESS MATERIALS

A. Coordinate activities with other project contractors so that there is no soil disturbance from traffic or other construction activities subsequent to placement.
B. Excess Planting Soil Mixtures and Materials: Remove the excess planting soil mixture and materials from the site at no additional cost to the Department unless other wise requested.

3.10 POST-INSTALLATION TESTING

A. Placed Planting Soils must be capable of infiltrating water at the minimum rate provided in this Specification for each type of planting soil.

END OF SECTION



DRAWING NOTES

KEYNOTES

ADR-01	083100 ACCESS DOORS

LEGEND

- SCOPE REFERENCE HATCH
- DRAWING NOTE
- CEILING MOUNTED DEVICES
- WALL MOUNTED DEVICES
- CONCEAL PENDANT SPRINKLER
- PENDANT SPRINKLER
- UPRIGHT SPRINKLER
- SIDE WALL SPRINKLER
- LINEAR DIFFUSER
- DIFFUSER
- EXHAUST
- ACCESS PANEL
- LIGHT FIXTURE
- LIGHT FIXTURE
- PROJECTOR
- PROJECTOR SCREEN
- EXIT SIGN
- SPEAKER
- PAGING SPEAKER
- MICROPHONE
- SMOKE DETECTOR
- FIRE ALARM SPEAKER/STROBE
- FIRE ALARM STROBE
- OCCUPANCY SENSOR
- VACANCY
- DAYLIGHT SENSOR
- SECURITY CAMERA
- WAP ABOVE CEILING
- WAP BELOW CEILING
- WOOD BAFFLE
- WALL CLOCK

GENERAL NOTES

1. REFER TO SHEET GEN-G-104 FOR MATERIAL CODES LIST & SPEC SECTION REFERENCES
2. REFER TO LS SERIES CODE ANALYSIS PLANS FOR REQUIRED WALL FIRE RATINGS
3. REFER TO 500 SERIES FOR EXTERIOR ENCLOSURE INFORMATION
4. RCPS ARE CUT 8' -0" AFF TYP.
5. ALL CEILING HEIGHTS ARE AS INDICATED ON RCP
6. ALL DIFFUSERS, REGISTERS AND GRILLES ARE BY THE .2 HVAC CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY.
7. ALL PLUMBING FIXTURES, SPRINKLERS, FHCS, AND STANDPIPES AND RELATED EQUIPMENT ARE BY THE .3 PLUMBING CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY.
8. ALL LIGHTS, LIGHTING CONTROL DEVICES, FIRE ALARM DEVICES, AV/IT AND SECURITY DEVICES ARE BY THE .4 ELECTRICAL CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY.
9. REFER TO ELECTRICAL, IT DRAWINGS AND LIGHTING FIXTURE SCHEDULE FOR LIGHTING INFORMATION
10. REFER TO ELECTRICAL, AV, IT, AND SECURITY DOCUMENTS FOR FURTHER INFORMATION ABOUT CEILING MOUNTED DEVICES.
11. ALL FIXTURES LOCATED WITHIN ACT TILE TO BE CENTERED WITHIN TILE.
12. REFER TO MECHANICAL DRAWINGS FOR HVAC DIFFUSER INFORMATION.
13. ALL EXPOSED AFS INDICATED ON THE RCPs IS TO BE 1.5" THICK ON UNDERSIDE OF METAL DECKING AND EXPOSED BEAMS, UNLESS NOTED OTHERWISE.
14. ALL EXPOSED CEILINGS IN BOH AND MEP SPACES TO BE PAINTED ONLY.
15. SOME TYPICAL ENLARGEMENTS IN 600 SERIES APPLY TO MULTIPLE SIMILAR ROOMS.

GENERAL NOTES ON EXPOSED CEILINGS

1. ALL NON CLT EXPOSED CEILINGS AND/OR ACOUSTICAL FINISHES TO BE PAINTED TO MATCH PT-05 U.O.N.
2. ADJACENT SURFACES SHOULD BE PROTECTED DURING THE APPLICATION OF SPRAY-ON FIRE PROOFING, PAINT AND/OR ACOUSTICAL FINISH.
3. ALL PAINT, FINISH APPLICATIONS AND TOUCH UP SHOULD BE CONSISTENT THROUGHOUT, AND REVIEWED BY THE ARCHITECT AND OWNER.
4. IT AND MEP SYSTEM LAYOUTS, SEAM LOCATIONS, HANGER DETAILS AND LOCATIONS SHOULD TO BE COORDINATED ON SHOP DRAWINGS FOR. REVIEW AND APPROVAL BY THE ARCHITECT.
5. ALL DUCTWORKS AND CONDUITS IN EXPOSED CEILINGS SHOULD BE FREE OF MARKINGS, TAGS, STICKERS AND IMPERFECTIONS, AND PROVIDED WITH A FINISH TO BE COMPATIBLE WITH A FINAL PAINT COATING ON SITE.
6. EXPOSED HOT WATER PIPING AND INSULATION IN EXPOSED CEILINGS SHOULD BE JACKETED WITH STAINLESS STEEL SHEET METAL, PVC, OR APPROVED EQUAL.
7. DUCTWORKS IN EXPOSED CEILINGS SHOULD HAVE INTERNAL ACOUSTICAL AND THERMAL LINING AND NO EXTERNAL INSULATION.
8. ALL MEP ELEMENTS AND ACCESSORIES SHOULD HAVE A FINAL PAINT COAT ON SITE.

CEILING HATCHES

- EXPOSED CEILING U.O.N.
- GYPSUM CEILING (092116)
- ACOUSTIC CEILING TILES (095100)
- WOOD CEILING (064000)
- SPRAY ACOUSTICAL TREATMENT (092100)

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 — 1

IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

TACTICAL TRAINING DESIGN
Tactical Design North
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AV/IT ENGINEER
Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER
Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING
CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER
Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT
Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT
Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

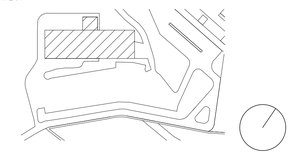
LANDSCAPE
Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING
MCLA
1000 Patomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

COST ESTIMATING
AECOM
1700 Market St, Suite 1600, Philadelphia, PA 19103

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
34	21 JUL 2023	ADDENDUM #34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

REGISTERED ARCHITECT
COMMONWEALTH OF PENNSYLVANIA
ENC. NO. RA-000000

SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

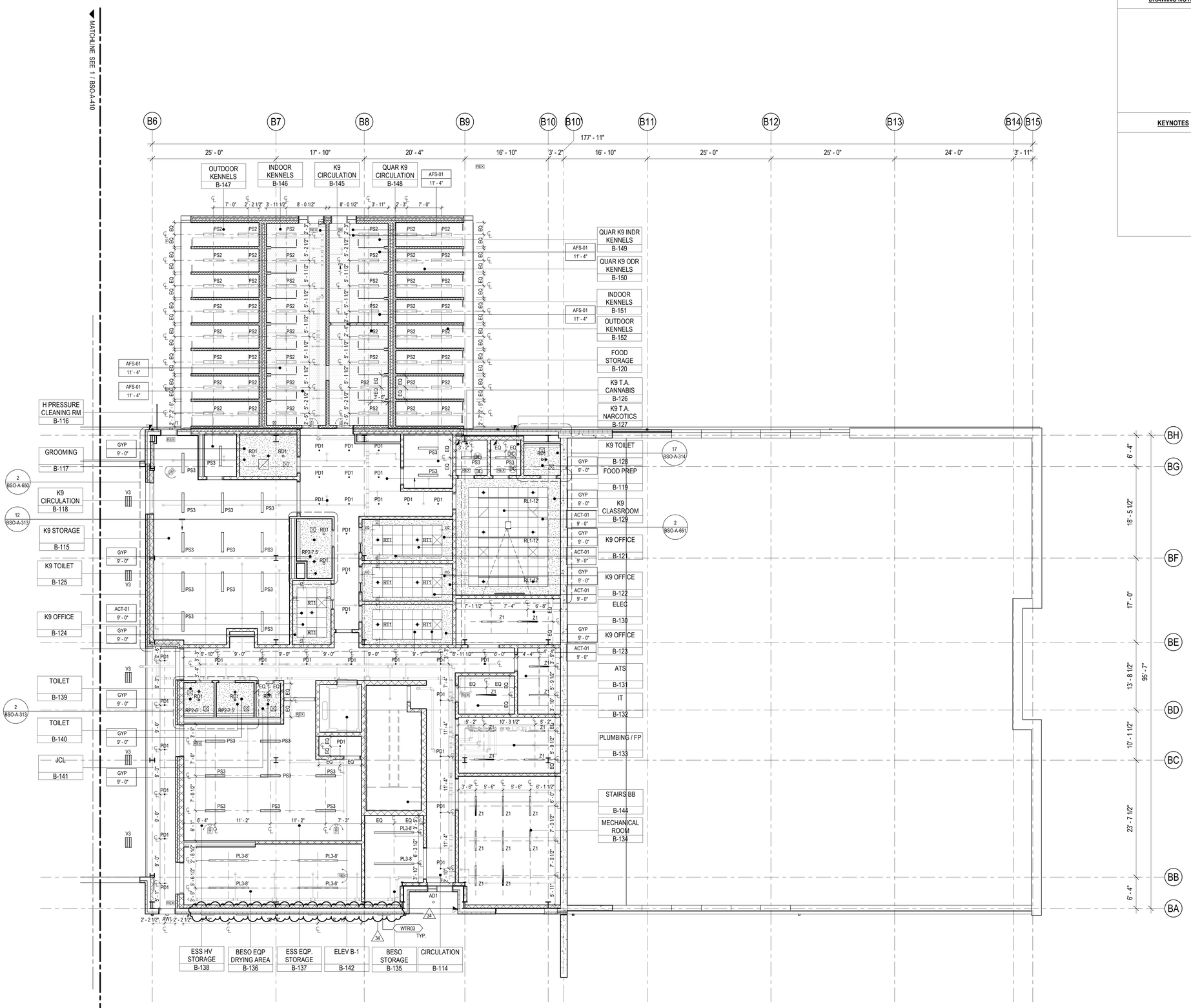
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

RCP PART PLAN A - LEVEL 1

SHEET No.
BSO-A-410

DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED

1 REFLECTED CEILING PART PLAN A - LEVEL 1
SCALE: 1/8" = 1'-0" 0 4'-0" 8'-0" 16'-0" 32'-0"



1 REFLECTED CEILING PART PLAN B - LEVEL 1

SCALE: 1/8" = 1'-0" 0 4'-0" 8'-0" 16'-0" 32'-0"

DRAWING NOTES

KEYNOTES

LEGEND

- SCOPE REFERENCE HATCH
- XX DRAWING NOTE
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- XX WALL MOUNTED DEVICES
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- PENDANT SPRINKLER
- UPRIGHT SPRINKLER
- SIDE WALL SPRINKLER
- LINEAR DIFFUSER
- DIFFUSER
- EXHAUST
- ACCESS PANEL
- XX1 LIGHT FIXTURE
- XX1 LIGHT FIXTURE
- P PROJECTOR
- PROJECTOR SCREEN
- EXIT SIGN
- S SPEAKER
- PA PAGING SPEAKER
- M MICROPHONE
- S SMOKE DETECTOR
- FIRE ALARM SPEAKER/STROBE
- FIRE ALARM STROBE
- OS OCCUPANCY SENSOR
- VS VACANCY
- DS DAYLIGHT SENSOR
- 180 SECURITY CAMERA
- WAP WAP ABOVE CEILING
- WAP WAP BELOW CEILING
- WOOD BAFFLE
- WALL CLOCK

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8. ALL MEP ELEMENTS AND ACCESSORIES SHOULD HAVE A FINAL PAINT COAT ON SITE.

CEILING HATCHES

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- GYPSUM CEILING (092116)
- ACOUSTIC CEILING TILES (095100)
- WOOD CEILING (064000)
- SPRAY ACOUSTICAL TREATMENT (092100)

VERIFY SCALE

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TACTICAL TRAINING DESIGN
Tactical Design North
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
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Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

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MCLA
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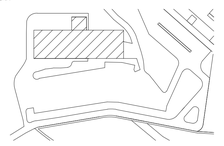
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

COST ESTIMATING
AECOM
1700 Market St, Suite 1600, Philadelphia, PA 19103

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
34	21 JUL 2023	ADDENDUM #34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

REGISTERED ARCHITECT COMMONWEALTH OF PENNSYLVANIA — SIGNATURE — DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

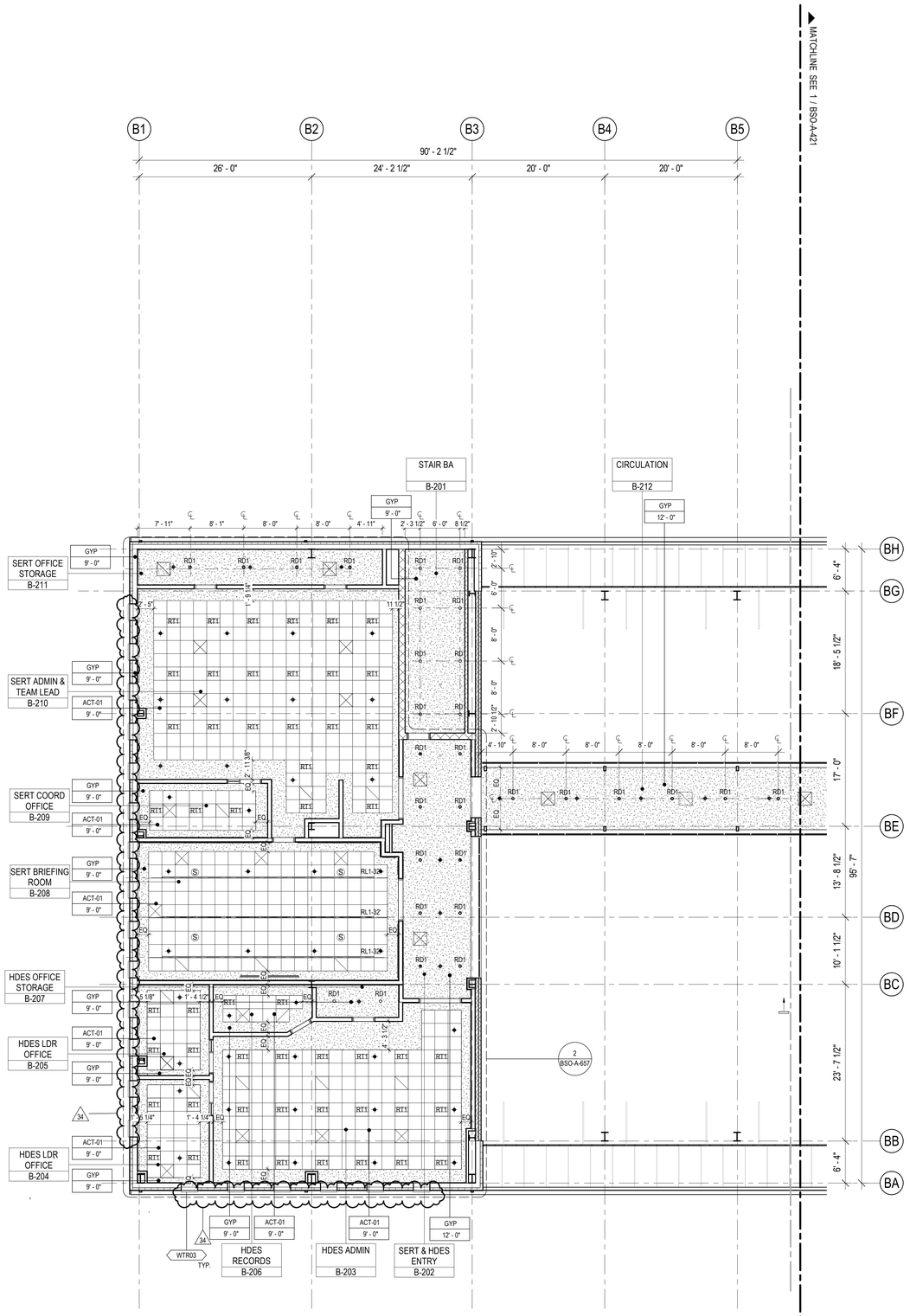
Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

RCP PART PLAN B - LEVEL 1

SHEET No.
BSO-A-411

DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



1 REFLECTED CEILING PART PLAN A - LEVEL 2

SCALE: 1/8" = 1'-0" 0 4'-0" 8'-0" 16'-0" 32'-0"

DRAWING NOTES

KEYNOTES

LEGEND

- SCOPE REFERENCE HATCH
- XX DRAWING NOTE
- XX CEILING MOUNTED DEVICES
- XX WALL MOUNTED DEVICES
- CONCEAL PENDANT SPRINKLER
- PENDANT SPRINKLER
- UPRIGHT SPRINKLER
- SIDE WALL SPRINKLER
- LINEAR DIFFUSER
- DIFFUSER
- EXHAUST
- ACCESS PANEL
- XX1 LIGHT FIXTURE
- XX1 LIGHT FIXTURE
- P PROJECTOR
- PROJECTOR SCREEN
- EXIT SIGN
- S SPEAKER
- PA PAGING SPEAKER
- M MICROPHONE
- S SMOKE DETECTOR
- FIRE ALARM SPEAKER/STROBE
- FIRE ALARM STROBE
- OS OCCUPANCY SENSOR
- VS VACANCY
- DS DAYLIGHT SENSOR
- SECURITY CAMERA
- WAP WAP ABOVE CEILING
- WAP WAP BELOW CEILING
- WOOD BAFFLE
- WALL CLOCK

GENERAL NOTES

1. REFER TO SHEET GEN-G-104 FOR MATERIAL CODES LIST & SPEC SECTION REFERENCES
2. REFER TO LS SERIES CODE ANALYSIS PLANS FOR REQUIRED WALL FIRE RATINGS
3. REFER TO 500 SERIES FOR EXTERIOR ENCLOSURE INFORMATION
4. RCPS ARE CUT 8' -0" AFF TYP.
5. ALL CEILING HEIGHTS ARE AS INDICATED ON RCP
6. ALL DIFFUSERS, REGISTERS AND GRILLES ARE BY THE .2 HVAC CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY.
7. ALL PLUMBING FIXTURES, SPRINKLERS, FHCS, AND STANDPIPES AND RELATED EQUIPMENT ARE BY THE .3 PLUMBING CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY.
8. ALL LIGHTS, LIGHTING CONTROL DEVICES, FIRE ALARM DEVICES, AV/IT AND SECURITY DEVICES ARE BY THE .4 ELECTRICAL CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY.
9. REFER TO ELECTRICAL IT DRAWINGS AND LIGHTING FIXTURE SCHEDULE FOR LIGHTING INFORMATION
10. REFER TO ELECTRICAL, AV, IT, AND SECURITY DOCUMENTS FOR FURTHER INFORMATION ABOUT CEILING MOUNTED DEVICES.
11. ALL FIXTURES LOCATED WITHIN ACT TILE TO BE CENTERED WITHIN TILE.
12. REFER TO MECHANICAL DRAWINGS FOR HVAC DIFFUSER INFORMATION.
13. ALL EXPOSED AFS INDICATED ON THE RCPs IS TO BE 1.5" THICK ON UNDERSIDE OF METAL DECKING AND EXPOSED BEAMS, UNLESS NOTED OTHERWISE.
14. ALL EXPOSED CEILINGS IN BOH AND MEP SPACES TO BE PAINTED ONLY.
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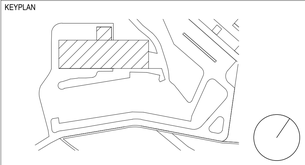

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SIGNATURE DATE

ARCHITECT
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

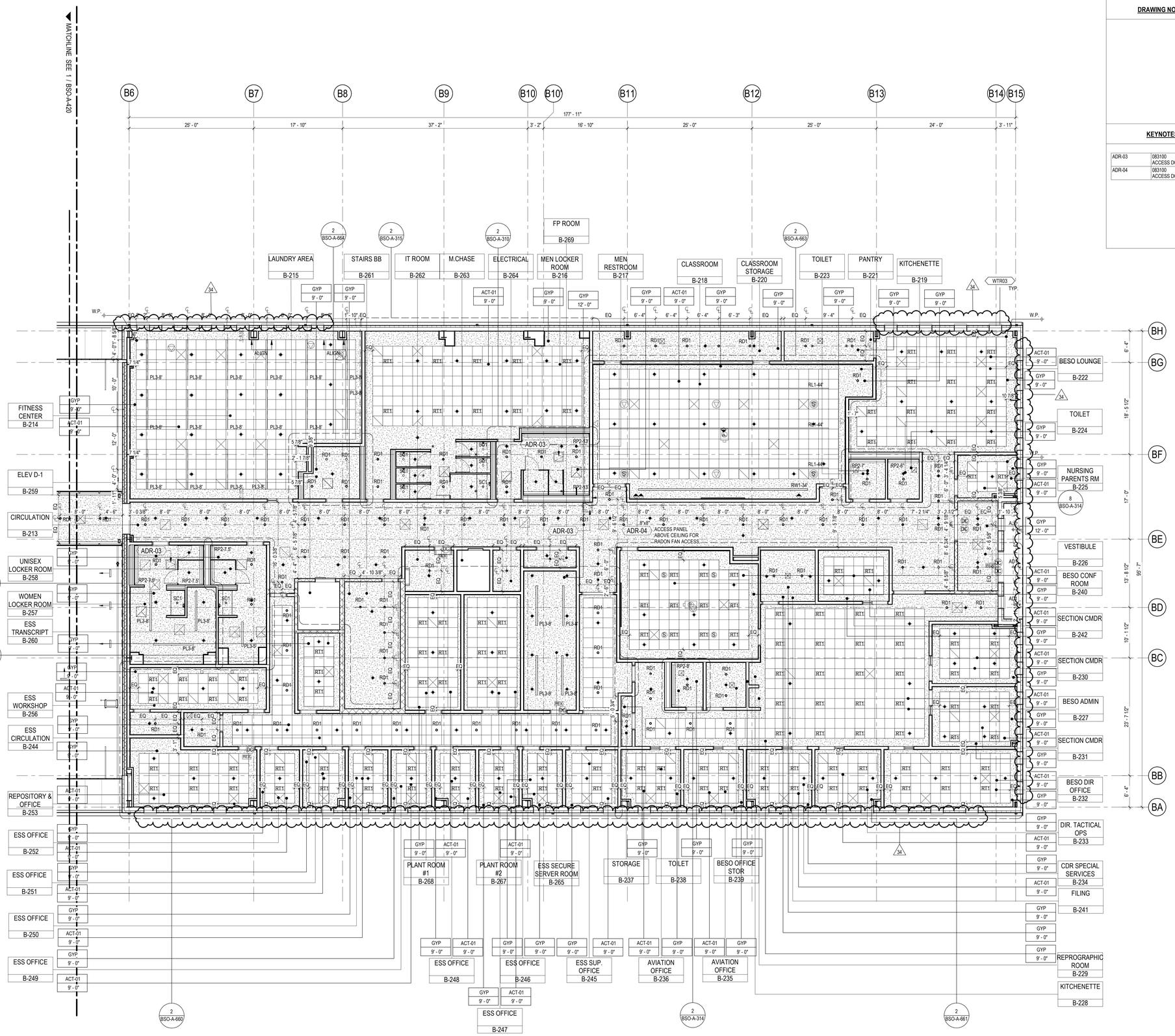
Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

RCP PART PLAN A - LEVEL 2

SHEET No. BSO-A-420

DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



1 REFLECTED CEILING PART PLAN B - LEVEL 2

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

DRAWING NOTES

KEYNOTES

ADR-03	083100 ACCESS DOORS
ADR-04	083100 ACCESS DOORS

LEGEND

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- (XX) WALL MOUNTED DEVICES
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- EXHAUST
- ACCESS PANEL
- XX1 LIGHT FIXTURE
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- FIRE ALARM STROBE
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- (VS) VACANCY
- (DS) DAYLIGHT SENSOR
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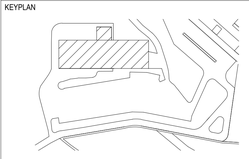

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SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

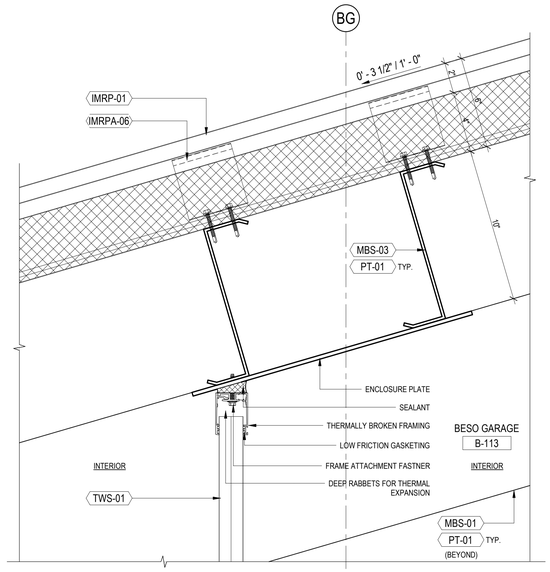
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

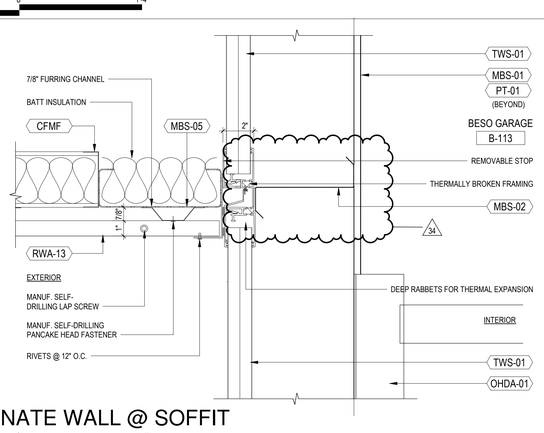
RPC PART PLAN B - LEVEL 2

SHEET No.			
BSO-A-421			
DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



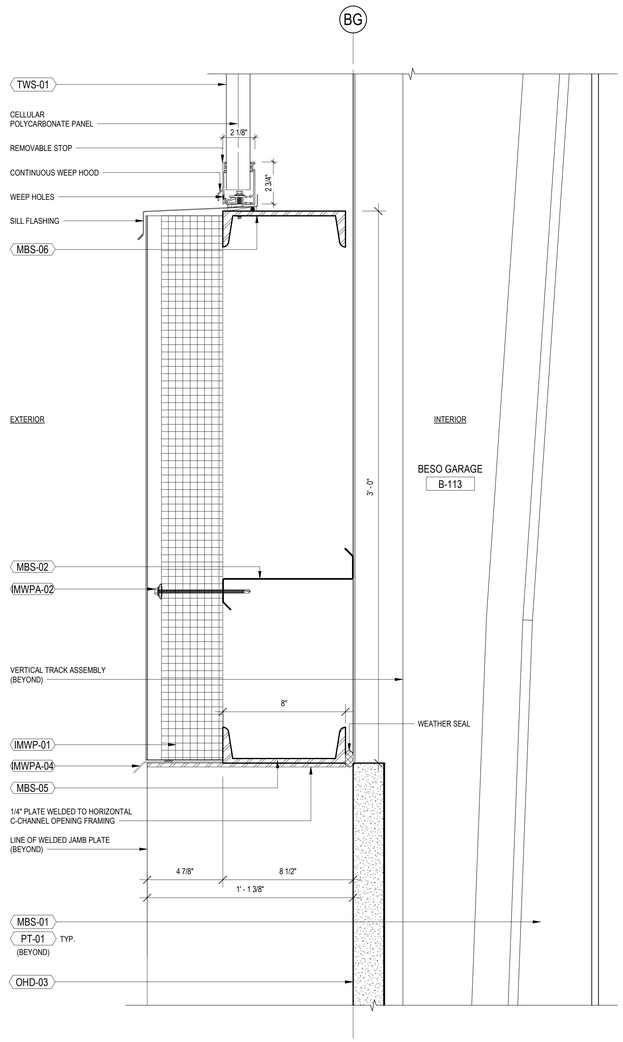
5 DETAIL- POLYCARBONATE WALL @ ROOF PANELS

SCALE: 3" = 1'-0" 0 2" 4" 8" 1'-4"



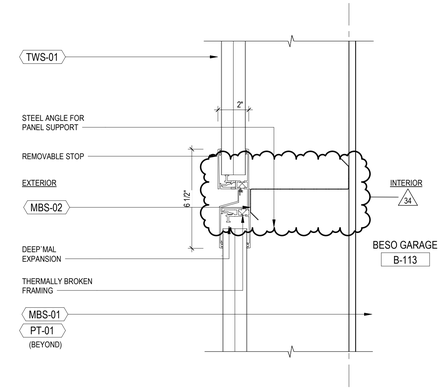
4 DETAIL - POLYCARBONATE WALL @ SOFFIT

SCALE: 3" = 1'-0" 0 2" 4" 8" 1'-4"



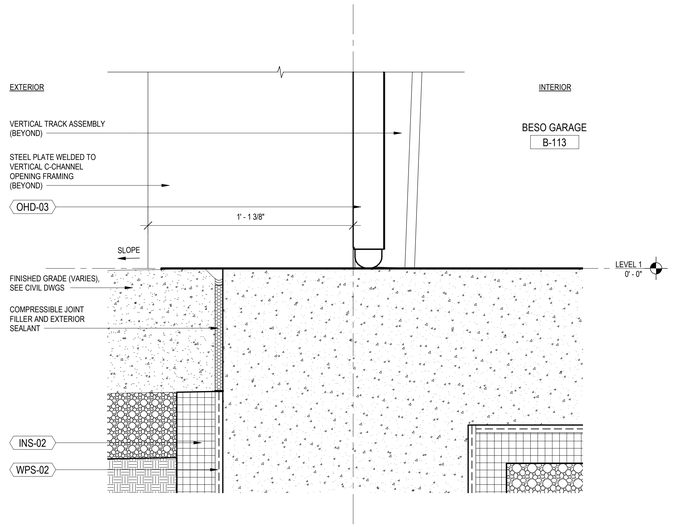
2 DETAIL - GARAGE DOOR HEAD

SCALE: 3" = 1'-0" 0 2" 4" 8" 1'-4"



3 DETAIL - POLYCARBONATE PANEL STACKING

SCALE: 3" = 1'-0" 0 2" 4" 8" 1'-4"



1 DETAIL- GARAGE DOOR BASE

SCALE: 3" = 1'-0" 0 2" 4" 8" 1'-4"

KEYNOTES

CFMF	054000 COLD-FORMED METAL FRAMING
IMRP-01	074113 4" INSULATED METAL ROOF PANELS - DARK GRAY
IMRPA-06	074113 MANUFACTURER'S STANDING SEAM ROOF PANEL CLIP
IMWP-01	074213 4" INSULATED METAL WALL PANELS - DARK GRAY
IMWPA-02	074213 MANUFACTURER'S THRU-PANEL WALL FASTENER W/ WASHER INTO SUPPORT MEMBER
IMWPA-04	074213 DRIP FLASHING
INS-02	072100 XPS BOARD INSULATION 25 PSI
MBS-01	133419 PRIMARY STRUCTURAL FRAMING (BY PEMB FABRICATOR / INSTALLER
MBS-02	133419 SECONDARY WALL FRAMING - 8" TO 8 1/2" Z-GIRTS (BY PEMB FABRICATOR / INSTALLER)
MBS-03	133419 Z-GIRT ROOF PURLINS (10") (BY PEMB FABRICATOR / INSTALLER)
MBS-05	133419 STEEL FRAMED OPENING - HEADER
MBS-06	133419 STEEL FRAMED OPENING - SILL
OHD-03	083300 HIGH-LIFT TRACK SECTIONAL GARAGE DOOR
OHDA-01	083300 OVERHEAD GARAGE DOORS TRACK
PT-01	099100 PAINT FINISH, WHITE
RWA-13	077000 12" WIDE METAL SOFFIT PANEL
TWS-01	084500 INTERCONNECTING POLYCARBONATE WALL SYSTEM
WPS-02	071300 FOUNDATION WALL SHEET WATERPROOFING

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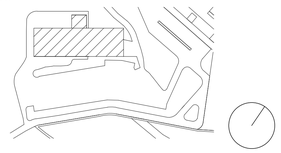


NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
34	21 JUL 2023	ADDENDUM #34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

REGISTERED ARCHITECT COMMONWEALTH OF PENNSYLVANIA ENT. NO. RA-000000

SIGNATURE DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1

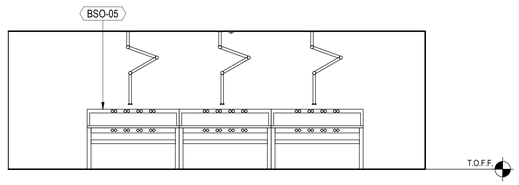
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

EXTERIOR SECTION DETAILS

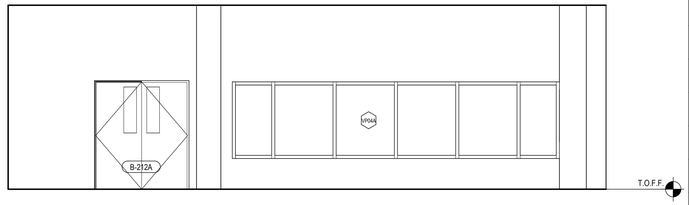
SHEET No. BSO-A-520

DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



10 ESS WORKSHOP - NORTH
SCALE: 1/4" = 1'-0"

8 ESS WORKSHOP - EAST
SCALE: 1/4" = 1'-0"



6 SERT & HDES ENTRY - EAST
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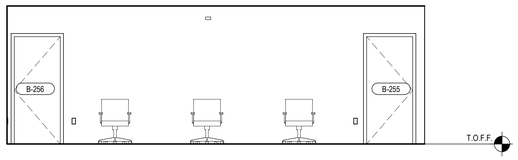
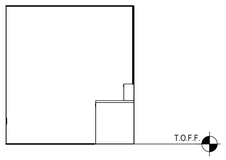
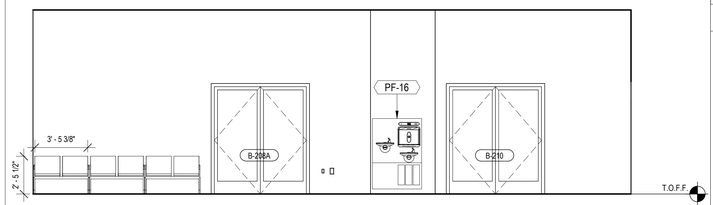


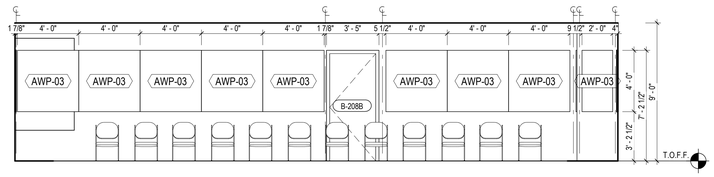
9 ESS WORKSHOP - SOUTH
SCALE: 1/4" = 1'-0"



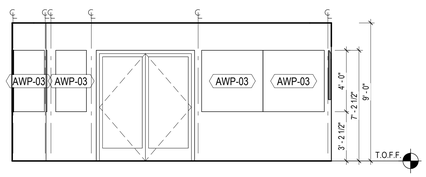
7 ESS WORKSHOP - WEST
SCALE: 1/4" = 1'-0"



5 SERT & HDES ENTRY - WEST
SCALE: 1/4" = 1'-0"



4 SERT BRIEFING ROOM - NORTH
SCALE: 1/4" = 1'-0"



2 SERT BRIEFING ROOM - EAST
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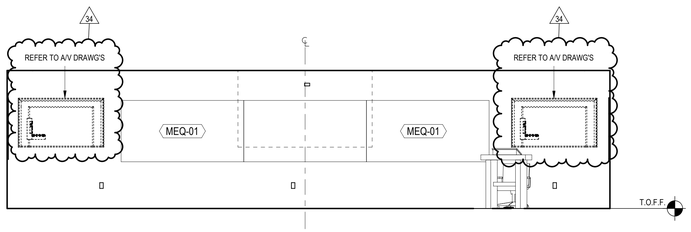
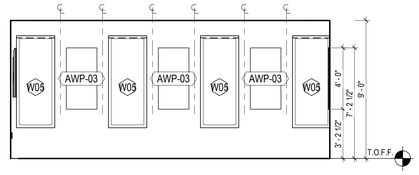


3 SERT BRIEFING ROOM - SOUTH
SCALE: 1/4" = 1'-0"



1 SERT BRIEFING ROOM - WEST
SCALE: 1/4" = 1'-0"

LEGEND

FIRE RATINGS

- 1/2 HOUR FIRE RATING
- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING

XX DRAWING NOTE

1	SWITCH	SINGLE 1A	DOUBLE 1B	QUAD 1C	CONTROL PANEL 1D
2	ELECTRICAL OUTLET	SINGLE 2A	DUPLEX 2B	QUAD 2C	
3	DATA OUTLET	2 PORT 3A	6 PORT 3B	AV 3C	
4	FIRE ALRAM STROBE	4			
5	THERMOSTAT	5			
6	WALL CLOCK	6			
7	PULL STATION	7			
8	SECURITY CAMERA	8			
9	CARD READER	9			
10	ADA PUSH BOTTON	10			
11	FLOOR BOX	11A	FLEX FLOOR MOUNTED 11B	SAT FLOOR MOUNTED 11C	MONUMENT MOUNTED 11D
12	WAP	12			

GENERAL NOTES

1. ALL DIFFUSERS, REGISTERS AND GRILLES ARE BY THE .2 HVAC CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY, UNO.
2. ALL PLUMBING FIXTURES, SPRINKLERS, FHCS, AND STANDPIPES AND RELATED EQUIPMENT ARE BY THE .4 PLUMBING CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY, UNO.
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4. REFERENCE GEN-G-103 FOR STANDARD MOUNTING HEIGHTS AND DETAILS
5. REFERENCE ALSO POWER, COMMUNICATIONS AND FINISH PLANS AND GEN-G-103 FOR STANDARD DEVICE MOUNTING ARRANGEMENTS, ALIGNMENTS AND DIMENSIONAL INFORMATION.
6. ALIGN WALL TILE JOINTS TO FLOOR TILE JOIN LINES.
7. CONFIRM FINIAL TILE JOINT LAYOUT WITH PROFESSIONAL PRIOR TO INSTALLATION.

DRAWING NOTES

KEYNOTES

AWP-03	097723 ACOUSTIC WALL PANEL, HIGH IMPACT
BSO-05	119020 ESS WORKBENCH
MEQ-01	117710 WHITE BOARD
PF-16	224710 DRINKING FOUNTAINS

VERIFY SCALE

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0 1

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TACTICAL TRAINING DESIGN
Tactical Design North
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
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STRUCTURAL ENGINEER
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250 Greenwich St, New York, NY 10007

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CIVIL ENGINEER
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SIGNAGE CONSULTANT
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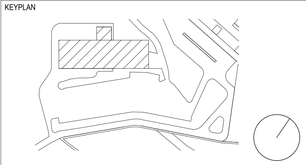
COST ESTIMATING
AECOM
1700 Market St, Suite 1600, Philadelphia, PA 19103

KEYPLAN



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SIGNATURE DATE

ARCHITECT
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250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

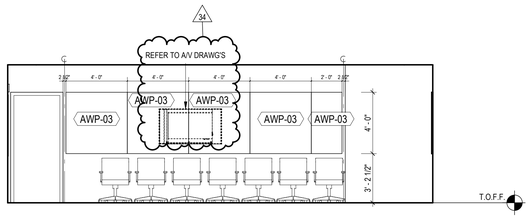
Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

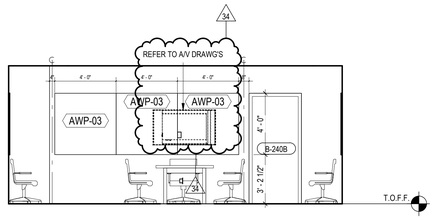
INTERIOR ELEVATIONS - SERT & HDES ENTRY/ BESO AREA / SERT BRIEFING ROOM

SHEET No. BSO-A-658

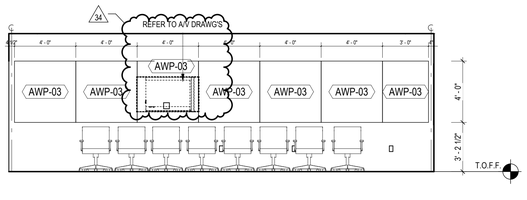
DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



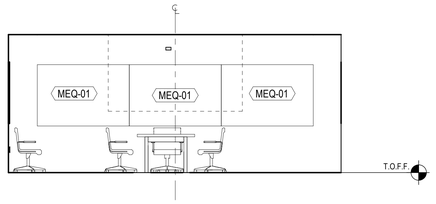
8 BESO CONF ROOM - NORTH
SCALE: 1/4" = 1'-0"



4 BESO CONF ROOM - EAST
SCALE: 1/4" = 1'-0"



7 BESO CONF ROOM - SOUTH
SCALE: 1/4" = 1'-0"



3 BESO CONF ROOM - WEST
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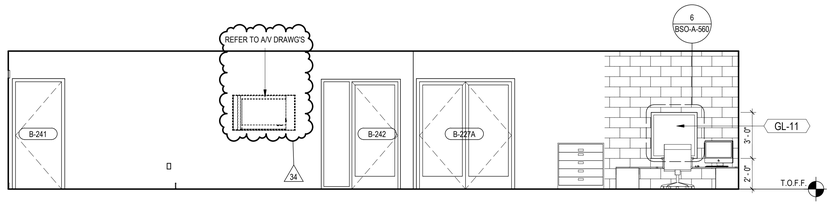
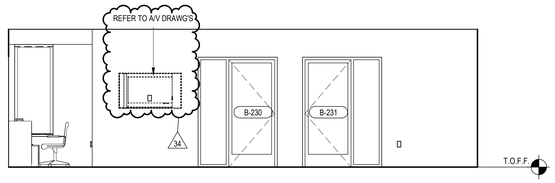
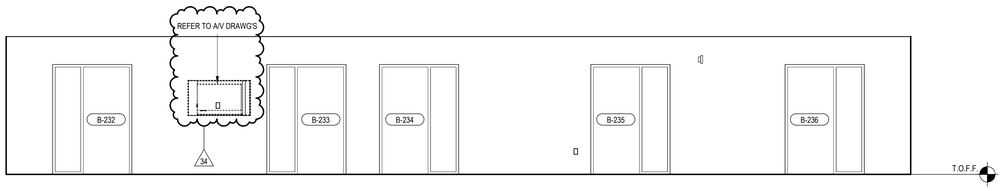


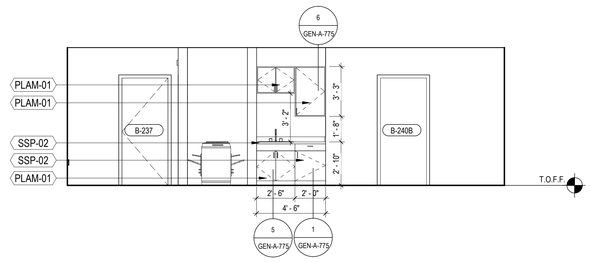
6 BESO ADMIN - NORTH
SCALE: 1/4" = 1'-0"



2 BESO ADMIN - EAST
SCALE: 1/4" = 1'-0"



5 BESO ADMIN - SOUTH
SCALE: 1/4" = 1'-0"



1 BESO ADMIN - WEST
SCALE: 1/4" = 1'-0"

LEGEND

FIRE RATINGS

- 1/2 HOUR FIRE RATING
- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING
- XX DRAWING NOTE

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DRAWING NOTES

KEYNOTES

AWP-03	097723 ACOUSTIC WALL PANEL, HIGH IMPACT
GL-11	088856 IMPACT RESISTANT GLASS
MEQ-01	117710 WHITE BOARD
PLAM-01	064000 PLASTIC LAMINATE, WHITE
SSP-02	064000 SOLID SURFACE - DARK GRAY

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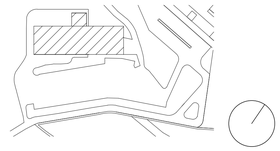
KEYPLAN



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SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

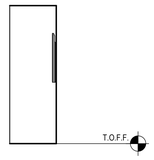
Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

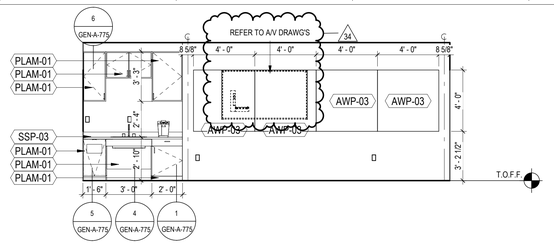
INTERIOR ELEVATION - BESO ADMIN / CONF ROOM

SHEET No. BSO-A-662

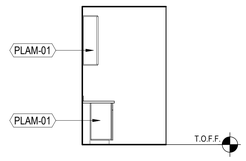
DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



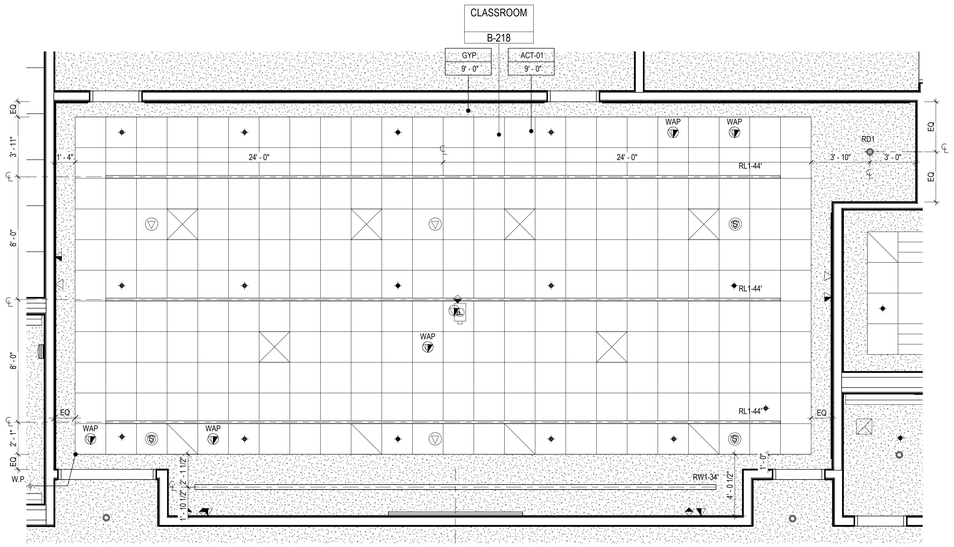
9 CLASSROOM W/ KITCHENETTE - EAST 2
SCALE: 1/4" = 1'-0"



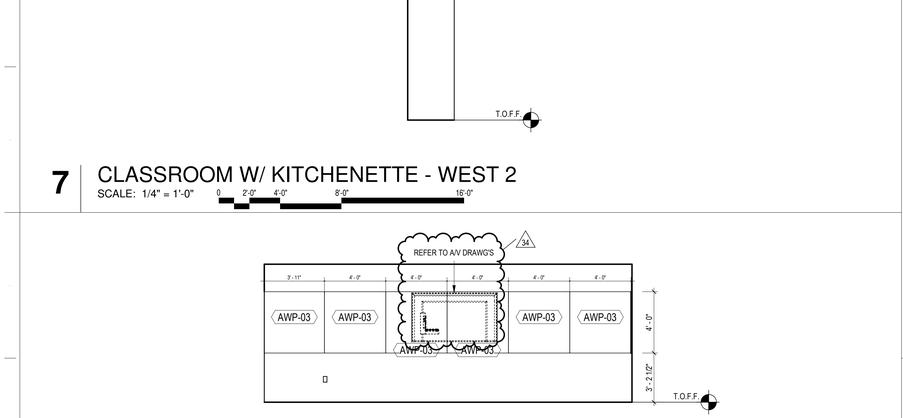
3 CLASSROOM W/ KITCHENETTE - EAST
SCALE: 1/4" = 1'-0"



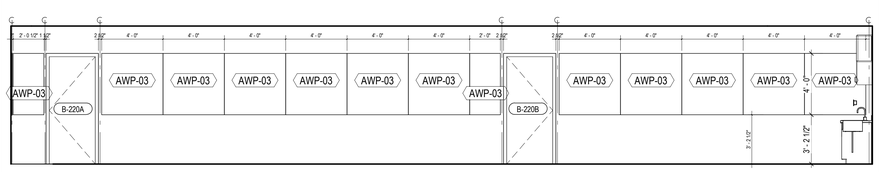
8 CLASSROOM W/ KITCHENETTE - SOUTH 2
SCALE: 1/4" = 1'-0"



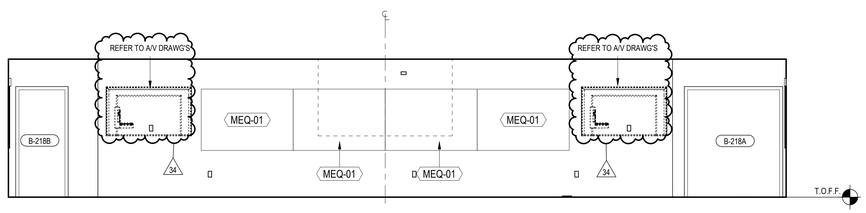
2 RCP - CLASSROOM W/ KITCHENETTE
SCALE: 1/4" = 1'-0"



6 CLASSROOM W/ KITCHENETTE - WEST
SCALE: 1/4" = 1'-0"



5 CLASSROOM W/ KITCHENETTE - NORTH
SCALE: 1/4" = 1'-0"



4 CLASSROOM W/ KITCHENETTE - SOUTH
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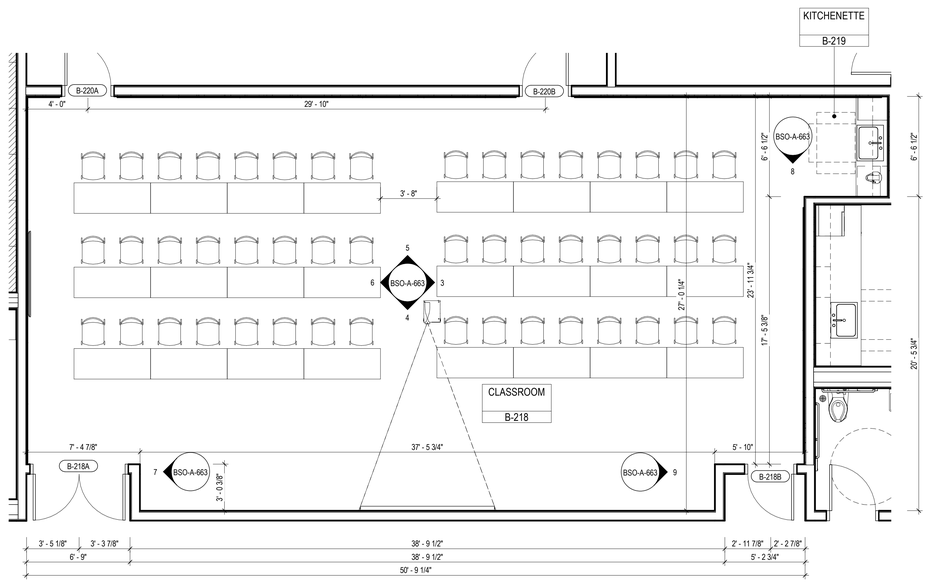

1 PLAN - CLASSROOM W/ KITCHENETTE
SCALE: 1/4" = 1'-0"

KEYNOTES

AWP-03	097723 ACOUSTIC WALL PANEL, HIGH IMPACT
MEQ-01	117710 WHITE BOARD
PLAM-01	064000 PLASTIC LAMINATE, WHITE

LEGEND

FIRE RATINGS

- 1/2 HOUR FIRE RATING
- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING

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7	PULL STATION	7			
8	SECURITY CAMERA	8			
9	CARD READER	9			
10	ADA PUSH BOTTON	10			
11	FLOOR BOX	11A	FLR MOUNTED 11B	DET MOUNTED 11C	DEVICE MOUNTED 11D
12	WAP	12			

RCP LEGEND

- CONCEAL PENDANT SPRINKLER
- PENDANT SPRINKLER
- UPRIGHT SPRINKLER
- SIDE WALL SPRINKLER
- LINEAR DIFFUSER
- DIFFUSER
- EXHAUST
- ACCESS PANEL
- XX1 LIGHT FIXTURE
- XX1 LIGHT FIXTURE
- (P) PROJECTOR
- PROJECTOR SCREEN
- EXIT SIGN
- (S) SPEAKER
- (PA) PAGING SPEAKER
- (M) MICROPHONE
- (S) SMOKE DETECTOR
- FIRE ALARM SPEAKER/STROBE
- FIRE ALARM STROBE
- (OS) OCCUPANCY SENSOR
- (VS) VACANCY
- (DS) DAYLIGHT SENSOR
- (180) SECURITY CAMERA
- WAP WAP ABOVE CEILING
- WAP WAP BELOW CEILING
- WOOD BAFFLE
- WALL CLOCK

GENERAL NOTES

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6. ALIGN WALL TILE JOINTS TO FLOOR TILE JOIN LINES.
7. CONFIRM FINAL TILE JOINT LAYOUT WITH PROFESSIONAL PRIOR TO INSTALLATION.
8. 5% OF LOCKERS SHALL BE ACCESSIBLE

DRAWING NOTES

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

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COST ESTIMATING
AECOM
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KEYPLAN

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
34	21 JUL 2023	ADDENDUM #34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

REGISTERED ARCHITECT COMMONWEALTH OF PENNSYLVANIA ENG. No.

SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

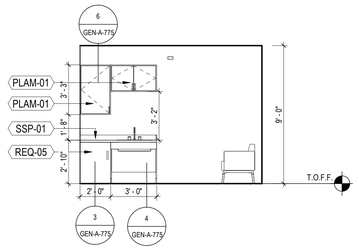
Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

INTERIOR PLANS / RCP AND ELEVATIONS - CLASSROOM

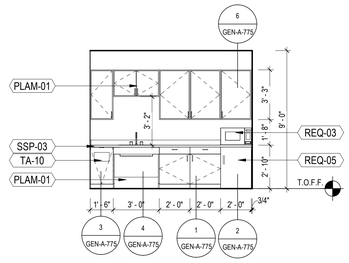
SHEET No. BSO-A-663

DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



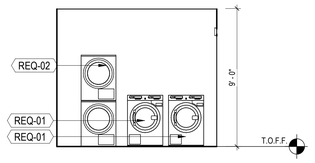
11 MOTHERS ROOM - NORTH

SCALE: 1/4" = 1'-0" 0 2'-0" 4'-0" 8'-0" 16'-0"



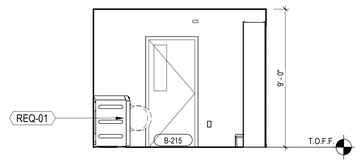
9 BESO LOUNGE - ELEVATION

SCALE: 1/4" = 1'-0" 0 2'-0" 4'-0" 8'-0" 16'-0"



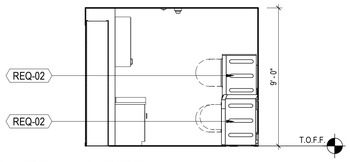
6 LAUNDRY AREA - EAST

SCALE: 1/4" = 1'-0" 0 2'-0" 4'-0" 8'-0" 16'-0"



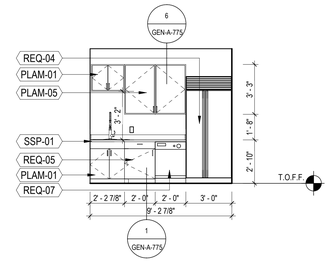
5 LAUNDRY AREA - SOUTH

SCALE: 1/4" = 1'-0" 0 2'-0" 4'-0" 8'-0" 16'-0"



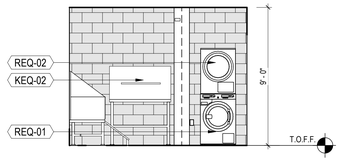
4 LAUNDRY AREA - NORTH

SCALE: 1/4" = 1'-0" 0 2'-0" 4'-0" 8'-0" 16'-0"



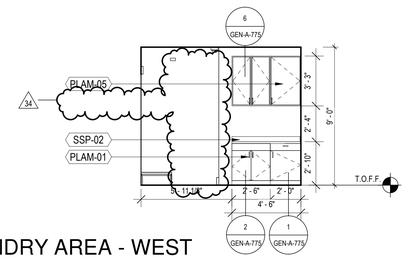
10 FOOD PREP - ELEVATION

SCALE: 1/4" = 1'-0" 0 2'-0" 4'-0" 8'-0" 16'-0"



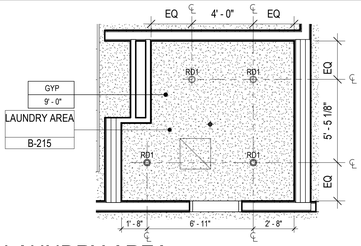
8 GROOMING - ELEVATION

SCALE: 1/4" = 1'-0" 0 2'-0" 4'-0" 8'-0" 16'-0"



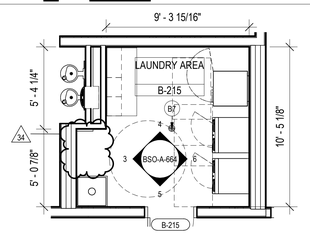
3 LAUNDRY AREA - WEST

SCALE: 1/4" = 1'-0" 0 2'-0" 4'-0" 8'-0" 16'-0"



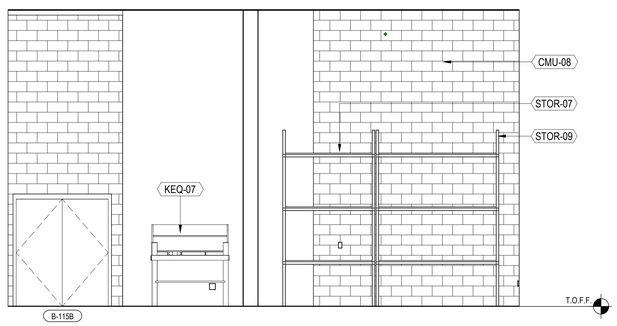
2 RCP - LAUNDRY AREA

SCALE: 1/4" = 1'-0" 0 2'-0" 4'-0" 8'-0" 16'-0"



1 PLAN - LAUNDRY AREA

SCALE: 1/4" = 1'-0" 0 2'-0" 4'-0" 8'-0" 16'-0"



7 K9 STORAGE - ELEVATION

SCALE: 1/4" = 1'-0" 0 2'-0" 4'-0" 8'-0" 16'-0"

KEYNOTES

CMU-08	042000 CONCRETE MASONRY UNIT, 8" X 16" X 8"
KEQ-02	131900 K9 DRYING TABLE
KEQ-07	131900 KENNEL ENCLOSURE
PLAM-01	064000 PLASTIC LAMINATE, WHITE
PLAM-05	064000 PLASTIC LAMINATE, DARK GRAY
REQ-01	113000 WASHER
REQ-02	113000 DRYER
REQ-03	113000 MICROWAVE
REQ-04	113000 FULL SIZE REFRIGERATOR
REQ-05	113000 MINI REFRIGERATOR
REQ-07	113000 DISHWASHER
SSP-01	064000 SOLID SURFACE - WHITE
SSP-02	064000 SOLID SURFACE - DARK GRAY
SSP-03	064000 SOLID SURFACE - LIGHT QUARTZ
STOR-07	105613 14" H X 72" L X 42" D 3 TIER PALLET STORAGE RACK SOLID SHELF
STOR-09	105613 14" H X 96" L X 42" D 3 TIER PALLET STORAGE RACK SOLID SHELF
TA-10	102813 TRASH CAN

LEGEND

FIRE RATINGS

- 1/2 HOUR FIRE RATING
- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING

XX DRAWING NOTE

1	SWITCH	SINGLE 1A	DOUBLE 1B	QUAD 1C	CONTROL PANEL 1D
2	ELECTRICAL OUTLET	SINGLE 2A	DUPLEX 2B	QUAD 2C	
3	DATA OUTLET	2 PORT 3A	4 PORT 3B	AV 3C	
4	FIRE ALRAM STROBE	4			
5	THERMOSTAT	5			
6	WALL CLOCK	6			
7	PULL STATION	7			
8	SECURITY CAMERA	8			
9	CARD READER	9			
10	ADA PUSH BOTTON	10			
11	FLOOR BOX	11A	RJ45 FLOOR MOUNTED 11B	DATA DOOR MOUNTED 11C	DATA DOOR MOUNTED 11D
12	WAP	12			

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DRAWING NOTES

B7	FLOOR DRAIN, REFER TO PLUMBING DRAWINGS

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CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

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D.G.S. PROJECT No.
C-0211-0005 PHASE 5

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Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

INTERIOR PLAN / RCP AND ELEVATIONS - LAUNDRY AREA & INTERIOR ELEVATIONS

SHEET No. BSO-A-664

DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED

DOOR SCHEDULE - NUMBER

NUMBER	ROOM NAME	DOOR TYPE	DOOR WIDTH	DOOR HEIGHT	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	DETAIL JAMB	DETAIL HEAD	DETAIL SILL	FIRE RATING	ACOUSTIC	SECURITY	HARDWARE	COMMENTS
LEVEL 1																	
B-101B	SERT EQP STORAGE	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	7/GEN-A-520	6/GEN-A-520	S6	-	-		01A	
B-102	SERT EQP STORAGE	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S6	90 MIN		CARD READER	SEC 02	
B-103	SERT EQP STORAGE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	-		CARD READER	SEC 08A	
B-104	GUN CLEANING AREA	-	3' - 0"	7' - 1"		PT	-		PT	6/BSO-A-721	7/BSO-A-721	5/BSO-A-721	90 MIN	-		BO	VAULT DOOR
B-105B	STAIR BA	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	45 MIN	-		13	
B-105C	STAIR BA	FG	3' - 0"	8' - 0"	ALUM/GL	PT/GL-02	3	ALUM/GL	PT/GL-02	9/GEN-A-521	8/GEN-A-521	7/GEN-A-521	90 MIN	-		13	
B-106	BESO GARAGE	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	7/GEN-A-520	6/GEN-A-520	S6	-	-		04	
B-107A	HDES EQP STORAGE	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	7/GEN-A-520	6/GEN-A-520	S6	-	SG		03A	
B-110	HDES WORKSHOP	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S6	-	-		01	
B-111	SERT EQP STORAGE	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S6	-	-		01	
B-112	HDES HV STORAGE	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S6	-	-		01	
B-113A	BESO GARAGE	F2	6' - 0"	7' - 0"	HM	MTL-09	2	HM	PT	7/GEN-A-520	6/GEN-A-520	S6	-	SG		11A	
B-113C	BESO GARAGE	OH	16' - 0"	16' - 0"	STL	MTL-09	-	STL	-	2/BSO-A-524	2/BSO-A-520	1/BSO-A-520	-	-		BO	INSULATED SECTIONAL DOOR
B-113D	BESO GARAGE	OH	16' - 0"	16' - 0"	STL	MTL-09	-	STL	-	2/BSO-A-524	2/BSO-A-520	1/BSO-A-520	-	-		BO	INSULATED SECTIONAL DOOR
B-113E	BESO GARAGE	OH	16' - 0"	16' - 0"	STL	MTL-09	-	STL	-	2/BSO-A-524	2/BSO-A-520	1/BSO-A-520	-	-		BO	INSULATED SECTIONAL DOOR
B-113G	BESO GARAGE	OH	16' - 0"	16' - 0"	STL	MTL-09	-	STL	-	2/BSO-A-524	2/BSO-A-520	1/BSO-A-520	-	-		BO	INSULATED SECTIONAL DOOR
B-113H	BESO GARAGE	OH	16' - 0"	16' - 0"	STL	MTL-09	-	STL	-	2/BSO-A-524	2/BSO-A-520	1/BSO-A-520	-			BO	INSULATED SECTIONAL DOOR
B-113I	BESO GARAGE	OH	16' - 0"	16' - 0"	STL	MTL-09	-	STL	-	2/BSO-A-524	2/BSO-A-520	1/BSO-A-520	-			BO	INSULATED SECTIONAL DOOR
B-115B	K9 STORAGE	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S2	-			01A	
B-115C	K9 STORAGE	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	7/GEN-A-520	6/GEN-A-520	S6	-	-		01A	
B-116	K9 STORAGE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2	-	-		02A	
B-117	GROOMING	V	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	-	-		02A	
B-118A	K9 CIRCULATION	V	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	-	SG		02	
B-118B	K9 CIRCULATION	V	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2	-	SG		02	
B-118C	CIRCULATION	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2	-	-		02	
B-120	FOOD STORAGE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2	-	-		02A	
B-121	K9 OFFICE	FGD	3' - 0"	7' - 0"	ALUM/GL	PT	3	ALUM	PT	J10	H11	S6	-	SG		AL 03	DUTCH DOOR
B-122	K9 CIRCULATION	FGD	3' - 0"	7' - 0"	ALUM/GL	PT	3	ALUM	PT	J10	H11	S6	-	SG		AL 03	DUTCH DOOR
B-123	K9 CIRCULATION	FGD	3' - 0"	7' - 0"	ALUM/GL	PT	1	ALUM	PT	J10	H11	S6	-	SG		AL 03	DUTCH DOOR
B-124	K9 OFFICE	FGD	3' - 0"	7' - 0"	ALUM/GL	PT	3	ALUM	PT	J10	H11	S6	-	SG		AL 03	DUTCH DOOR
B-125	K9 TOILET	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		06A	
B-126	K9 CLASSROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	-	-		05A	
B-127	K9 CLASSROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	-	-		05A	
B-128	K9 CLASSROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	-	-		06	
B-129	K9 CIRCULATION	VD	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	-	-		02	DUTCH DOOR
B-130	CIRCULATION	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S6	90 MIN	SG		08	
B-131	ATS	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	90 MIN	SG		05A	
B-132	IT	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2	90 MIN	SG	CARD READER	SEC 05B	
B-133	PLUMBING / FP	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2	90 MIN	SG		02	
B-134	MECHANICAL ROOM	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S2	90 MIN	SG		03A	
B-135	BESO STORAGE	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S6	-	-		03A	
B-136	BESO EQP DRYING AREA	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	7/GEN-A-520	6/GEN-A-520	S6	-	-		01B	
B-137	ESS EQP. STORAGE	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S6	-	-	CARD READER	SEC 06	
B-138	ESS HV STORAGE	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	7/GEN-A-520	6/GEN-A-520	S6	-	-	CARD READER	SEC 06	
B-139	TOILET	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S2	-	SG		06A	
B-140	TOILET	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S2	-	SG		06A	
B-141	JCL	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2	-	-		02A	
B-143	ESS EQP. STORAGE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	-			05B	
B-144	STAIRS BB	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	45 MIN			10A	
B-145A	K9 CIRCULATION		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-145B	K9 CIRCULATION		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-145C	K9 CIRCULATION		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-145D	K9 CIRCULATION		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-145E	K9 CIRCULATION		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-145F	K9 CIRCULATION		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-145G	K9 CIRCULATION		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-145H	K9 CIRCULATION		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-145J	QUAR K9 CIRCULATION	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	-	-		12	
B-145K	INDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-145L	INDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-145M	INDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-145N	INDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-145O	K9 CIRCULATION	BR	3' - 0"	7' - 0"	STL		-		MTL-12	9/BSO-A-721	10/BSO-A-721	8/BSO-A-721		-		BO	SLIDING DOOR
B-146A	OUTDOOR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-146B	OUTDOOR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-146C	OUTDOOR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-146D	OUTDOOR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-146E	OUTDOOR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-146F	OUTDOOR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-146G	OUTDOOR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-146H	OUTDOOR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-147A	OUTDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-147B	OUTDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-147C	OUTDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-147D	OUTDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-147E	OUTDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-147F	OUTDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-147G	OUTDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-147H	OUTDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-148A	QUAR K9 INDR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-148B	QUAR K9 INDR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-148C	QUAR K9 INDR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-148D	QUAR K9 INDR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-149A	QUAR K9 ODR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-149B	QUAR K9 ODR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-149C	QUAR K9 ODR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-149D	QUAR K9 ODR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-150A	QUAR K9 ODR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-150B	QUAR K9 ODR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-150C	QUAR K9 ODR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-150D	QUAR K9 ODR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-151A	OUTDOOR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-151B	OUTDOOR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-151C	OUTDOOR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-151D	OUTDOOR KENNELS		1' - 5"	2' - 4 1/2"	STL	PT	-	STL	PT	3/BSO-A-721	2/BSO-A-721	1/BSO-A-721	--			BO	GUILLOTINE DOOR
B-152A	OUTDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-152B	OUTDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-152C	OUTDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-152D	OUTDOOR KENNELS		3' - 0"	7' - 9 1/4"	HM	PT	-	STL	PT	4/BSO-A-721	4/BSO-A-721	4/BSO-A-721	-			BO	KENNEL GATE
B-153A	FENCED AREA	G2	6' - 0"	8' - 0"						-	-	-			CARD READER	SEC 10	FENCE GATE DOOR
B-153B	FENCED AREA	G	3' - 0"	8' - 0"						-	-	-			CARD READER	SEC 11	FENCE GATE DOOR
B-153C	FENCED AREA	G	3' - 0"	8' - 0"						-	-	-			CARD READER	SEC 11	FENCE GATE DOOR

DOOR SCHEDULE - NUMBER

NUMBER	ROOM NAME	DOOR TYPE	DOOR WIDTH	DOOR HEIGHT	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	DETAIL JAMB	DETAIL HEAD	DETAIL SILL	FIRE RATING	ACOUSTIC	SECURITY	HARDWARE	COMMENTS
EB-101A	SERT EQP STORAGE	F2	6' - 0"	8' - 0"	HM	PT	2	HM	PT	6/BSO-A-524	6/BSO-A-521	7/GEN-A-531	-		CARD READER	SEC 02	INSULATED HM DOOR
EB-105A	STAIR BA	FG	3' - 0"	8' - 0"	ALUM/GL	AL/GL-02	3	ALUM/GL	AL/GL-02	9/BSO-A-561	8/BSO-A-561	7/BSO-A-561	-	-	CARD READER	SEC 08A	INSULATED HM DOOR
EB-109	HDES WORKSHOP	F2	6' - 0"	8' - 0"	HM	PT	2	HM	PT	6/BSO-A-524	6/BSO-A-521	7/GEN-A-531	-	SG	CARD READER	SEC 07	INSULATED HM DOOR
EB-113B	BESO GARAGE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	6/GEN-A-531	8/GEN-A-531	7/GEN-A-531	-	-	CARD READER	SEC 08A	INSULATED HM DOOR
EB-113F	BESO GARAGE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	6/GEN-A-531	8/GEN-A-531	7/GEN-A-531	-	-	CARD READER	SEC 08A	
EB-114	CIRCULATION	FG	3' - 0"	8' - 0"	ALUM/GL	AL/GL-02	3	ALUM/GL	AL/GL-02	9/BSO-A-561	8/BSO-A-561	7/BSO-A-561	-	-	CARD READER	SEC 08A	INSULATED ALUM DOOR
EB-115A	K9 STORAGE	V	3' - 0"	7' - 0"	HM	PT	1	HM	PT	6/GEN-A-531	8/GEN-A-531	7/GEN-A-531	-	SG	CARD READER	SEC 08A	INSULATED HM DOOR
EB-145I	K9 CIRCULATION	FG	3' - 0"	8' - 0"	ALUM/GL	AL/GL-02	3	ALUM/GL	AL/GL-02	9/GEN-A-521	8/GEN-A-521	7/GEN-A-521	-	-	CARD READER	SEC 08A	INSULATED ALUM DOOR
EB-148E	FENCED AREA	FG	3' - 0"	8' - 0"	ALUM/GL	AL/GL-02	3	ALUM/GL	AL/GL-02	9/GEN-A-521	8/GEN-A-521	7/GEN-A-521	-	-	CARD READER	SEC 08A	INSULATED ALUM DOOR
LEVEL 2																	
B-202	STAIR BA	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	45 MIN	-		10	
B-203	HDES ADMIN	FG2	6' - 0"	7' - 0"	ALUM/GL	AL	2	ALUM	PT	J2	H2	S1	-	-		01B	
B-204	HDES LDR OFFICE	FG	3' - 0"	7' - 0"	ALUM/GL	AL	3	ALUM	PT	J2	H2	S6	-			07A	
B-205	HDES ADMIN	FG	3' - 0"	7' - 0"	ALUM/GL	AL	3	ALUM	PT	J2	H2	S6	-			07A	
B-206	HDES ADMIN	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	-		05A	
B-207	HDES ADMIN	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	-		05A	
B-208A	SERT & HDES ENTRY	FG2	6' - 0"	7' - 0"	ALUM/GL	AL	2	ALUM	AL	J2	H2	S6	-	SG		01A	
B-208B	SERT BRIEFING ROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S1	-	SG		07A	
B-209	SERT COORD OFFICE	FG	3' - 0"	7' - 0"	ALUM/GL	AL	3	ALUM	AL	J2	H2	S6	-			07A	
B-210	SERT ADMIN & TEAM LEAD	FG2	6' - 0"	7' - 0"	ALUM/GL	AL	2	ALUM	AL	J2	H2	S1	-			AL 01A	
B-211A	SERT OFFICE STORAGE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	-		05A	
B-211B	SERT OFFICE STORAGE	F	3' - 0"	7' - 0"	HM	PT	1	HM	AL	J2	H2	S6	-	-		05A	
B-212A	CIRCULATION	V2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	7/GEN-A-520	6/GEN-A-520	S6	-	-		08B	DOUBLE EGRESS
B-212B	CIRCULATION	V2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	7/GEN-A-520	6/GEN-A-520	S6	-	-		08B	DOUBLE EGRESS
B-213	VESTIBULE	FG2	6' - 0"	7' - 0"	ALUM/GL	AL	2	ALUM	AL	J10	H11	S6	-		CARD READER	AL 02	
B-214	FITNESS CENTER	FG	3' - 0"	7' - 0"	ALUM/GL	AL	3	ALUM	AL	J2	H2	S2	-	SG		02A	
B-215	LAUNDRY AREA	V	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S2	-	SG		02	
B-216	MEN LOCKER ROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S2	-	SG		02A	
B-217A	MEN RESTROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S2	-	SG		02A	
B-217B	MEN RESTROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	-		02A	
B-218A	CIRCULATION	V2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J2	H2	S6	-	SG		08	
B-218B	CIRCULATION	V	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		13	
B-220A	CLASSROOM STORAGE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	-		05C	
B-220B	CLASSROOM STORAGE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	-		05A	
B-221	BESO LOUNGE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S1	-	-		02A	
B-222	CIRCULATION	V2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J2	H2	S1	-	-		01A	
B-223	TOILET	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S2	-	SG		06A	
B-224	TOILET	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S2	-	SG		06A	
B-225	NURSING PARENTS RM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S1	-	SG		06A	
B-227A	CIRCULATION	FG2	6' - 0"	7' - 0"	ALUM/GL	AL	2	ALUM	AL	J2	H2	S1	-	-		AL 01A	
B-227B	BESO ADMIN	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	-		02	
B-230	BESO ADMIN	FG	3' - 0"	7' - 0"	ALUM/GL	AL	3	ALUM	AL	J2	H2	S6	-	SG		AL 04	
B-231	SECTION CMDR	FG	3' - 0"	7' - 0"	ALUM/GL	AL	3	ALUM	AL	J2	H2	S6	-	SG		AL 04	
B-232	BESO DIR OFFICE	FG	3' - 0"	7' - 0"	ALUM/GL	AL	3	ALUM	AL	J2	H2	S6	-	SG		AL 04	
B-233	DIR. TACTICAL OPS	FG	3' - 0"	7' - 0"	ALUM/GL	AL	3	ALUM	AL	J2	H2	S6	-	SG		AL 04	
B-234	BESO ADMIN	FG	3' - 0"	7' - 0"	ALUM/GL	AL	3	ALUM	AL	J2	H2	S6	-	SG		AL 04	
B-235	BESO ADMIN	FG	3' - 0"	7' - 0"	ALUM/GL	AL	3	ALUM	AL	J2	H2	S6	-	SG		AL 04	
B-236	BESO ADMIN	FG	3' - 0"	7' - 0"	ALUM/GL	AL	3	ALUM	AL	J2	H2	S6	-	SG		AL 04	
B-237	BESO ADMIN	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	-		AL 04	
B-238	TOILET	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S1	-	SG		06A	
B-239	BESO OFFICE STOR	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	-		05	
B-240A	CIRCULATION	V	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S1	-	-		07	
B-240B	BESO CONF ROOM	V	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		07C	
B-241	BESO ADMIN	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	-		02A	
B-242	BESO ADMIN	FG	3' - 0"	7' - 0"	ALUM/GL	AL	3	ALUM	PT	J2	H2	S6	-	SG		AL 04	
B-243	CIRCULATION	FG2	6' - 0"	7' - 0"	ALUM/GL	AL	2	ALUM	PT	J2	H2	S1	-	-		AL 01	
B-244A	CIRCULATION	FG2	6' - 0"	7' - 0"	ALUM/GL	AL	2	ALUM	PT	J2	H2	S6	-	-		AL 01	
B-244B	ESS CIRCULATION	FG	3' - 0"	7' - 0"	ALUM/GL	AL	1	ALUM	PT	J2	H2	S1	-	-		AL 05	
B-245	ESS SUP. OFFICE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		07B	
B-246	ESS OFFICE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		07B	
B-247	ESS OFFICE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		07B	
B-248	ESS OFFICE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		07B	
B-249	ESS OFFICE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		07B	
B-250	ESS OFFICE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		07B	
B-251	ESS OFFICE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		07B	
B-252	ESS OFFICE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		07B	
B-253	REPOSITORY & OFFICE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG	CARD READER	07A	
B-254	ESS STORAGE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	-		05B	
B-255	BESO GARAGE	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	-		05B	
B-256	ESS WORKSHOP	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		07B	
B-257	WOMEN LOCKER ROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S2	-	SG		02A	
B-258	UNISEX LOCKER ROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S2	-	SG		02A	
B-260	ESS CIRCULATION	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		07C	
B-261	STAIRS BB	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	45 MIN	-		10	
B-262	IT ROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S2	90 MIN	SG	CARD READER	SEC 05C	
B-263	M.CHASE		3' - 0"	3' - 0"									90 MIN			BO	M. CHASE ACCESS PANEL
B-264	ELECTRICAL	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	90 MIN	SG		05C	
B-265	ESS SECURE SERVER ROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S1	90 MIN	SG	CARD READER	SEC 05C	
B-267	PLANT ROOM #2	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		05C	
B-268	PLANT ROOM #1	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	SG		05C	
B-269	CIRCULATION	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J2	H2	S6	90 MIN	SG		08	
EB-226	VESTIBULE	FG2	6' - 0"	8' - 0"	ALUM/GL	AL/GL-02	2	ALUM	AL/GL-02	9/BSO-A-561	8/BSO-A-561	7/BSO-A-561	-	-	CARD READER	AL 02	INSULATED ALUM DOOR

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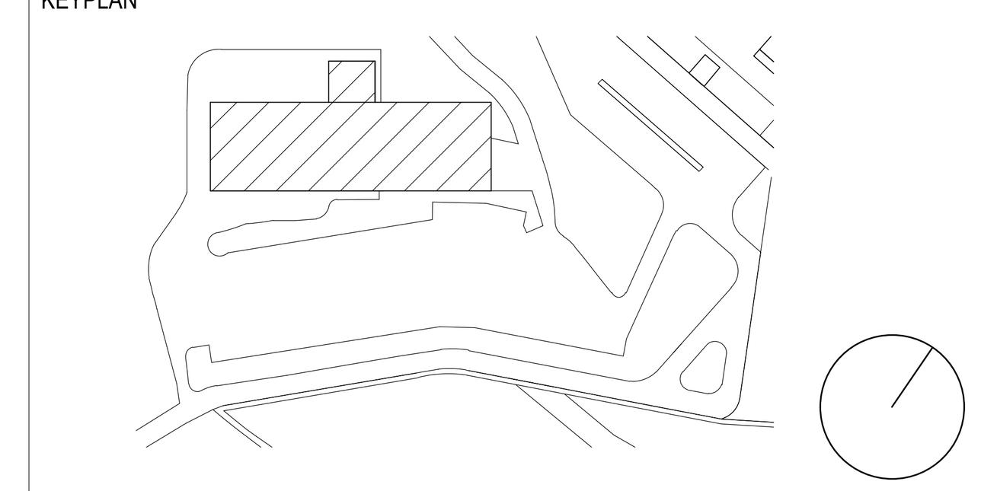
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

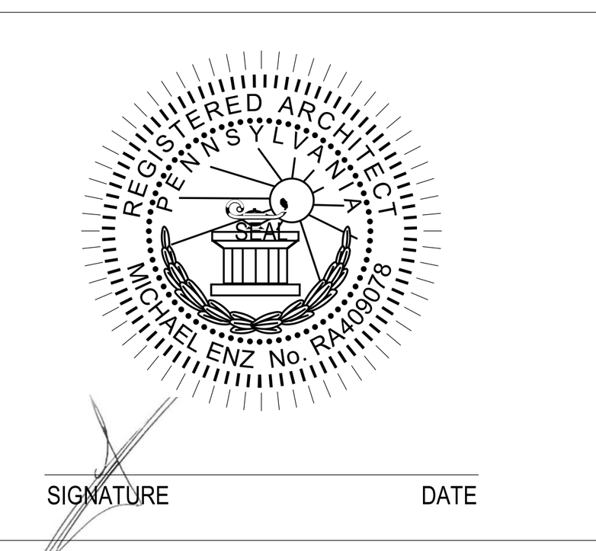
COST ESTIMATING
AECOM
1700 Market St, Suite 1600, Philadelphia, PA 19103

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
34	21 JUL 2023	ADDENDUM #34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS



SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

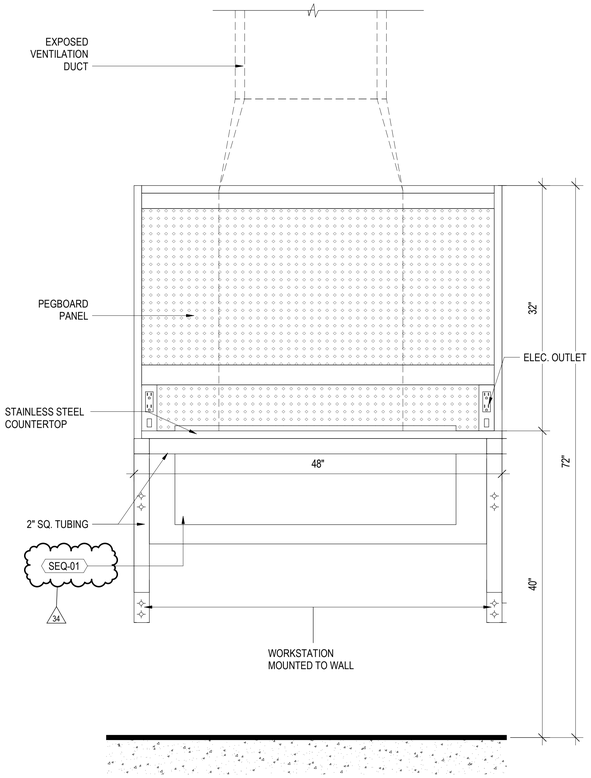
VERIFY SCALE
BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING:
0 1
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

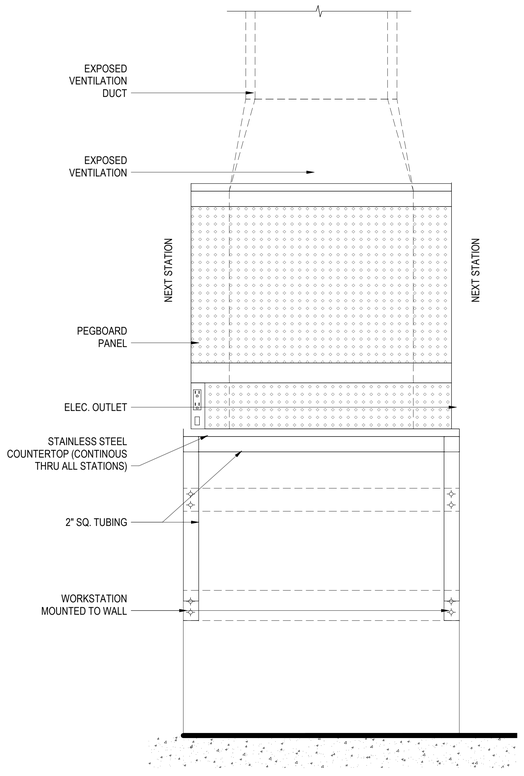
DOOR SCHEDULE

SHEET No. BSO-A-710

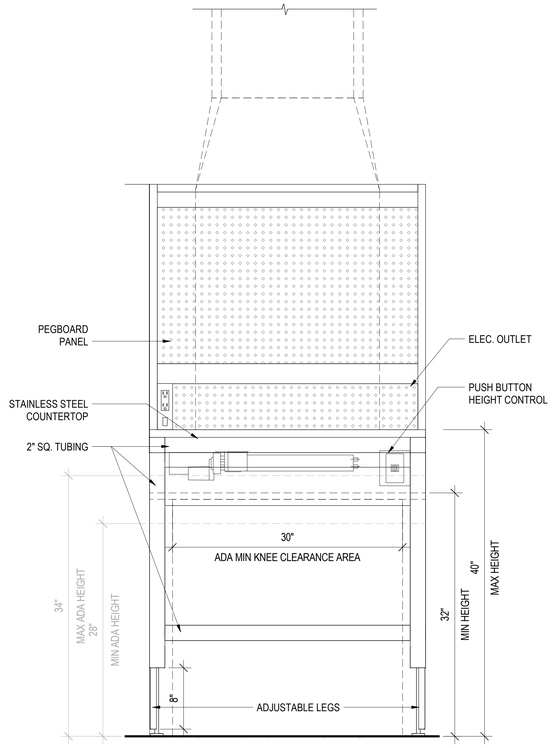
DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



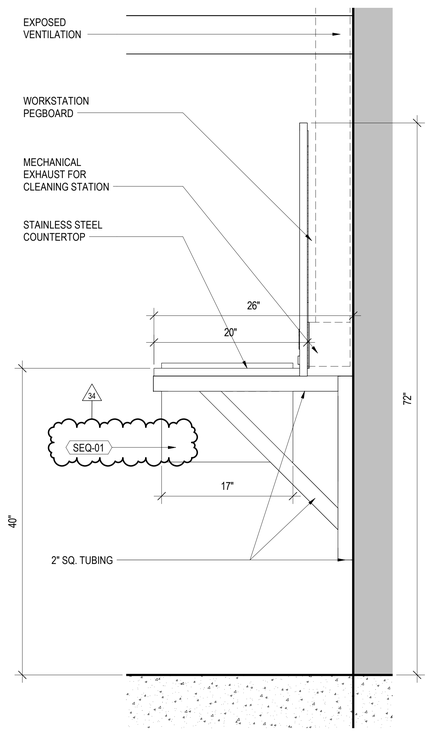
5 ULTRASONIC CLEANING STATION 48"
SCALE: 1 1/2" = 1'-0"



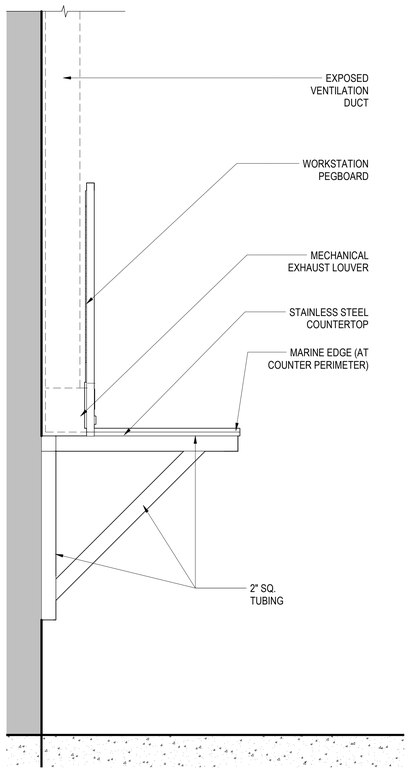
4 GUN CLEANING - WORKBENCH 36"
SCALE: 1 1/2" = 1'-0"



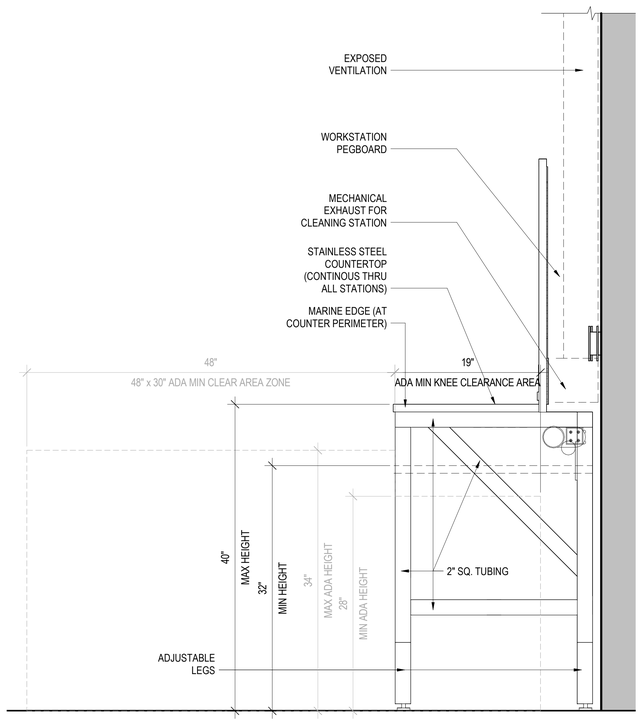
2 GUN CLEANING - ACCESSIBLE WORKBENCH 36"
SCALE: 1 1/2" = 1'-0"



6 ULTRASONIC CLEANING STATION 48" SECTION
SCALE: 1 1/2" = 1'-0"



3 GUN CLEANING - WORKBENCH 36" SECTION
SCALE: 1 1/2" = 1'-0"



1 GUN CLEANING - ACCESSIBLE WORKBENCH 36" SEC.
SCALE: 1 1/2" = 1'-0"

KEYNOTES

SEQ-01	119020 ULTRASONIC CLEANER

VERIFY SCALE

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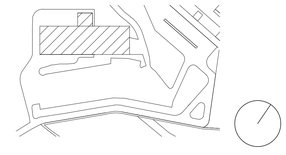
KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
34	21 JUL 2023	ADDENDUM #34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

REGISTERED ARCHITECT COMMONWEALTH OF PENNSYLVANIA ENG. NO. RA-XXXXXX

SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

MILLWORK DETAILS

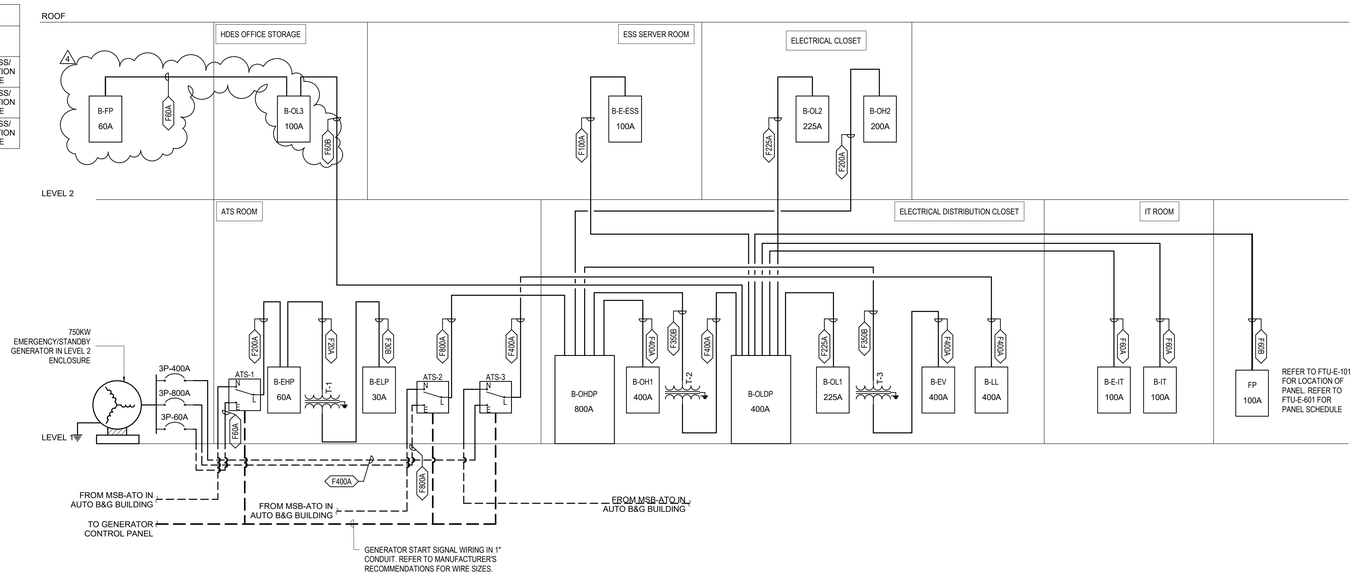
SHEET No. BSO-A-770

DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED

ATS SCHEDULE									
ATS TAG	VOLTAGE	RATING	SHORT CKT RATING	NO. OF POLES	ENCLOSURE	REMARK	PRIORITY	CATALOG NUMBER	
ATS 1	277/480V 3PH,4W	60A	65 KAIC	4	NEMA - 1	OPEN TRANSITION TYPE	LEGALLY REQUIRED STANDBY	COPPER	BYPASS/ ISOLATION TYPE
ATS 2	277/480V 3PH,4W	800A	65 KAIC	4	NEMA - 1	OPEN TRANSITION TYPE	LIFE SAFETY - LESS THAN 10 SECS	COPPER	BYPASS/ ISOLATION TYPE
ATS 3	277/480V 3PH,4W	400A	65 KAIC	4	NEMA - 1	OPEN TRANSITION TYPE	OPTIONAL STANDBY	COPPER	BYPASS/ ISOLATION TYPE

FEEDER SCHEDULE	
F20A	3#12+1#12G IN 3/4"C
F30A	3#1+1#10G IN 3/4"C
F30B	4#10+1#10G IN 3/4"C
F60A	4#4+1#10G IN 1-1/4"C
F60B	4#2/0+1#6G IN 2"C
F110A	4#1+1#6G IN 1-1/2"C
F200A	4#3/0+1#6G IN 2"C
F225A	4#4/0+1#4G IN 2-1/2"C
F225B	3#4/0+1#4G IN 2"C 3
F350B	4#500KCMIL+1#3G IN 4"C
F400A	4#600KCMIL+1#3G IN 4"C
F800A	(2) SETS OF 4#600KCMIL+1#1/0G IN (2) 4"C

TRANSFORMER SCHEDULE					
XMER TAG	PRIMARY VOLTAGE	SECONDARY VOLTAGE	KVA RATI...	ENCLOSURE	WINDING
T1	480V	208/120V	9	NEMA - 1	COPPER
T2	480V	208/120V	225	NEMA - 1	COPPER
T3	480V	208/120V	225	NEMA - 1	COPPER 3



2 SINGLE LINE DIAGRAM
SCALE: N.T.S.

PROVIDE OVER-CURRENT PROTECTION DEVICE, SHORT-CIRCUIT COORDINATION AND ARC FLASH STUDIES ON ALL THE ELECTRICAL EQUIPMENT INDICATED ON THIS DRAWING TO THE ENGINEER PRIOR TO RECEIVING FINAL APPROVAL OF THE DISTRIBUTION EQUIPMENT SHOP DRAWINGS AND/OR PRIOR TO RELEASE OF EQUIPMENT DRAWINGS FOR MANUFACTURING.

IMPORTANT NOTE

CONTRACTOR SHALL SUBMIT THE SWITCHGEAR SHOP DRAWING TO CON EDISON METERING AND INSPECTION DEPARTMENT FOR REVIEW TO COMPLY WITH CON EDISON REQUIREMENT AS PER CON EDISON HANDBOOK, AND GET FINAL APPROVAL FROM THE METERING AND INSPECTION SUPERVISOR PRIOR TO ORDERING THE SWITCHBOARD.

GENERAL NOTES

1. REFER TO GEN-E-001 FOR SYMBOLS, ABBREVIATIONS AND NOTES.
2. REFER TO BSO-E-601 FOR PANEL SCHEDULES.
3. REFER TO GEN-E-701 FOR DETAILS.
4. NOTE THAT ALL NEW EXPOSED CABLES ABOVE THE CEILING SHALL BE PLENUM RATED.
5. DISCONNECT SWITCHES FOR ALL MECHANICAL EQUIPMENT SHALL BE PROVIDED BY THE EQUIPMENT MANUFACTURER. COORDINATE WITH MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.

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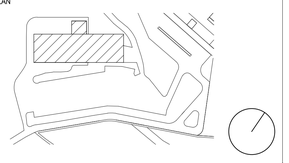
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
4	21 JUL 2023	ADDENDUM 34			
3	07 JUL 2023	ADDENDUM 31			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033176E
PENNSYLVANIA

2023-06-16
SIGNATURE DATE

ARCHITECT
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

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SINGLE LINE DIAGRAM

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SHEET No. BSO-E-402

DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK	APR 2022	AS NOTED

Switchboard: OLDP

Location: Space 202 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 22,000
Supply From: T2 | **Phases:** 3 | **Mains Type:** BOLTED PRESSURE SERVICE SWITCH
Mounting: | **Wires:** 4 | **Mains Rating:** 400 A
Enclosure: | **MCB Rating:** 400 A

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	B-OL1	3	400 A	225 A	52499 VA	
2	B-IT	3	60 A	60 A	8560 VA	
3	B-E-IT	3	60 A	60 A	4740 VA	
4	B-OL2	3	400 A	225 A	64403 VA	
5	B-E-ESS	3	30 A	20 A	18960 VA	
6	B-OL3	3	100 A	80 A	35911 VA	
7	PANEL FP - FROM ATO	2	100 A	60 A	11000 VA	
8	Spare	1	30 A	20 A	0 VA	
9	Space	1	--	--	--	
10	Space	1	--	--	--	
				Total Conn. Load:	195871 VA	
				Total Amps:	544 A	

Legend:

Load Classification	Connected Load	Demand Factor	Estimated...	Panel Totals	
Other	25034 VA	100.00%	25034 VA		
Power	51908 VA	100.00%	51908 VA	**Total Conn. Load:**	195871 VA
Receptacle	119200 VA	54.19%	64600 VA	**Total Est. Demand:**	141308 VA
				Total Conn.:	544 A
				Total Est. Demand:	392 A

Notes:

Branch Panel: B-EV

Location: Space 202 | **Volts:** 120/208 Wye | **A.I.C. Rating:**
Supply From: T3 | **Phase:** 3 | **Mains Type:** MCB
Mounting: Surface | **Wires:** 4 | **Bussing:** 400 A
Enclosure: Type 1 | **Mains Rating:** 400 A
Feeder:

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	EV CHARGER	2#6+1#6G 1-1/2C	40 A	2	3350	3350					2	40 A	2#6+1#6G 1-1/2"C	EV CHARGER	2
3							3350	3350							4
5	EV CHARGER	2#6+1#6G 1-1/2"C	40 A	2					3350	3350	2	40 A	2#6+1#6G 1-1/2"C	EV CHARGER	6
7					3350	3350									8
9	EV CHARGER	2#6+1#6G 1-1/2"C	40 A	2			3350	3350			2	40 A	2#6+1#6G 1-1/2"C	EV CHARGER	10
11									3350	3350					12
13	EV CHARGER	2#6+1#6G 1-1/2"C	40 A	2	3350	3350					2	40 A	2#6+1#6G 1-1/2"C	EV CHARGER	14
15							3350	3350							16
17	Spare	--	20 A	1					0	0	1	20 A	--	Spare	18
19	Spare	--	20 A	1	0	0					1	20 A	--	Spare	20
21	Spare	--	20 A	1			0	0			1	20 A	--	Spare	22
23	Spare	--	20 A	1					0	0	1	20 A	--	Spare	24
25	Spare	--	20 A	1	0	0					1	20 A	--	Spare	26
27	Spare	--	20 A	1			0	0			1	20 A	--	Spare	28
29	Spare	--	20 A	1					0	0	1	20 A	--	Spare	30
31	Spare	--	20 A	1	0	0					1	20 A	--	Spare	32
33	Spare	--	20 A	1			0	0			1	20 A	--	Spare	34
35	Space	--	--	1					--	--	1	--	--	Space	36
37	Space	--	--	1	--	--					1	--	--	Space	38
39	Space	--	--	1			--	--			1	--	--	Space	40
41	Space	--	--	1					--	--	1	--	--	Space	42
				Total Load	20100 VA		20100 VA		13400 VA						
				Design Amp	149 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Power	53600 VA	100.00%	53600 VA		
				Total Conn. Load:	53600 VA
				Total Est. Demand:	53600 VA
				Total Conn.:	149 A
				Total Est. Demand:	149 A

Notes:

Branch Panel: B-OL1

Location: Space 202 | **Volts:** 120/208 Wye | **A.I.C. Rating:**
Supply From: OLDP | **Phase:** 3 | **Mains Type:** MCB
Mounting: Surface | **Wires:** 4 | **Bussing:** 225A
Enclosure: Type 1 | **Mains Rating:** 225 A
Feeder:

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A		B		C		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	ELEC.ATS MAINT	2#12+1#12G	20 A	1	360	900					1	20 A	2#10+1#10G	B-102,3,4 RECPTS	2
3	B-101 RECPTS	2#10+1#10G	20 A	1			900	900			1	20 A	2#10+1#10G	B-107,8,9,10,11...	4
5	B-107 ROBOT LIFT	2#12+1#12G	20 A	1					720	3600	1	40 A	2#8+1#10G IN...	B-102 ULTRASONIC	6
7	GARAGE RECPTS	2#12+1#12G	20 A	1	540	540					1	20 A	2#12+1#12G	GARAGE RECPTS	8
9	OH POWER DROPS	2#10+1#10G	20 A	1			1000	1000			1	20 A	2#10+1#10G	OH POWER DROPS	10
11	OH POWER DROPS	2#10+1#10G	20 A	1					1000	1000	1	20 A	2#10+1#10G	OH POWER DROPS	12
13	OH POWER DROPS	2#10+1#10G	20 A	1	1000	1000					1	20 A	2#10+1#10G	OH POWER DROPS	14
15	OH POWER DROPS	2#10+1#10G	20 A	1			1000	720			1	20 A	2#12+1#12G	CORR. RECPTS	16
17	B-140,141,142...	2#12+1#12G	20 A	1					1080	1000	1	20 A	2#10+1#10G	OH POWER DROPS	18
19	B-140,141,142...	2#12+1#12G	20 A	1	900	558					1	20 A	2#12+1#12G	KENNELS RCPTS	20
21	K9 CIRCULATION	2#12+1#12G	20 A	1			1080	180			1	20 A	2#12+1#12G	DISHWASHER	22
23	Spare	--	20 A	1					0	720	1	20 A	2#12+1#12G	K9 OFFICES	24
25	K9 OFFICES	2#12+1#12G	20 A	1	540	540					1	20 A	2#12+1#12G	B-123,124 RECPTS	26
27	K9 CLASSROOM	2#12+1#12G	20 A	1			720	720			1	20 A	2#12+1#12G	B-118,119 RECPTS	28
29	B-120 RECPTS	2#12+1#12G	20 A	1					540	540	1	20 A	2#12+1#12G	B-109,111 RECPTS	30
31	DRYING RACK	2#12+1#12G	20 A	1	180	180					1	20 A	2#12+1#12G	DRYING RACK	32
33	EXPRESS DRYER	2#8+1#10G IN 3/4"C	35 A	2			3130	180			1	20 A	2#12+1#12G	DRYING RACK	34
35									3130	180	1	20 A	2#12+1#12G	REFRIGERATOR	36
37	B-EF-1	2#12+1#12G	20 A	1	400	1656					1	20 A	2#12+1#12G	B-EF-3	38
39	B-EF-4	2#12+1#12G	20 A	1			864	864			1	20 A	2#12+1#12G	B-SF-1	40
41	B-AHU-1 HEAT REC	2#12+1#12G	20 A	1					516	700	1	15 A	2#12+1#12G	B-EF-6	42
43	B-HP-1	2#8+1#10G IN 3/4"C	35 A	2	2763	791					2	15 A	2#12+1#12G	B-HP-2	44
45							2763	791							46
47	B-HP-3	2#12+1#12G	15 A	2					791	1152	1	15 A	2#12+1#12G	B-HUM-1	48
49					791	90					2	40 A	2#8+1#10G IN 3/4"C	K9 WASHER/DRYER	50
51	OUTDOOR RECPT	2#12+1#12G	20 A	1			198	90							52
53	B-CU-7	2#12+1#12G	20 A	2					583	50	1	15 A	2#12+1#12G	HEAT TRACE	54
55					583	50					1	15 A	2#12+1#12G	HEAT TRACE	56
57	CONDENSATE...	2#12+1#12G	20 A	1			720	50			1	20 A	2#12+1#12G	HEAT TRACE	58
59	SOLVENT TANK	2#12-1#12G	20 A	1					180	180	1	20 A	2#12+1#12G	WASHING MACHINE	60
61	REC-B-222	2#12-1#12G	20 A	1	540	500					1	20 A	2#12+1#12G	REC-B-240	62
63	PROJECTOR-B-218	2#12-1#12G	20 A	1			50	500			1	20 A	2#12+1#12G	PROJ.SCREEN-M-240	64
65	PROJEC....	2#12-1#12G	20 A	1					50	1080	1	20 A	2#12+1#12G	REC-B-240	66
67	Space	--	--	1	--	1440					1	20 A	2#12+1#12G	B-267 RECEPTACLES	68
69	Space	--	--	1			--	--			1	--	--	Space	70
71	Space	--	--	1					--	--	1	--	--	Space	72
				Total Load	16404 VA		17832 VA		18267 VA						
				Design Amp	146 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	19644 VA	100.00%	19644 VA		
Power	14745 VA	100.00%	14745 VA	**Total Conn. Load:**	52499 VA
Receptacle	18900 VA	76.46%	14450 VA	**Total Est. Demand:**	48076 VA
				Total Conn.:	146 A
				Total Est. Demand:	133 A

Notes:

Branch Panel: B-OL2

Location: | **Volts:** 120/208 Wye | **A.I.C. Rating:**
Supply From: OLDP | **Phase:** 3 | **Mains Type:** MCB
Mounting: Surface | **Wires:** 4 | **Bussing:** 225A
Enclosure: Type 1 | **Mains Rating:** 225 A
Feeder:

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A		B		C		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	B-213 RECPTS	2#12+1#12G	20 A	1	1620	1260					1	20 A	2#12+1#12G	B-213 TVs	2
3	ELLIPTICAL	2#12+1#12G	20 A	1			180	180			1	20 A	2#12+1#12G	ELLIPTICAL	4
5	ELLIPTICAL	2#12+1#12G	20 A	1					180	180	1	20 A	2#12+1#12G	TREADMILL	6
7	TREADMILL	2#12+1#12G	20 A	1	180	180					1	20 A	2#12+1#12G	TREADMILL	8
9	TREADMILL	2#12+1#12G	20 A	1			180	180			1	20 A	2#12+1#12G	TREADMILL	10
11	CIRC. RECPTS	2#12+1#12G	20 A	1					720	1080	1	20 A	2#12+1#12G	B-214 RECPTS	12
13	B-215 RECPTS	2#12+1#12G	20 A	1	1080	1080					1	20 A	2#12+1#12G	B-216 RECPTS	14
15	REC-B-221,220,219,2...	2#12+1#12G	20 A	1			1080	720			1	20 A	2#12+1#12G	MOTHER'S	16
17	B-219 RECPTS	2#12+1#12G	20 A	1					1080	180	1	20 A	2#12+1#12G	B-222 COUNTER	18
19	B-21 FOUNTAIN	2#12+1#12G	20 A	1	180	1080					1	20 A	2#12+1#12G	B-216 RECPTS	20
21	FOUTNAIN-B-213	2#12+1#12G	20 A	1			180	180			1	20 A	2#12+1#12G	B-222...	22
23	B-222 COUNTER	2#12+1#12G	20 A	1					180	180	1	20 A	2#12+1#12G	B-222 COUNTER	24
25	RC-B-240	2#12+1#12G	20 A	1	900	1080					1	20 A	2#12+1#12G	CIRC. RECPTS	26
27	ADMIN RCPTS	2#12+1#12G	20 A	1			1440	1080			1	20 A	2#12+1#12G	ADMIN RCPTS	28
29	RECEPTION	2#12+1#12G	20 A	1					1080	360	1	20 A	2#12+1#12G	REPROGRAPHY	30
31	COFFEE POINT	2#12+1#12G	20 A	1	540	720					1	20 A	2#12+1#12G	B-242 RECPTS	32
33	B-230 RECPTS	2#12+1#12G	20 A	1			1080	1080			1	20 A	2#12+1#12G	B-231 RECPTS	34
35	B-232 RECPTS	2#12+1#12G	20 A	1					1080	540	1	20 A	2#12+1#12G	B-233 RECPTS	36
37	B-234 RECPTS	2#12+1#12G	20 A	1	1080	1080					1	20 A	2#12+1#12G	OFFICE RECPTS	38
39	OFFICE RECPTS	2#12+1#12G	20 A	1			1080	1080			1	20 A	2#12+1#12G	OFFICE RECPTS	40
41	REC-B-245,236	2#12+1#12G	20 A	1					900	1080	1	20 A	2#12+1#12G	OFFICE RECPTS	42
43	B-253 RECPTS	2#12+1#12G	20 A	1	900	1440					1	20 A	2#12+1#12G	B-254,256,260	44
45	B-256...	2#12+1#12G	20 A	1			1080	1080			1	20 A	2#12+1#12G	B-260...	46
47	LOCKER ROOMS	2#12+1#12G	20 A	1					1080	720	1	20 A	2#12+1#12G	CIRC. RECPTS	48
49	B-268...	2#12+1#12G	20 A	1	1080	1080					1	20 A	2#12+1#12G	B-268...	50
51	B-268 TVs	2#12+1#12G	20 A	1			900	1080			1	20 A	2#12+1#12G	B-267...	52
53	B-267...	2#12+1#12G	20 A	1					1080	900	1	20 A	2#12+1#12G	B-267 TVs	54
55	Spare	--	20 A	1	0	1260					1	20 A	2#12+1#12G	B-240 RECPTS	56
57	B-CU-4	2#8+1#10G	40 A	2			3453	1115			2	20 A	2#12+1#12G	B-CU-3	58
59									3453	1115					60
61	B-CU-5	2#12+1#12G	20 A	2	583	3453					2	40 A	2#8+1#10G	B-CU-6	62
63							583	3453							64
65	WASHER	2#12+1#12G	20 A	1					180	1656	1	20 A	2#12+1#12G	B-EF-2	66
67	WASHER	2#12+1#12G	20 A	1	180	900					1	20 A	2#12+1#12G	REC-B-233	68
69	Spare	--	20 A	1			0	0			1	20 A	--	Spare	70
71	Spare	--	20 A	1					0	0	1	20 A	--	Spare	72
				Total Load	22936 VA		22464 VA		19004 VA						
				Design Amp	179 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	5052 VA	100.00%	5052 VA		
Power	13811 VA	100.00%	13811 VA	**Total Conn. Load:**	64403 VA
Receptacle	45540 VA	60.98%	27770 VA	**Total Est. Demand:**	46633 VA
				Total Conn.:	179 A
				Total Est. Demand:	129 A

Notes:

Branch Panel: B-OL3

Location: Space 91 | **Volts:** 120/208 Wye | **A.I.C. Rating:**
Supply From: OLDP | **Phase:** 3 | **Mains Type:** MCB
Mounting: Surface | **Wires:** 4 | **Bussing:** 100 A
Enclosure: Type 1 | **Mains Rating:** 80 A
Feeder:

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A		B		C		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	B-203...	2#12+1#12G	20 A	1	1080	1080					1	20 A	2#12+1#12G	B-203...	2
3	REC-B-209	2#12+1#12G	20 A	1			900	1080			1	20 A	2#12+1#12G	B-206 RECPTS	4
5	DKN FUNTAIN-B-202	2#12+1#12G	20 A	1					180	900	1	20 A	2#12+1#12G	B-207,10,11 RCPTS	6
7	B-208,209 RCPTS	2#12+1#12G	20 A	1	720	1080					1	20 A	2#12+1#12G	B-207...	8
9	B-210 RECEPTS	2#12+1#12G	20 A	1			720	500			1	20 A	2#12+1#12G	PROJECTOR-B-208	10
11	WASHER	2#10+1#10G	20 A	2					0	0	2	20 A	2#10+1#10G	WASHER	12
13					0	0									14
15	B-143 RECPT	2#12+1#12G	20 A	1			180	180			1	20 A	2#12+1#12G	ELEV SUMP PIT	16
17	ELEV SUMP PUMP SP-2	3#12+1#12G IN 3/4"C	20 A	3	800	90					1	20 A	2#12+1#12G	HOT WATER HEATER	18
19									800	50	1	20 A	2#12+1#12G		20
21							800	90			2	60 A	2#8+1#10G IN 3/4"C	DRYER	22
23	FSD'S	2#12+1#12G	20 A	1					160	160	1	20 A	2#12+1#12G	FSD'S	24
25	EXTERIOR...	2#12+1#12G	20 A	1	198	0					1	20 A	--	Spare	26
27	TV RECEPTACLE	2#12+1#12G	20 A	1			180	180			1	20 A	2#12+1#12G	TV RECEPT	28
29	SSDS FAN	2#12+1#12G	20 A	1					169	169	1	20 A	2#12+1#12G	SSDS FAN	30
31	SSDS FAN	2#12+1#12G	20 A	1	169	720					1	20 A	2#12+1#12G	B-108 RECEPTACLES	32
33	B-101 RECEPTACLES	2#12+1#12G	20 A	1			720	540			1	20 A	2#12+1#12G	B-104 RECEPTACLES	34
35	B-103 RECEPTACLES	2#12+1#12G	20 A	1					900	720	1	20 A	2#12+1#12G	B-138 RECEPTACLES	36
37	GFI RECEPTACLES	2#12+1#12G	20 A	1	720	720					1	20 A	2#12+1#12G	B-115 RECEPTACLES	38
39	B-129 RECEPTACLES	2#12+1#12G	20 A	1			720	720			1	20 A	2#12+1#12G	B-147 RECEPTACLES	40
41	K9 RECEPTACLES	2#12+1#12G	20 A	1					720	540	1	20 A	2#12+1#12G	B-124 RECEPTACLES	42
43	REC-B-203	2#12+1#12G	20 A	1	720	720					1	20 A	2#12+1#12G	REC-B-205	44
45	REC-B-208	2#12+1#12G	20 A	1			1080	500			1	20 A	2#12+1#12G	PROJ.SCREEN-B-208	46
47	REC-B-210 & COPIER	2#12+1#12G	20 A	1					900	1080	1	20 A	2#12+1#12G	FL BOXES-B-210	48
49	FOUNTAIN-B-114	2#12+1#12G	20 A	1	180	540					1	20 A	2#12+1#12G	REC- CORRIOR	50
51	Spare	--	20 A	1			0	720			1	20 A	2#12+1#12G	REC-B-121	52
53	Spare	--	20 A	1					0	0	1	20 A	2#12+1#12G	CADAVER FREEZER	54
55	Spare	--	20 A	1	0	0					1	20 A	--	Spare	56
57	Spare	--	20 A	1			0	0			1	20 A	--	Spare	58
59	Spare	--	20 A	1					0	0	1	20 A	--	Spare	60
61	Spare	--	20 A	1	0	0					1	20 A	--	Spare	62
63	Space	--	--	1			--	--			1	--	--	Space	64
65	Space	--	--	1					--	--	1	--	--	Space	66
67	Space	--	--	1	--	3940					3	60 A	SEE ONE LINE DIAGRAM	FP	68
69	Space	--	--	1			--	2500							70
71	Space	--	--	1					--	2880					72
				Total Load	13477 VA		12125 VA		10318 VA						
				Design Amp	100 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	338 VA	100.00%	338 VA		
Power	13082 VA	100.00%	13082 VA	**Total Conn. Load:**	35911 VA
Receptacle	22500 VA	72.22%	16250 VA	**Total Est. Demand:**	29662 VA
				Total Conn.:	100 A
				Total Est. Demand:	82 A

Notes:

Branch Panel: B-FP

Location: Space 91 | **Volts:** 120/208 Wye | **A.I.C. Rating:**
Supply From: B-OL3 | **Phase:** 3 | **Mains Type:** MCB
Mounting: Surface | **Wires:** 4 | **Bussing:** 60 A
Enclosure: Type 1 | **Mains Rating:** 60 A
Feeder:

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	2,000 GAL DIESEL STORAGE TANK	2#10+1#10G	20 A	2	1250	1250					2	20 A	2#10+1#10G	10,000 GAL GASOLINE STORAG...	2
3							1250	1250							4
5	DISPENSER	2#10+1#10G	20 A	1					1440	1440	1	20 A	2#10+1#10G	DISPENSER	6
7	FUEL SHIELD	2#10+1#10G	20 A	1	1440	0					1	20 A	--	Spare	8
9	Spare	--	20 A	1			0	0			1	20 A	--	Spare	10
11	Spare	--	20 A	1					0	0	1	20 A	--	Spare	12
				Total Load	3940 VA		2500 VA		2880 VA						
				Design Amp	26 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Power	9320 VA	100.00%	9320 VA		
				Total Conn. Load:	9320 VA
				Total Est. Demand:	9320 VA
				Total Conn.:	26 A
				Total Est. Demand:	26 A

Notes:

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Patomac St NW, Suite 121, Washington, DC 20007

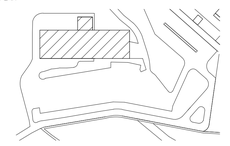
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
4	21 JUL 2023	ADDENDUM 34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033176E
PENNSYLVANIA

2023-06-16
SIGNATURE DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

LOW VOLTAGE PANEL SCHEDULES

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

SHEET No. BSO-E-602

DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK	APR 2022	AS NOTED

TYPE	DESCRIPTION	MFR.	CATALOG NO.	NO. OF LAMPS	WATTS	LUMENS	LAMP TYPE	DIMMING CONTROL	VOLTAGE	ACCEPTABLE ALTERNATE MFR.	LOCATION	NOTES
AD1	MOUNTING: Recessed, Ceiling APERTURE SIZE: 4.1"DIA DIMENSIONS: 4"DIA x 5.5"H OPTICS: NA ACCESSORY LENS: Matte Diffuser FINISH: Powder Coat, White ADD'L ATTRIBUTES:	GOTHAM	VO4-30-15-AR-WD-LD-MVOLT-GZ10	1 ea.	13.7	1293 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	EXTERIOR ENTRIES	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
AW1	MOUNTING: Surface, Wall DIMENSIONS: 7.09"W x 3.94"H x 6.94"D OPTICS: Medium Symmetric Down ACCESSORY LENS: Hexcell Louver FINISH: Black Mat - 9004 ADD'L ATTRIBUTES:	WE-EF LIGHTING	131-9970-9004	1 ea.	13	1182 lm delivered	LED module 3000K 80CRI	NON-DIM	120-277	BEGA LIGMAN LIGHTING	EXTERIOR FACADE	EGRESS DOORS & PATH
PD1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 3-7/64"DIA DIMENSIONS: 3-7/64"DIA X 5"H OPTICS: 60° WIDE FLOOD ACCESSORY LENS: MATTE DIFFUSE FINISH: POLYESTER POWDER COAT, MATTE BLACK ADD'L ATTRIBUTES: 50° CUTOFF, FIELD INTERCHANGABLE OPTIC	GOTHAM	EVO2CC--30-15-AR-LD-WD-MVOLT-UGZ-SGBCC-CCAN-C120-90CRI-DBL	1 ea.	21.2	1302 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	LEVEL 0 - ATRIUM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PL3	MOUNTING: Suspended, Ceiling APERTURE SIZE: 4" DIMENSIONS: 4"W x LENGTH X 4-9/16"H OPTICS: NA ACCESSORY LENS: Flat Diffuser FINISH: Polyester Powder Coat, Matte White...	FINELITE	HP4-P-ID-B-B-930-F-F-96LG-120-SC-FC10-SW	1 ft.	9.2	1015 lm/ft delivered	LED linear 3000K 90CRI	0-10v	120-277	AXIS WHITEGOODS	BSO- LEVEL 1 & 2	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PS2	MOUNTING: Suspended, Ceiling APERTURE SIZE: 6.8"W DIMENSIONS: 6.8"W x 48"L X 4.2"H OPTICS: Wide Distribution ACCESSORY LENS: Low Profile Clear Len FINISH: Polyester Powder Coat, Matte White...	LITHONIA	FEM-L48-6000LM-LPACL-WD-MVOLTZ-GZ10-30K-90CRI	1 ea.	39	4703 lm delivered	LED LINEAR 3000K 90CRI	0-10V	120-277		BSO - LEVEL 1 - KENNEL	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PS3	MOUNTING: Suspended, Ceiling APERTURE SIZE: 5.5"W DIMENSIONS: 5.5"W x 48"L X 3.5"H OPTICS: NA ACCESSORY LENS: Curved Len FINISH: Polyester Powder Coat, Matte White...	LITHONIA	BLWP4-20L-ADP-MVOLTZ-GZ10-L-P930	1 ea.	16	1985 lm delivered	LED LINEAR 3000K 90CRI	0-10V	120-277		BSO/FTU - STORAGE	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RD1	MOUNTING: Recessed, Ceiling APERTURE SIZE: 18.1"DIA DIMENSIONS: 18.1"DIA x 5.5"H OPTICS: NA ACCESSORY LENS: Matte Diffuser FINISH: Powder Coat, White...	GOTHAM	EVO4--30-15-AR-WD-LD-MVOLT-GZ10-90CRI-TRW	1 ea.	13.7	1293 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	TYP CORRIDOR & RESTROOM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RL1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 4" DIMENSIONS: 4"W X LENGTH X 4-9/16"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	FINELITE	HP4-P-ID-B-B-930-F-F-96LG-120-SC-FC10-SW	1 /ft	9.2	1015 lm/ft delivered	LED linear 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	LEVEL 1 & 2 - BSO TYP - LOCKER	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PS1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 12.5"DIA DIMENSIONS: 13.25"DIA X 12.75"H OPTICS: WIDE DISTRIBUTION ACCESSORY LENS: FLAT DIFFUSER FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	HOLOPHANE	BALED-5000LM-6585U-MVOLT-30K-PM	1 ea.	39	4334 lm delivered	LED module 3000K 90CRI	0-10V	120-277		LEVEL 1 - BSO	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RP2	MOUNTING: RECESSED, CEILING APERTURE SIZE: 4"W DIMENSIONS: 4"W X LENGTH X 5-1/8"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER WITH 2" REGRESSED FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HP-WS-4W-2D-LENGTH-B-930-SW-120-SC-FC10-	1 FT.	4.6	297 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	TYP. RESTROOM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RT1	MOUNTING: RECESSED, CEILING APERTURE SIZE: 2'X2' DIMENSIONS: 24"W X 5-1/8"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HPT-RSE-2X2-B-930-96-120-SC-FC9	1 ea.	36.1	3377 lm delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	TYPICAL - OFFICE MAG - KITCHEN	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RW1	MOUNTING: Recessed, Ceiling APERTURE SIZE: 4"W DIMENSIONS: 4"W x LENGTH x 4"H OPTICS: NA ACCESSORY LENS: Flat Diffuser FINISH: Powder Coat, White...	FINELITE	HP-4R-WWD-LENGTH-B-930-F-96LG-120-SC-FC10	1 ft.	4.6	357 lm/ft delivered	LED module 3000K 90CRI	0-10v	120-277	AXIS WHITEGOODS	TYP. CLASSROOM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SC1	MOUNTING: SURFACE, CEILING APERTURE SIZE: 4-1/8"DIA DIMENSIONS: 7-5/16"DIA X 24"L X 2-11/16"H OPTICS: NA ACCESSORY LENS: SOLITE CLEAR FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	DMF	DRDSS-4R-10-9-30-O	1 ea.	12	1000 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	TYP. RESTROOM/ SHOWER	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SS1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 6.8"W DIMENSIONS: 6.8"W X 48"L X 4.2"H OPTICS: WIDE DISTRIBUTION ACCESSORY LENS: LOW PROFILE CLEAR LEN FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	LITHONIA	FEM-L48-4000-LPACL-WD-MVOLTZ-GZ10-30K-90CRI	1 ea.	39	3150 lm delivered	LED LINEAR 3000K 90CRI	0-10V	120-277			•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SW1	MOUNTING: SURFACE, WALL APERTURE SIZE: 2.25"W DIMENSIONS: 4.5"W X 23.41"L X 3.95"H OPTICS: ACCESSORY LENS: FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	FINELITE	HP2WMID-LENGTH-H-H-930-ASY-DAO-96LG-277-SC-FC10-MB-FE-SW	1 ea.	13.8	624 lm UP 532 lm DN delivered	LED MODULE 3000K 90CRI	0-10V	120-277	H.E. WILLIAMS L.S.I	DORM STAIR	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •LENGTHS AS NOTED ON PLAN, VERIFY PER LANDING
WP	DIE-CAST ALUMINUM BACK PLATE AND HEAT SINK SEALED WITH THERMAL SHOCK-RESISTANT GLASS GLOBE WITH GUARD	PHILIPS	VWXL-14-NW-G1-8	1 ea.	14	MINI CRI: 70	4000K	0-10V	120-277	COLUMBIA	ELEVATOR PIT	•MOUNTS TO STANDARD ELECTRICAL JUNCTION BOX (BY OTHERS)
V3	MOUNTING: PENDANT (SUSPENSION CABLES) 12" HUNG FROM CEILING SURFACE FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES.	COLUMBIA	PEL2-35MV-EDU	1 ea.	206.45	31866	3500K	0-10V	120-277		GARAGE	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
Z1	MOUNTING: PENDANT, RECESSED, SURFACE FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES:	COLUMBIA	MPS-4-40-U-*-ELL14 FOR EM BATTERY PACK	1 ea.		4000 lm delivered	LED module, 4000K, 80 CRI	NON-DIM	UNV	H.E. WILLIAMS L.S.I	BACK OF HOUSE SPACES	•FINISH PER ARCHITECT •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
Z2	MOUNTING: PENDANT, RECESSED, SURFACE FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES:	COLUMBIA	MPS-2-40-U-*-ELL14 FOR EM BATTERY PACK	1 ea.	20.4	2500 lm delivered	LED module, 4000K, 80 CRI	NON-DIM	UNV		BACK OF HOUSE SPACES	•FINISH PER ARCHITECT •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
X1	MOUNTING: WALL FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES: FIELD ADJUSTABLE CHEVRONS	EMERI-LITE	LS VXX NRWA	1 EA	23		LED	NON-DIM	UNIV		EGRESS	•EXIT SIGN •FINISH PER ARCHITECT
X2	MOUNTING: CEILING FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES: FIELD ADJUSTABLE CHEVRONS	COLUMBIA	LS VXX NRWA	1 EA	23		LED	NON-DIM	UNIV		EGRESS	•EXIT SIGN •FINISH PER ARCHITECT

LIGHTING CONTROL SEQUENCE OF OPERATIONS

TYPICAL ROOM TYPE	SENSOR OPERATION	PHOTOCELL	TIMECLOCK BACKUP	NETWORKED?	SWITCH	OPERATION	EMERGENCY (SWITCHED/UNSWITCHED)	BASIS OF DESIGN - LUTRON CONTROLS ALTERNATE: CRESTRON	SWITCHED RECEPTACLES	NOTES
CORRIDORS	OCCUPANCY	NO	YES	YES	2-BUTTON	ON/OFF	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	AUOTMATIC ON, AUTOMATIC OFF BASED ON OCCUPANCY WITH LOCAL OVERRIDE SWITCH. TIMECLOCK OVERRIDE TO OFF.
RESTRICTED ACCESS STAIRWELLS	OCCUPANCY	NO	NO	NO	N/A	N/A	UNSWITCHED	INTEGRAL SENSORS	NO	INTEGRAL SENSOR IN LUMINAIRE DIMS LIGHT TO 50% OR LESS WHEN VACANCY DETECTED.
CLOTHING STORAGE	OCCUPANCY	INTEGRAL TO LUMINAIRE	YES	YES	N/A	N/A	UNSWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	INTEGRAL SENSOR IN LUMINAIRE DIMS LIGHT TO 50% OR LESS WHEN VACANCY DETECTED. CENTRAL TIMECLOCK CONTROL FOR OPERATION 'ON' DURING...
PRIVATE OFFICES	OCCUPANCY	WHERE DAYLIGHT IS PRESENT	YES	YES	LOCAL RAISE/LOWER	MANUAL DIM	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	YES	MANUAL ON, AUTO OFF OPERATIOIN WITH MANUAL DIMMING RAISE/LOWER. TIMECLOCK BACKUP TO OFF. 50% GENERAL USE RECEPTACLES ON OCCUPANCY...
OPEN OFFICES	OCCUPANCY	WHERE DAYLIGHT IS PRESENT	YES	YES	LOCAL SCENE CONTROL WITH MANUAL...	MANUAL DIM	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	YES	TIMECLOCK CONTROL WITH MANUAL SCENE SETTINGS. DAYLIGHT HARVESTING AUTOMATICALLY DIMS LIGHTING BASED ON DAYLIGHT AVAILABILITY...
CONFERENCE ROOM	OCCUPANCY	NO	YES	YES	MULTI-BUTTON SCENE SELECT	SCENE RECALL	SWITCHED	LUTRON ENERGI-SAVR-NODE LOCAL MULTI-ZONE CONTROL SYSTEM	NO	MANUAL SCENE SELECT WALL STATIONS WITH OCCUPANCY SENSOR OVERRIDE TO OFF WHEN VACANCY DETECTED. MANUAL ON.
RESTROOMS - PUBLIC GROUP	OCCUPANCY	NO	YES	YES	SECURE ACCESS	ON/OFF	UNSWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	AUTOMATIC ON, AUTOMATIC OFF OPERATION WITH MANUAL OVERRIDE IN SECURE LOCATION.
RESTROOMS - PRIVATE	OCCUPANCY	WHERE DAYLIGHT IS PRESENT	NO	NO	WALL SWITCH SENSOR	MANUAL DIM	SWITCHED	LUTRON MAESTRO WALLSWITCH DIMMING SENSOR	NO	MANUAL ON, AUTO OFF OPERATIOIN WITH MANUAL DIMMING RAISE/LOWER.
BREAK / PANTRY	OCCUPANCY	WHERE DAYLIGHT IS PRESENT	NO	NO	LOCAL RAISE/LOWER	MANUAL DIM	SWITCHED	LUTRON STAND ALONE ENERGI-SAVR-NODE SYSTEM	NO	MANUAL ON, AUTO OFF OPERATIOIN WITH MANUAL DIMMING RAISE/LOWER.
ELEC / MECH / IT ROOMS	N/A	NO	NO	NO	LOCAL TOGGLE	ON/OFF	SWITCHED	MANUAL OPERATION	NO	MANUAL OPERATION
GENDER NEUTRAL-RESTROOM	OCCUPANCY	NO	NO	NO	WALL SWITCH SENSOR	ON/OFF	SWITCHED	LUTRON MAESTRO WALLSWITCH SENSOR	NO	MANUAL ON, AUTOMATIC OFF WITH MANUAL OVERRIDE.
EXTERIOR BUILDING MOUNT	N/A	OPEN LOOP PHOTOCELL	YES	YES	N/A	N/A	UNSWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	TIMECLOCK CONTROL BASED ON OWNER'S SCHEDULE, WITH DIMMING CAPABILITY. BUILDING MOUNTED ENTRY LIGHTING TO REMAIN ON DUSK TO DAWN.
FITNESS CENTER	OCCUPANCY	WHERE DAYLIGHT IS PRESENT	YES	YES	MULTI-BUTTON SCENE SELECT	SCENE RECALL	SWITCHED	LUTRON ENERGI-SAVR-NODE LOCAL MULTI-ZONE CONTROL SYSTEM	NO	MANUAL SCENE SELECT WALL STATIONS WITH OCCUPANCY SENSOR OVERRIDE TO OFF WHEN VACANCY DETECTED. MANUAL ON.
GARAGE	N/A	NO	NO	NO	LOCAL TOGGLE	ON/OFF	SWITCHED	MANUAL OPERATION	NO	MANUAL OPERATION
K9-CIRCULATION	NA	NO0	NO	NO	LOCAL TOGGLE	ON/OFF	SWITCHED	MANUAL OPERATION	NO	MANUAL OPERATION
K9-KENNELS	NA	NO	NO	NO	LOCAL TOGGLE	ON/OFF	SWITCHED	MANUAL OPERATION	NO	MANUAL OPERATION
LOCKER ROOM	OCCUPANCY	WHERE DAYLIGHT IS PRESENT	YES	YES	LOCAL RAISE/LOWER	MANUAL DIM	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	YES	MANUAL ON, AUTO OFF OPERATIOIN WITH MANUAL DIMMING RAISE/LOWER. TIMECLOCK BACKUP TO OFF. 50% GENERAL USE RECEPTACLES ON OCCUPANCY...
CLASSROOM	OCCUPANCY	WHERE DAYLIGHT IS PRESENT	YES	YES	LOCAL SCENE CONTROL WITH MANUAL	MANUAL DIM	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	YES	TIMECLOCK CONTROL WITH MANUAL SCENE SETTINGS. DAYLIGHT HARVESTING AUTOMATICALLY DIMS LIGHTING BASED ON DAYLIGHT AVAILABILITY.
PLANT ROOM	OCCUPANCY	WHERE DAYLIGHT IS PRESENT	YES	YES	LOCAL SCENE CONTROL WITH MANUAL	MANUAL DIM	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	YES	TIMECLOCK CONTROL WITH MANUAL SCENE SETTINGS. DAYLIGHT HARVESTING AUTOMATICALLY DIMS LIGHTING BASED ON DAYLIGHT AVAILABILITY.
WORKSHOP	OCCUPANCY	WHERE DAYLIGHT IS PRESENT	YES	YES	LOCAL SCENE CONTROL WITH MANUAL	MANUAL DIM	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	YES	TIMECLOCK CONTROL WITH MANUAL SCENE SETTINGS. DAYLIGHT HARVESTING AUTOMATICALLY DIMS LIGHTING BASED ON DAYLIGHT AVAILABILITY.
DRYING AREA	OCCUPANCY	WHERE DAYLIGHT IS PRESENT	YES	YES	LOCAL SCENE CONTROL WITH MANUAL	MANUAL DIM	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	YES	TIMECLOCK CONTROL WITH MANUAL SCENE SETTINGS. DAYLIGHT HARVESTING AUTOMATICALLY DIMS LIGHTING BASED ON DAYLIGHT AVAILABILITY.
BRIEFING AREA	OCCUPANCY	WHERE DAYLIGHT IS PRESENT	YES	YES	LOCAL SCENE CONTROL WITH MANUAL	MANUAL DIM	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	YES	TIMECLOCK CONTROL WITH MANUAL SCENE SETTINGS. DAYLIGHT HARVESTING AUTOMATICALLY DIMS LIGHTING BASED ON DAYLIGHT AVAILABILITY.
LOUNGE	OCCUPANCY	WHERE DAYLIGHT IS PRESENT	YES	YES	LOCAL SCENE CONTROL WITH MANUAL	MANUAL DIM	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	YES	TIMECLOCK CONTROL WITH MANUAL SCENE SETTINGS. DAYLIGHT HARVESTING AUTOMATICALLY DIMS LIGHTING BASED ON DAYLIGHT AVAILABILITY.

GENERATOR SET				GENERATOR ENGINE					POWER RATING (STANDBY)				ALTERNATOR	
MAKE	MODEL	LOCATION	SOUND RATING AT 23 FT	ENGINE MAKE	CYLINDER #	DISPLACEMENT (LITERS)	EPA TIER LEVEL	FUEL SYSTEM TYPE	VOLTAGE	PHASE	POWER FACTOR	KW	DEGREE RISE	EXCITER
CUMMINS	C3250 D6e	LEVEL 2 WEATHER-PROOF, SOUND...	73.8 Dba	CUMMINS	6	23.15	2	DIESEL	480Y/277V	3	0.8	750	125	PMG

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Patomac St NW, Suite 121, Washington, DC 20007

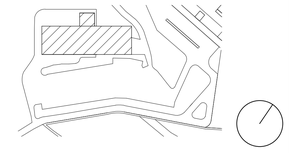
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
4	21 JUL 2023	ADDENDUM 34			
2	23 JUN 2023	ADDENDUM 28			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033176E
PENNSYLVANIA

2023-06-16
SIGNATURE DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

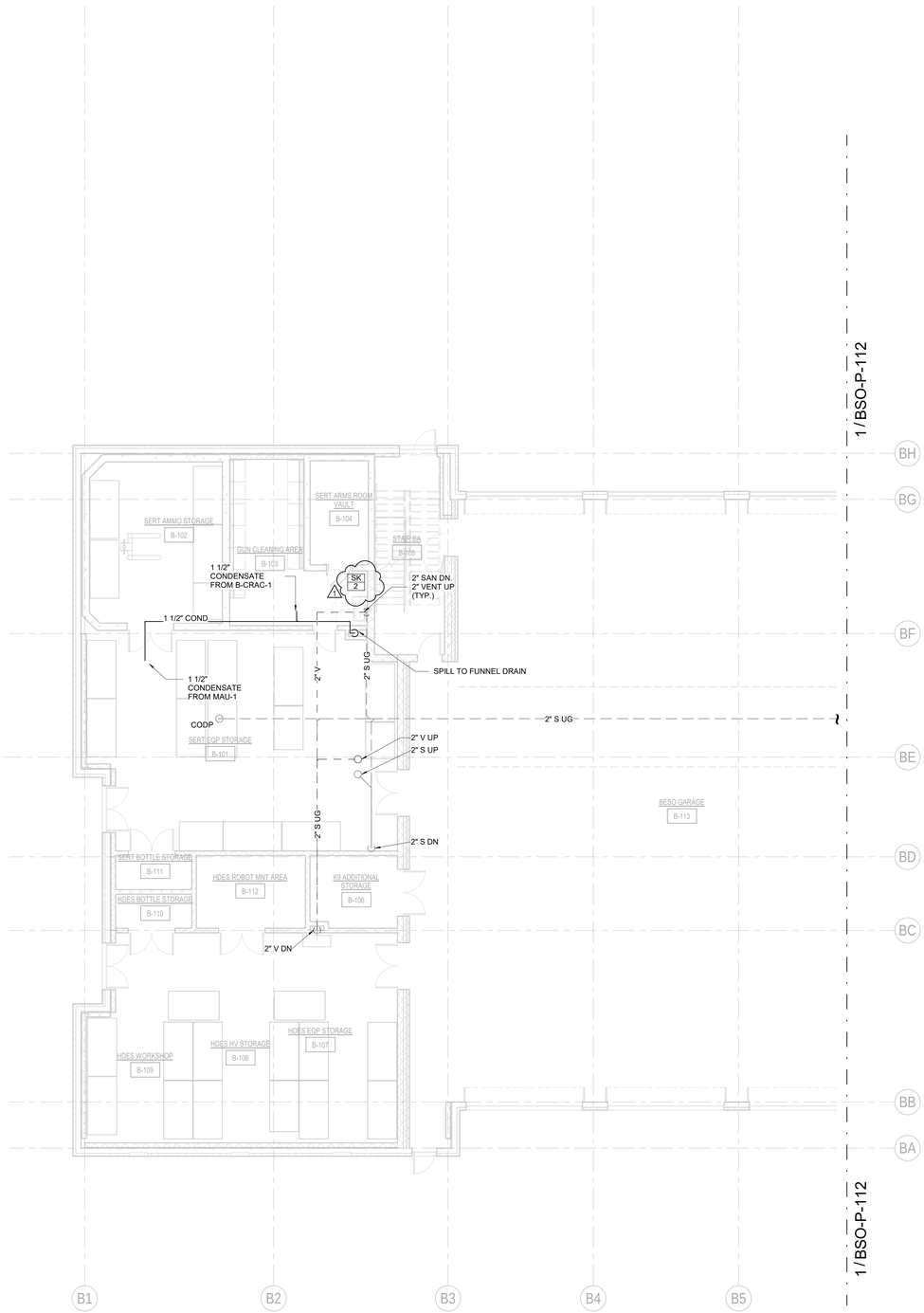
VERIFY SCALE
BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

SCHEDULES

SHEET No.
BSO-E-604

DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK	APR 2022	AS NOTED



1 BESO - FLOOR PART PLAN A - SAN & VENT - LEVEL 1 - PLUMBING

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

GENERAL NOTES

1. ALL UNDERGROUND SANITARY PIPING SHALL HAVE MINIMUM OF ¼" PER FOOT OF SLOPE.
2. ALL PENETRATIONS THROUGH FOUNDATION WALLS SHALL BE PROVIDED WITH LINK-SEAL TYPE PIPE SEAL FOR HYDROSTATIC SEAL.
3. ALL BENDS, CROSS CONNECTIONS UNDERGROUND SHALL BE MADE USING LONG SWEEP ELBOWS AND WYE FITTINGS.
4. REFER TO STRUCTURAL AND SITE/CIVIL DRAWINGS FOR UNDERGROUND PIPE TRENCH BACKFILL MATERIAL AND COMPACTION DETAILS.
5. ALL UNDERGROUND JOINTS SHALL BE BELL AND SPIGOT WITH COMPRESSION GASKETS.
6. ELEVATIONS AND INVERTS SHOWN HERE ARE APPROXIMATE FOR PRILIMINARY COORDINATION ONLY.
7. CONTRACTOR SHALL SUBMIT SHOP-DRAWING FOR AEOR REVIEW AFTER COORDINATING WITH OTHER TRADES AND PRIOR TO COMMENCING ANY WORK.
8. ALL INSTALLATION ARE SUBJECT TO GETTING APPROVED BY AUTHORITY HAVING JURISDICTION (AHJ).
9. ALL WALL AND FLOOR CLEANOUTS, SERVING 4" AND SMALLER, SHALL BE THE SAME SIZE AS THE PIPING SYSTEM THEY SERVE. CLEANOUTS SERVING 5" AND 6" PIPE SYSTEM SHALL BE 4". CLEANOUTS SERVING 8" PIPING SYSTEM SHALL BE 6".
10. PROVIDE ACCESS PANELS IN HARD CEILINGS AND WALL FOR ACCESS TO ALL PLUMBING EQUIPMENT, ISOLATION VALVES, ETC. THE ACCESS PANELS SHALL BE 24" X 24" MINIMUM. PAINT THE PANELS WITH COLOR MATCHING WALL OR CEILING PAINT COLOR SURROUNDING.

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

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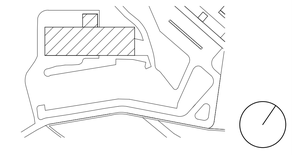
KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	21 JULY 2023	ADDENDUM 34			
	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033176E
PENNSYLVANIA

2023-07-21
SIGNATURE DATE

ARCHITECT
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Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

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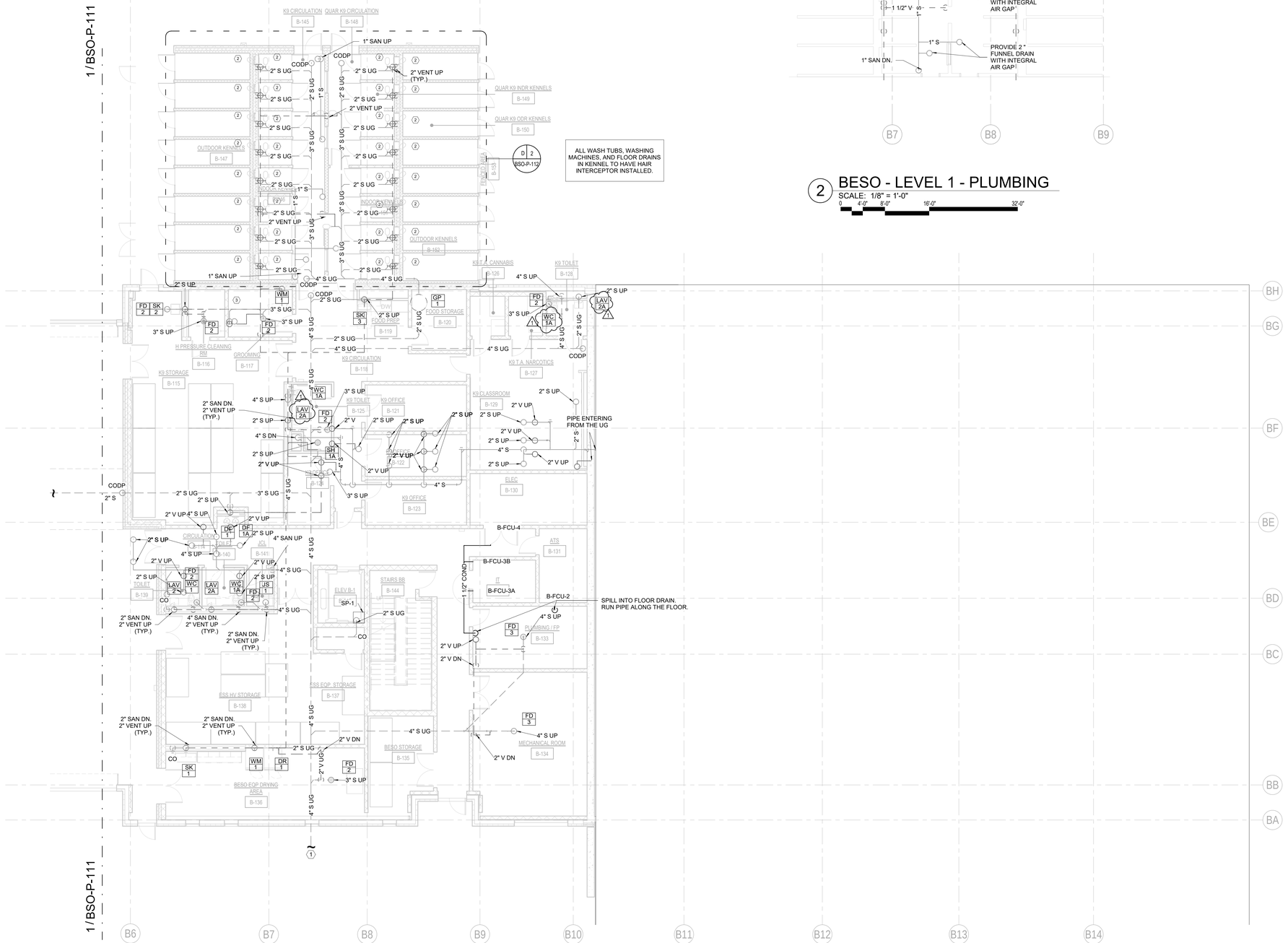
BESO - FLOOR PART PLAN A - SAN & VENT - LEVEL 1 - PLUMBING

SHEET No. BSO-P-111

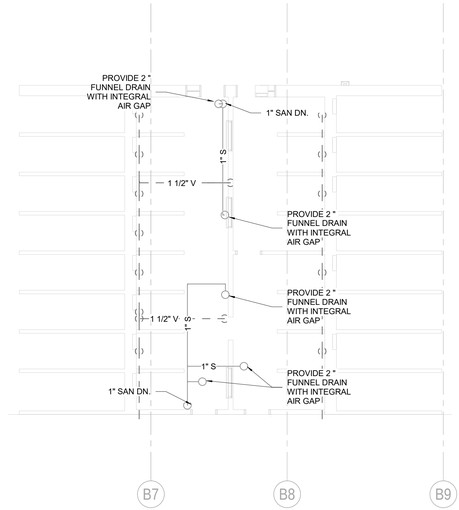
DRAWN BY	CHECKED BY	DATE	SCALE
JG/HP	HS/JKA		AS NOTED



1 BESO - FLOOR PART PLAN B - SAN & VENT - LEVEL 1 - PLUMBING

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"



2 BESO - LEVEL 1 - PLUMBING

SCALE: 1/8" = 1'-0"

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GENERAL NOTES

1. ALL UNDERGROUND SANITARY PIPING SHALL HAVE MINIMUM OF ¼" PER FOOT OF SLOPE.

2. ALL PENETRATIONS THROUGH FOUNDATION WALLS SHALL BE PROVIDED WITH LINK-SEAL TYPE PIPE SEAL FOR HYDROSTATIC SEAL.

3. ALL BENDS, CROSS CONNECTIONS UNDERGROUND SHALL BE MADE USING LONG SWEEP ELBOWS AND WYE FITTINGS.

4. REFER TO STRUCTURAL AND SITE/CIVIL DRAWINGS FOR UNDERGROUND PIPE TRENCH BACKFILL MATERIAL AND COMPACTION DETAILS.

5. ALL UNDERGROUND JOINTS SHALL BE BELL AND SPIGOT WITH COMPRESSION GASKETS.

6. ELEVATIONS AND INVERTS SHOWN HERE ARE APPROXIMATE FOR PRILIMINARY COORDINATION ONLY.

7. CONTRACTOR SHALL SUBMIT SHOP-DRAWING FOR AEOR REVIEW AFTER COORDINATING WITH OTHER TRADES AND PRIOR TO COMMENCING ANY WORK.

8. ALL INSTALLATION ARE SUBJECT TO GETTING APPROVED BY AUTHORITY HAVING JURISDICTION (AHJ).

9. ALL WALL AND FLOOR CLEANOUTS, SERVING 4" AND SMALLER, SHALL BE THE SAME SIZE AS THE PIPING SYSTEM THEY SERVE. CLEANOUTS SERVING 6" AND 8" PIPE SYSTEM SHALL BE 4". CLEANOUTS SERVING 8" PIPING SYSTEM SHALL BE 6".

10. PROVIDE ACCESS PANELS IN HARD CEILINGS AND WALL FOR ACCESS TO ALL PLUMBING EQUIPMENT, ISOLATION VALVES, ETC. THE ACCESS PANELS SHALL BE 24" X 24" MINIMUM. PAINT THE PANELS WITH COLOR MATCHING WALL OR CEILING PAINT COLOR SURROUNDING.

SHEET NOTES:

1 REFER TO SITE/CIVIL DRAWINGS FOR CONTINUATION.

2 PROVIDE BLUCHER 790.273.000.03S OR APPROVED EQUAL FLOOR DRAIN WITH BLUCHER FILTER BASKET 780.003.003.05 OR APPROVED EQUAL AND GRATING FLUSHED WITH SLAB TO TRAP ANIMAL AND DOG HAIR.

3 PROVIDE WATTS SI750TO OR EQUAL INLINE HAIR TRAP FOR THE DOG WASH BASINS.

VERIFY SCALE

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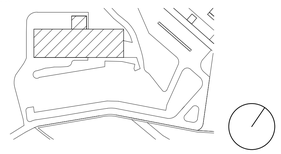

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1	21 JULY 2023	ADDENDUM 34			
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REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E
PENNSYLVANIA

2023-07-21
SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
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D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

BESO - FLOOR PART PLAN B - SAN & VENT - LEVEL 1 - PLUMBING

SHEET No. BSO-P-112

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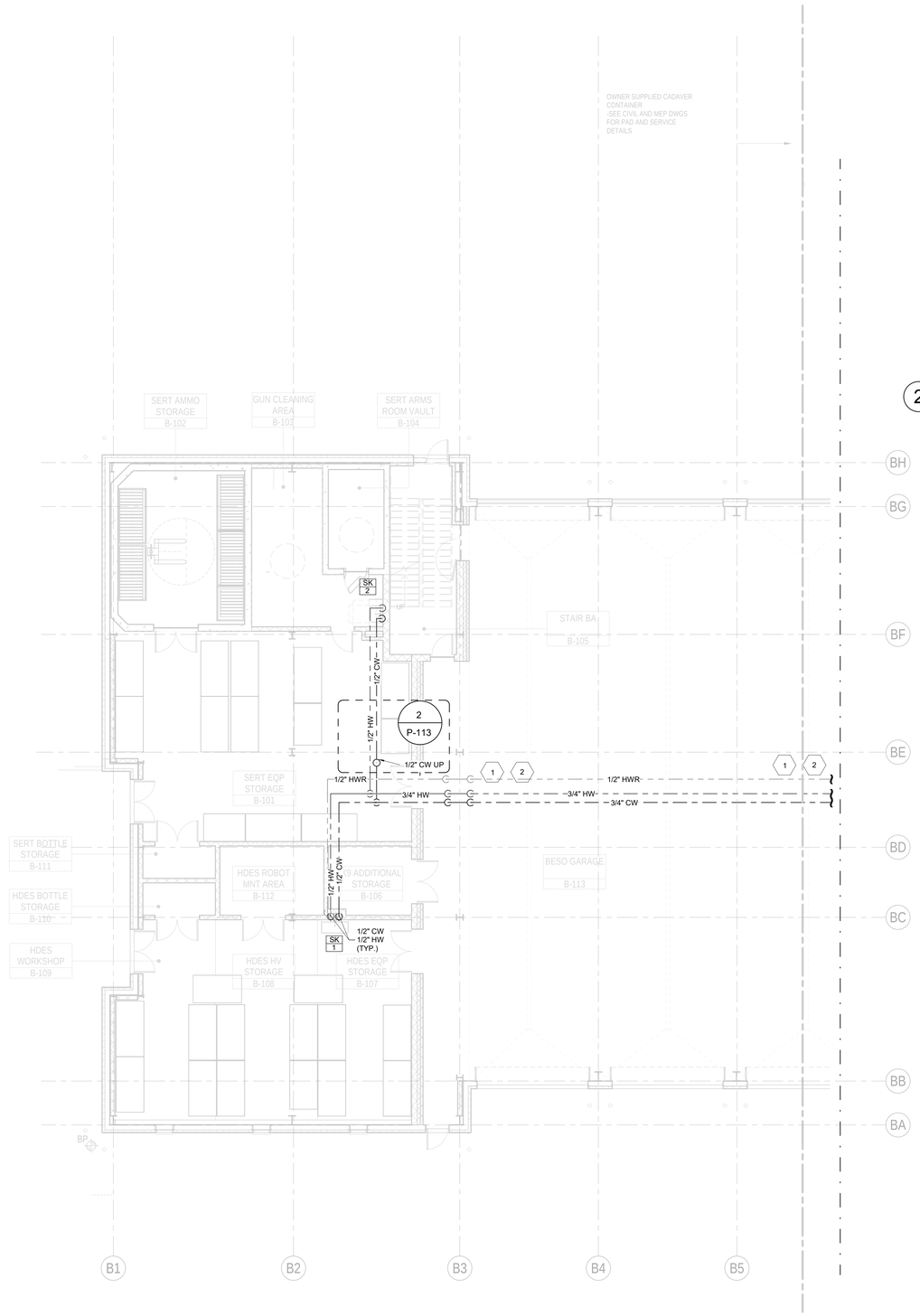

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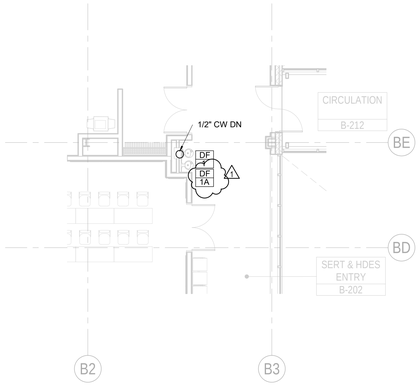
SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"



2 BESO - FLOOR PART PLAN A - DOMESTIC WATER SUPPLY - LEVEL 2 - PLUMBING

SCALE: 1/8" = 1'-0"

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GENERAL NOTES

1. ALL PIPING SHALL BE INSTALLED IN SUCH A MANNER AS TO AVOID FREEZING. ALL WATER PIPING SHALL BE INSTALLED BELOW ATTIC/ROOF INSULATION AND NO PIPING SHALL BE INSTALLED WITHIN EXTREIOR WALLS.

2. THE INSTALLATION OF PLUMBING SYSTEMS SHALL IN NO WAY CRUSH OR COMPROIMISE BUILDING INSULATION AND ALL BELOW GRADE WATER PIPING SHALL BE INSTALLED NO LESS THAN 6" BELOW FROST DEPTH.

3. ALL PIPING SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO BUILDING LINES. THEY SHALL BE SUPPORTED AND ANCHORED AS REQUIRED TO FACILITATE EXPANSION AND CONTRACTION.

4. ALL PIPING SHALL BE CONCEALED EXCEPT IN UNFINISHED SPACES OR OPEN CEILING SPACES.

5. INSULATION AND VAPOR BARRIER SHALL BE PROVIDED ON ALL PIPING AND/OR EQUIPMENT SUBJECT TO HEAT LOSS, CONDENSATION OR CONSTITUTING A POTENTIAL BURN HAZARD.

6. ACCESS DOORS AND/OR PANELS SHALL BE PROVIDED AT ALL MAINTENANCE AND SERVICE LOCATIONS FOR CONCEALED CONTROL DEVICES, VALVES AND PLUMBING EQUIPMENT/DEVICES. UNLESS SIZE OF ACCESS DOOR IS SPECIFICALLY NOTED, PANELS SHALL BE SIZED 18" X 18" MINIMUM AND SHALL BE PAINTED WITH SAME COLOR AS SURROUNDING PAINT COLOR.

7. ALL PIPING SHALL BE SUPPORTED DIRECTLY FROM STRUCTURAL ELEMENTS. NO OTHER COMPONENTS SHALL BE SUPPORTED FROM PLUMBING PIPING.

8. PROVIDE LOCAL TEMPERING VALVES FOR ALL LAVATORIES, SHOWERS AND HAND SINKS. TEMPERING VALVES SHALL CONFORM WITH ASSE 1070.

9. PROVIDE WATER HAMMER ARRESTORS AT ALL QUICK CLOSING VALVES WITH ISOLATION VALVE AND WITH ACCESS OR ACCESS PANELS.

10. ALL THREADED HOSE CONNECTIONS TO DOMESTIC WATER SYSTEM SHALL HAVE AN APPROVED VACUUM BREAKER I.E. HOSE BIBBS, WALL HYDRANTS, SYSTEM DRAINS, EQUIPMENT DRAINS, ETC.

11. PROVIDE INDIVIDUAL SHUT-OFF VALVES FOR EACH PLUMBING FIXTURE, INCLUDING DRINKING FOUNTAINS.

12. ALL PIPING, FITTINGS, VALVES SHALL COMPLY TO LEAD-FREE ACT.

13. CONTRACTOR SHALL PROVIDE TAGS TO EACH VALVES AND PLUMBING EQUIPMENT. CONTRACTOR SHALL PROVIDE VALVE TAG SCHEDULE TO OWNER AT THE END OF JOB.

SHEET NOTES

(1) PROVIDE SELF-REGULATING LOW TEMPERATURE HEATING CABLE FOR FREEZE PROTECTION OF COLD WATER, HOT WATER AND HOT WATER RETURN PIPING. HEAT TRACING CABLE SHALL BE 6 W/FT FOR PIPES 1" AND LARGER HEAT TRACING CABLE SHALL BE 4 W/FT FOR PIPES SMALLER THAN 1" DIAMETER.

(2) PROVIDE "CHROMALOX" MODEL UAS CONNECTION KITS WITH "CHROMALOX" MODEL UES ABOVE INSULATION END SEAL KIT. ALL OTHER APPROVED EQUAL PRODUCTS SHALL BE REVIEWED AND APPROVED BY PROFESSIONALS..

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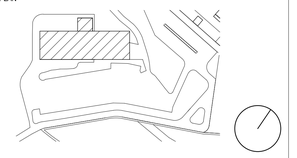

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ENGINEER PE033176E

2023-07-21
SIGNATURE DATE

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D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

BESO - FLOOR PART PLAN A - DOMESTIC WATER SUPPLY - LEVEL 1 - PLUMBING

SHEET No.
BSO-P-113

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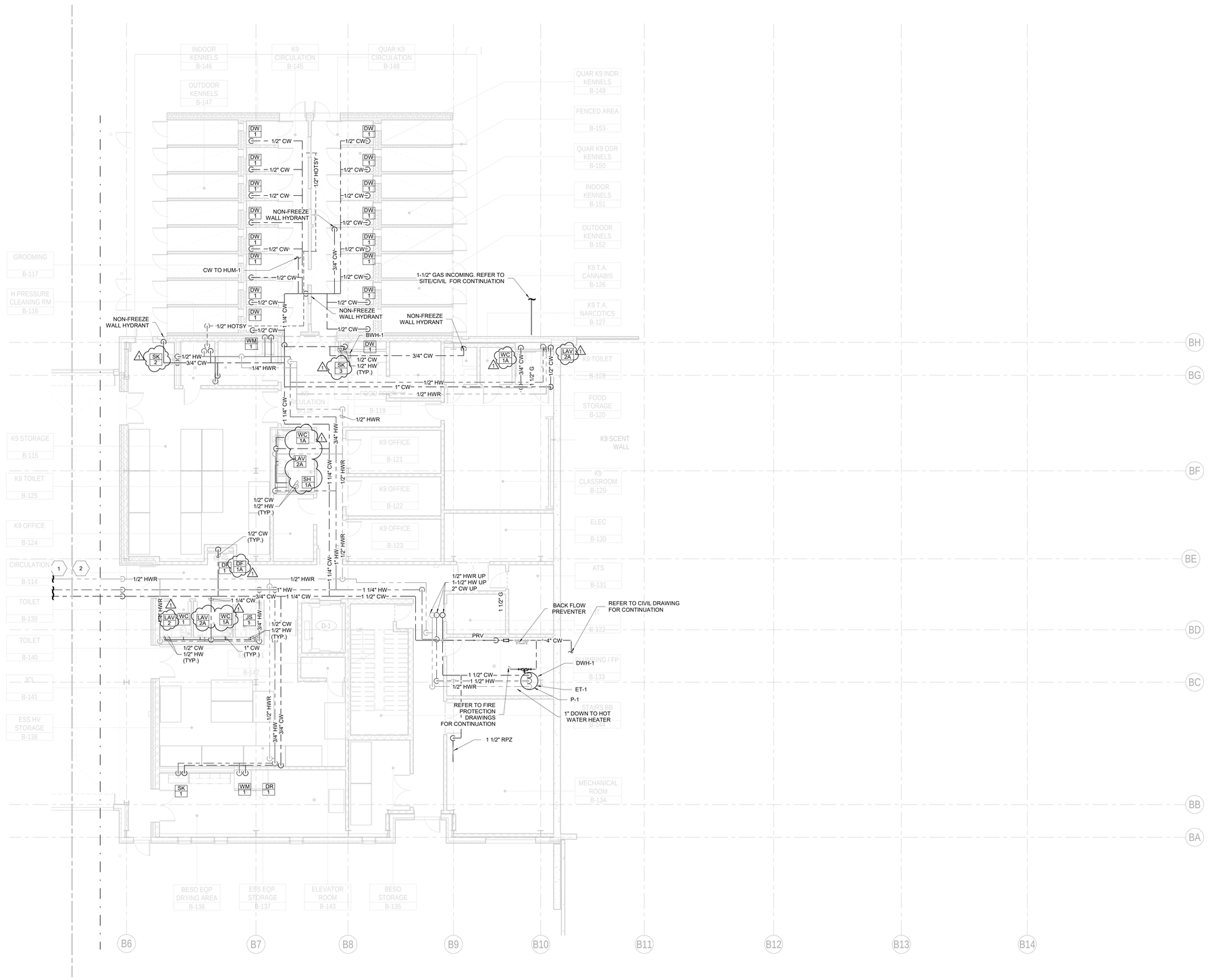

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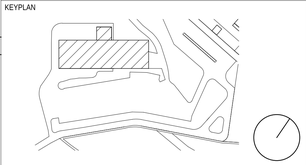

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HERSHEY, DAUPHIN COUNTY, PA

BESO - FLOOR PART PLAN B - DOMESTIC WATER SUPPLY - LEVEL 1 - PLUMBING

SHEET No. BSO-P-114

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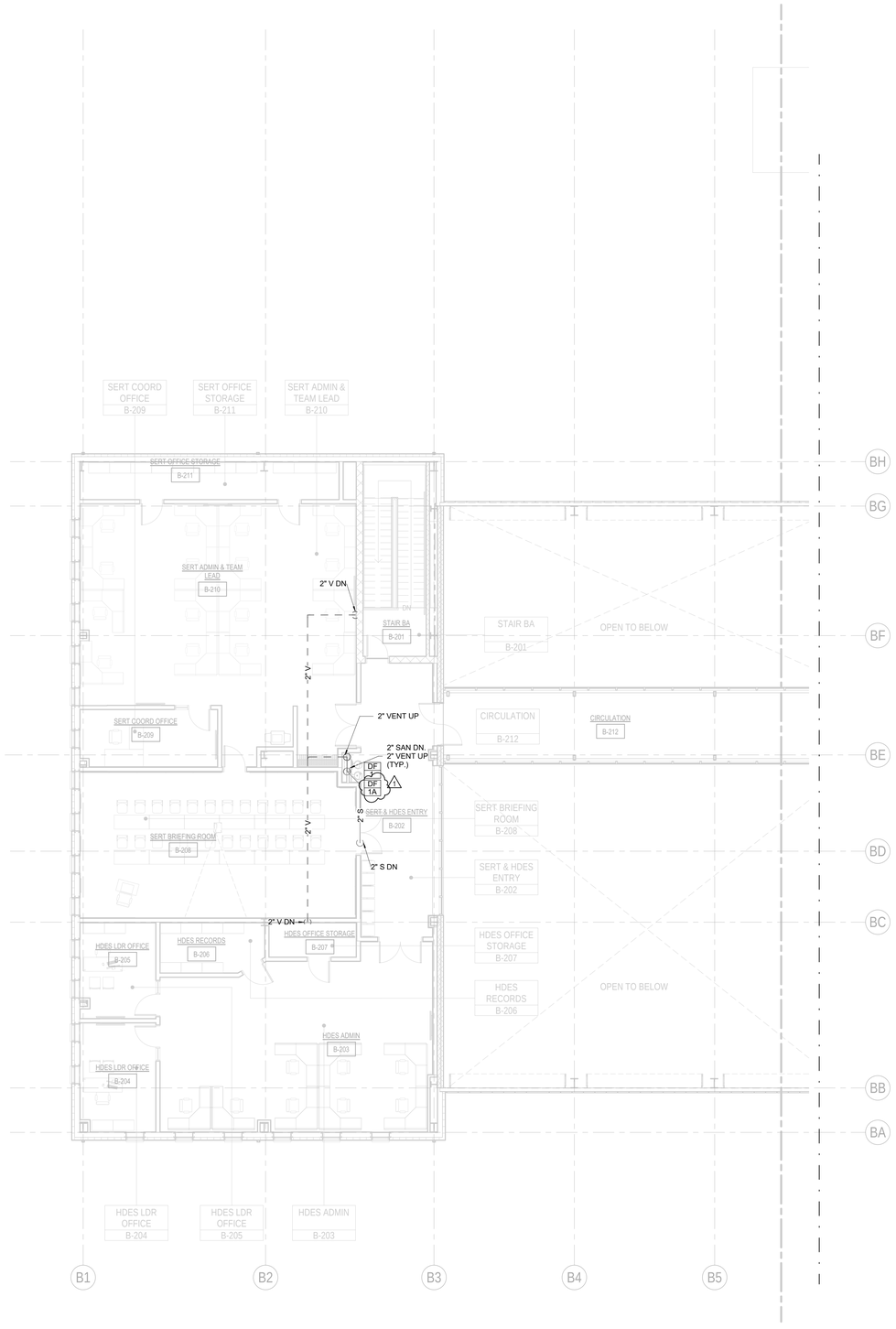

1 BESO - FLOOR PART PLAN A - SAN & VENT - LEVEL 2 - PLUMBING
SCALE: 1/8" = 1'-0"

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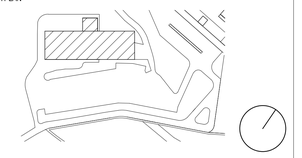

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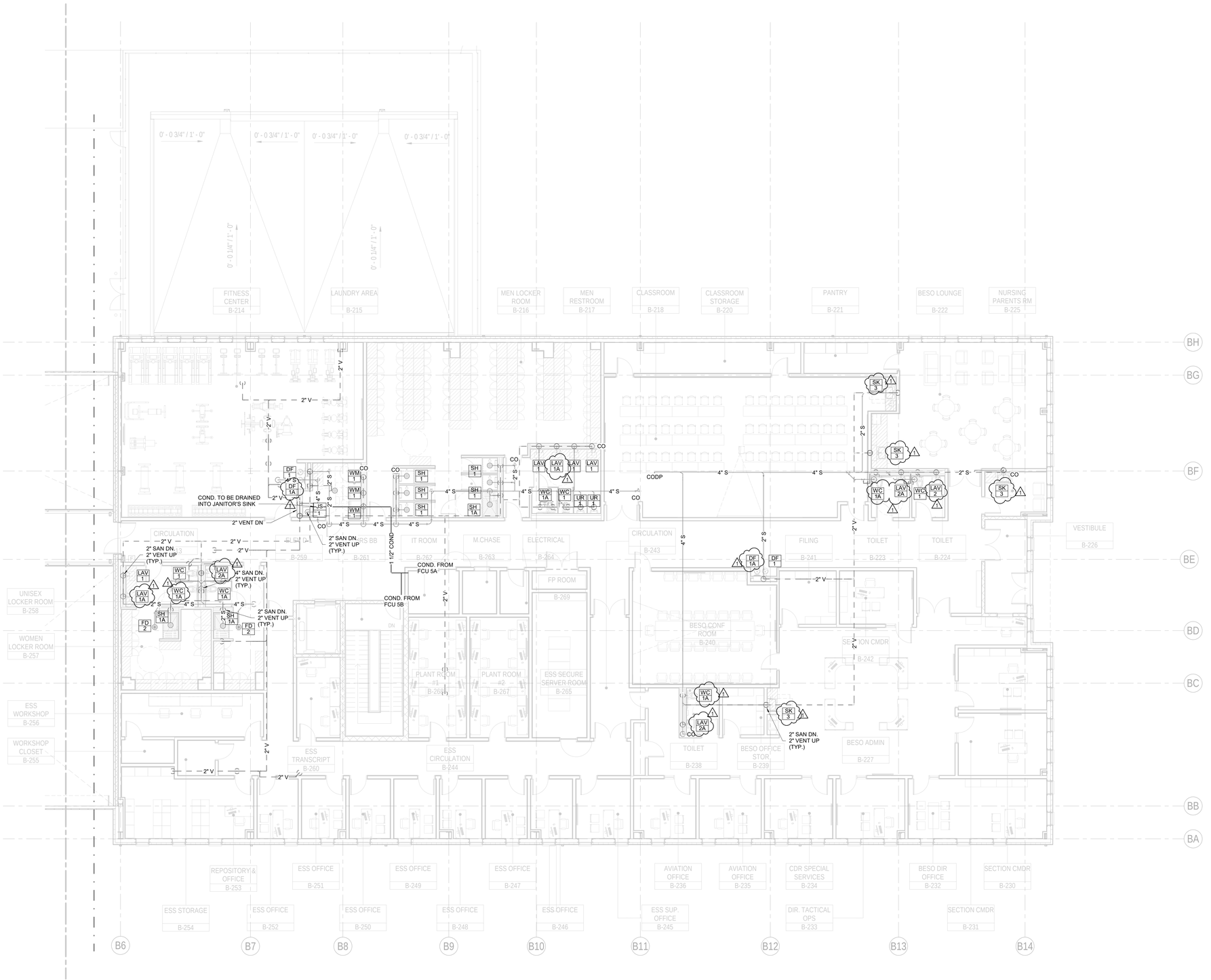

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LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Patomac St NW, Suite 121, Washington, DC 20007

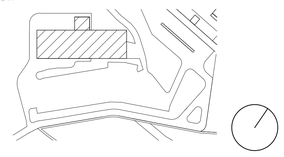
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



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COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE035178E
PENNSYLVANIA

2023-07-21
SIGNATURE DATE

ARCHITECT

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250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

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IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

BESO - FLOOR PART PLAN B - SAN & VENT - LEVEL 2 - PLUMBING

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

SHEET No. BSO-P-122

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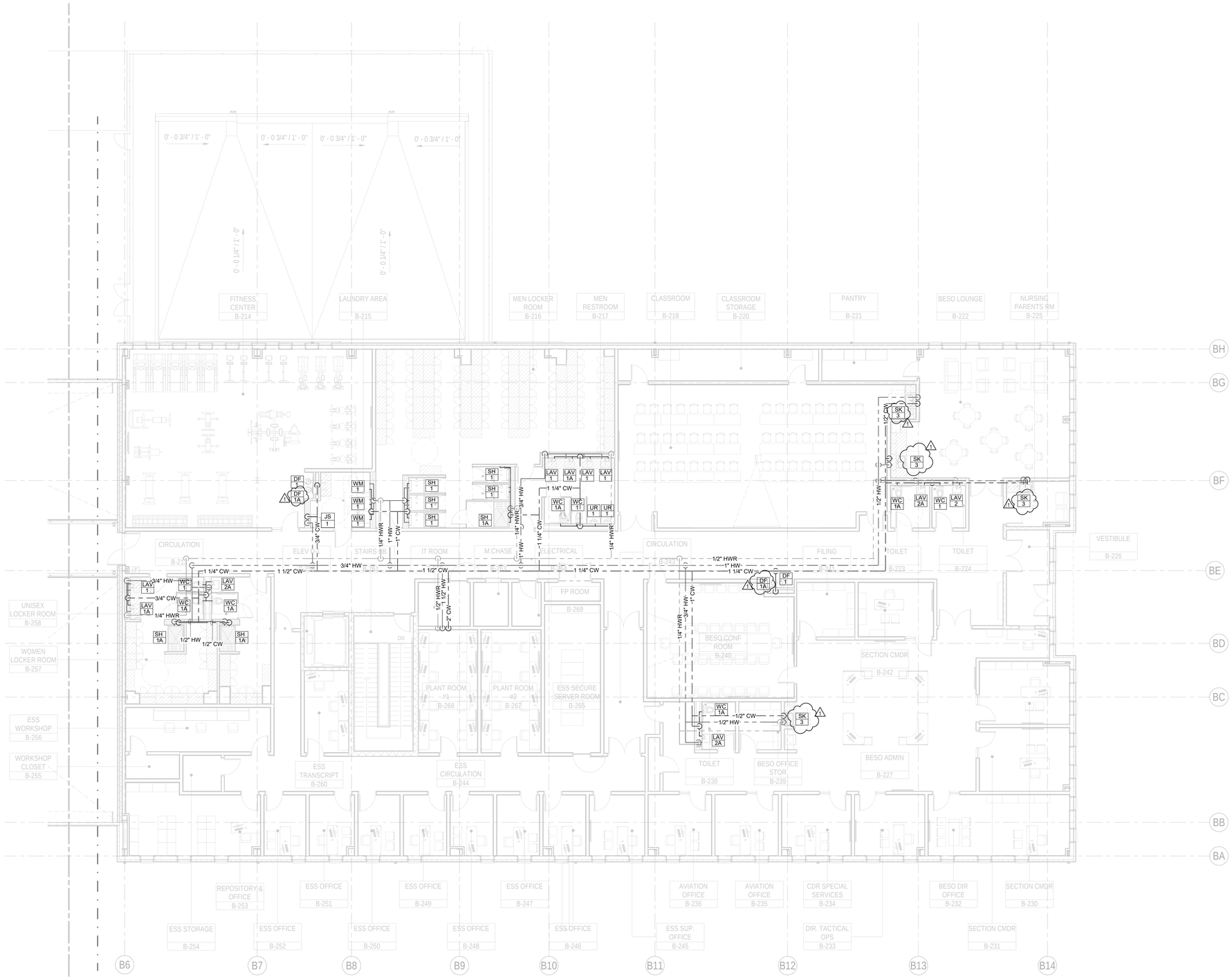

1 BESO - FLOOR PART PLAN B - DOMESTIC WATER SUPPLY - LEVEL 2 - PLUMBING
SCALE: 1/8" = 1'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

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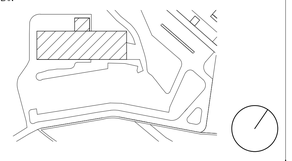

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BESO - FLOOR PART PLAN B - DOMESTIC WATER SUPPLY - LEVEL 2 - PLUMBING

SHEET No.
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DOMESTIC WATER HEATER SCHEDULE

TAG	MODEL	BASIS OF DESIGN	BUILDING	LOCATION	ROOM #	TYPE	RECOVERY RATE (GPH) @100 °F RISE	BTU/HR INPUT	TURNDOWN	STORAGE (GAL.)	STORAGE TEMPERATURE	EFFICIENCY	RELIEF VALVE		ELECTRICAL				MOTOR DATA				GAS			DIRECT VENTING		APPROX. DRY WEIGHT (LBS.)	DIMENSIONS (HXD)	REMARKS
													PRESSURE RATING (PSI)	TEMP. RATING	AMPS	PHASE	CYCLE	VOLTS	AMPS	PHASE	CYCLE	VOLTS	TYPE	OPERATING PRESSURE (INWC.)	CONNECTION (IN.)	AIR INLET	VENT SIZE			
DWH-1	SWA400N	LOCHINVAR	BESO	PLUMBING ROOM	B-133	TANKTYPE	459	399,000	5 : 1	110	140 °F	96%	150	180 °F	2.5	1	60	120	-	-	-	-	NATURAL	10" - 14"	1"	4"	4"	850	77.5"X34"	1, 2, 3, 4

REMARKS:
1. PROVIDE MASTER THERMOSTATIC MIXING VALVE AS REQUIRED.
2. REFER TO MECHANICAL DRAWINGS FOR VENT SIZE AND CONNECTIONS. GC SHALL SUBMIT VENT SHOP DRAWING AND CALCULATION FOR EOR'S REVIEW.
3. PROVIDE LOCAL 100 db AUDIBLE WATER LEAK DETECTOR ALARM.
4. TCC SHALL INTEGRATE WATER HEATER'S MODBUS COMMUNICATION TO BMS SYSTEM.

EXPANSION TANK SCHEDULE

TAG	QTY	SERVICE	LOCATION	MANUFACTURER	TYPE	MODEL	SYSTEM VOLUME	MAX TEMP	FLUID TYPE	MAX PRESS (PSIG)	TANK VOL (GAL)	ACCEPT VOL (GAL)	DRY WEIGHT (LBS)	DIA (IN)	HEIGHT (IN)	WORKING PRESSURE (PSIG)	NOTES	BASIS OF DESIGN
ET-1	1	DWH SYSTEM	B-132	BELL & GOSSETT	DIAPHRAGM	PT-5	25	200	WATER	150	2	0.9	5	8	12-5/8	150	1	BELL & GOSSETT

1. ASME RATED TANKS
2. HVAC DUTY
3. POTABLE WATER RATED

PUMP SCHEDULE

PUMP #	LOCATION	TYPE	MODEL	SERVICE	GPM	TDH	MOTOR DATA			BASIS OF DESIGN
							RPM	CYCLE	VOLTS	
P-1	B-133	CIRCULATOR	NBF-36	DWH SYSTEM	2.8	22	4600	60	115	BELL & GOSSETT

1. PROVIDE 80 GAL CUSHION TANK FOR PACKAGED DOMESTIC WATER BOOSTER PUMP SYSTEM.
2. REFER TO SPECIFICATION 15453 FOR ADDITIONAL INFORMATION.
3. PROVIDE ELASTOMETRIC HANGERS: DOUBLE-DEFLECTION TYPE, WITH MOLDED OIL RESISTANT RUBBER OR NEOPRENE ISOLATOR ELEMENTS BONDED TO STEEL HOUSINGS WITH THREADED CONNECTIONS FOR HANGER RODS.

SUMP PUMP SCHEDULE

PUMP #	LOCATION	SERVICE	TYPE	MODEL NO.	GPM	TDH	MOTOR DATA					BASIS OF DESIGN
							RPM	HP	PHASE	CYCLE	VOLTS	
SP-1	B-126	SUMP PUMP	DUPLEX	ELKT2EC0538	50	25	3500	1/2	3	60	208	BELL & GOSET

ELECTRIC BOOSTER WATER HEATER

WATER HEATER	LOCATION	ELECTRICAL DATA				APPROX WEIGHT LBS	DIMENSIONS (HxWxD)	MODEL	MANUFACTURER
		KW	PHASE	CYCLE	VOLTS				
BWH-1	B-119	7.2	SINGLE	CYCLE	240	5.8	8"x11.5"x3.75"	DURA-POWER DEL-15	AO SMITH

GRINDER PUMP SCHEDULE

GENERAL					PERFORMANCE			MOTOR DATA				
TAG	QTY	SERVICE	MANUFACTURE	MODEL	FLOW (GPM)	HEAD (FT.HD)	MAX. SHUT OFF HEAD (FT.HD)	MOTOR (HP)	FLA (AMPS)	SPEED (RPM)	POWER (V/PH/HZ)	WEIGHT (LBS)
GP-1	1	GRINDER SUMP	ZOELLER	7011	50	25	46	2	5.5	3450	460/3/60	137

PLUMBING FIXTURE SCHEDULE

		CONNECTION SIZE - INCHES										FAUCET/FLUSH VALVE/TRAP PRIMER OR SEAL			
TAG	PLUMBING FIXTURE	TRAP	SOIL/ WASTE	VENT	COLD WATER	COLD WATER FLUSH...	HOT WATER	THERMO STATIC MIXING...	MOUNTING HEIGHT RIM A.F.F.	OPTION 1	OPTION 2	OPTION 3	OPTION 1	OPTION 2	OPTION 3	REMARKS
WC-1	WATER CLOSET FLUSHOMETER TYPE	4"	4"	2"	-	1"	-	-	REFER TO ARCHITECTURAL DRAWINGS	KOHLER KINGSTON K-4325	ZURN Z5615-BWL	AMERICAN STANDARD AFWALL MILLENNIUM	ZURN ZEMS6000AV-IS	ECOS 111	AMERICAN STANDARD 2064196.295	
WC-1A	WATER CLOSET FLUSHOMETER TYPE...	4"	4"	2"	-	1"	-	-								
UR-1	URINAL	2"	2"	2"	-	3/4"	-	-		KOHLER DEXTER K-5016-ET	ZURN Z5730	AMERICAN STANDARD ALLBROOK	ZURN ZEMS6003AV-IS	ECOS 186 HW	AMERICAN STANDARD SELECTRONICS 6062	
UR-1A	URINAL ADA	2"	2"	2"	-	3/4"	-	-								
LAV-1	LAVATORY	2"	2"	2"	1/2"	-	1/2"	1/2"		Kohler Kathryn K-2297-0	Toto Atherton LT221#01	American Standard Townsend 0330000.020	Kohler Geometric K-13468-CP	Zurn Cumberland Z6956-XL-CV	SLOAN EAF-100	
LAV-1A	LAVATORY ADA	2"	2"	2"	1/2"	-	1/2"	1/2"								
LAV-2	LAVATORY DORM	2"	2"	2"	1/2"	-	1/2"	1/2"		Duravit D-Neo Washbasin...	Kohler Soho	American Standard Decorum	Kohler Honesty K-99760-4	Moen 6900 Rizon	AMERICAN STANDARD TIMES SQUARE	
LAV-2A	LAVATORY DORM ADA	2"	2"	2"	1/2"	-	1/2"	1/2"								
SH-1A	SHOWER ADA	2"	2"	2"	1/2"	-	1/2"	1/2"		Kohler Salient K-9055	DREAM LINE SLIMLINE 60"X36"	American Standard Studio A8003L-RHO.020	Kohler Awaken G110 K-99242-G	Moen 3669EP Eco-Performance Handhel...	Delta 3-Setting Slide Bar Handshower	
SK-1	DOUBLE LENGTH UTILITY SINK	2"	2"	2"	1/2"	-	1/2"	1/2"		MUSTEE 28CF	Steelton 36"X24"	PROFLO PFLT4024	Kohler K-14408-4-CP	Zurn Z82584	Elkay 8KD208513C-733	
SK-2	UTILITY SINK	2"	2"	2"	1/2"	-	1/2"	1/2"		Florestone 23x23 in	Kohler K-6716	Zurn Z5898	Kohler K-8928-CP	Zurn AquaSpec Z842M1	Speakman SC-5811	
SK-3	KITCHEN SINK	2"	2"	2"	1/2"	-	1/2"	1/2"		Kohler Vault K-3894-4	American Standard Edgewater...	Elkay DRKAD282255	Kohler K-14408-4-CP	Zurn Z825B4	Elkay 8KD208513C-733	
JS-1	JANITOR SINK	3"	3"	2"	3/4"	-	3/4"	3/4"		KOHLER WHITBY K-6710	Zurn Z1996-SF	American Standard 8344212	Kohler K-8928-CP	Zurn AquaSpec Z842M1	Speakman SC-5811	
FD-1	FLOOR DRAIN	2"	2"	2"	-	-	-	-		WATTS FD-100-A5	Zurn Z415B	J R Smith 2110	SureSeal Trap Seal	Zurn Z-Shield	Josam TSI Trap Seal	
FD-2	FLOOR DRAIN	3"	3"	2"	-	-	-	-		WATTS FD-100-A6	Zurn Z415B	J R Smith 2110				
FD-3	FLOOR DRAIN	4"	4"	2"	-	-	-	-		WATTS FD 230	Zurn Z415B	J R Smith 2110				
FS-1	FLOOR SINK	2"	2"	2"	-	-	-	-		WATTS FS-730	Zurn Z1900	J R Smith 3130				
DF-1	DRINKING FOUNTAIN	2"	2"	2"	3/4"	-	-	-		Elkay LZWS-LRPBM28K	Halsey Taylor HTHB-HACG8BLSS-WF	Oasis PG8SBFSL				
DF-1A	DRINKING FOUNTAIN ADA	2"	2"	2"	3/4"	-	-	-								
WM-1	COMMERCIAL WASHER	2"	2"	2"	3/4"		3/4"			MAYTAG MHN33	Speed Queen FF7 FF7008WN	WHIRLPOOL CHW9160GW	GUY GRAY B200	LSP OB-502	OATEY 38530	
DR-1	COMMERICIAL ELECTRIC DRYER	-	-	-	-	-	-	-		MAYTAG MLE26PRBYW	Speed Queen ADEE9R	WHIRLPOOL CED9160GW				
DW-1	DOG WATERER	-	-	-	1/2"	-	-	-		NELSON - 1200B	PROHYDRATE STAINLESS STEEL AUTOMATIC DOG WATERER	XL STAINLESS STEEL AUTOMATIC STOCK & PET WATERER				

THERMOSTATIC MIXING VALVE SCHEDULE

UNIT No.	DESCRIPTION	MODEL NO.	INLET WATER TEMPERATURE(°F)	SET POINT WATER TEMPERATURE(°F)	REMARKS
TMV-1	MASTER TMV	LEONARD-XL-150-LF	140 °F	120 °F	1
TMV-2	LOCAL TMV	ACORN-ST-70	120 °F	105 °F	-

1. PROVIDE SURFACE MOUNTED STAINLESS STEEL CABINET WITH VIEW PORT FOR THERMOMETER
INDOOR AND LOCK SET FOR CABINET.

BACK FLOW PREVENTERS SCHEDULE

LEGEND	QTY	LOCATION	SERVICE	SIZE	BASIS OF DESIGN
DCDA	1	PLUMBING / FIRE PROTECTION ROOM B-132	FIRE SERVICE	6"	WILKINS 350ADA
RPZ	1	PLUMBING / FIRE PROTECTION ROOM B-132	DOMESTIC WATER	4"	WILKINS 375A

FLOOR DRAIN IDENTIFICATION

FLOOR DRAIN TYPE	LOCATION
A	TOILET ROOMS/SHOWER STALL
S	MECHANICAL SPACES ON GRADE

WATER HAMMER ARRESTOR

UNIT No.	WHA-1
LOCATION	AS SHOWN ON DRAWINGS
SERVING	DOMESTIC COLD WATER
MANUFACTURER	WATTS INDUSTRIES, INC.
MODEL	#15M2
SIZE	1/2"

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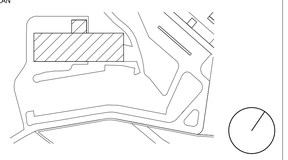

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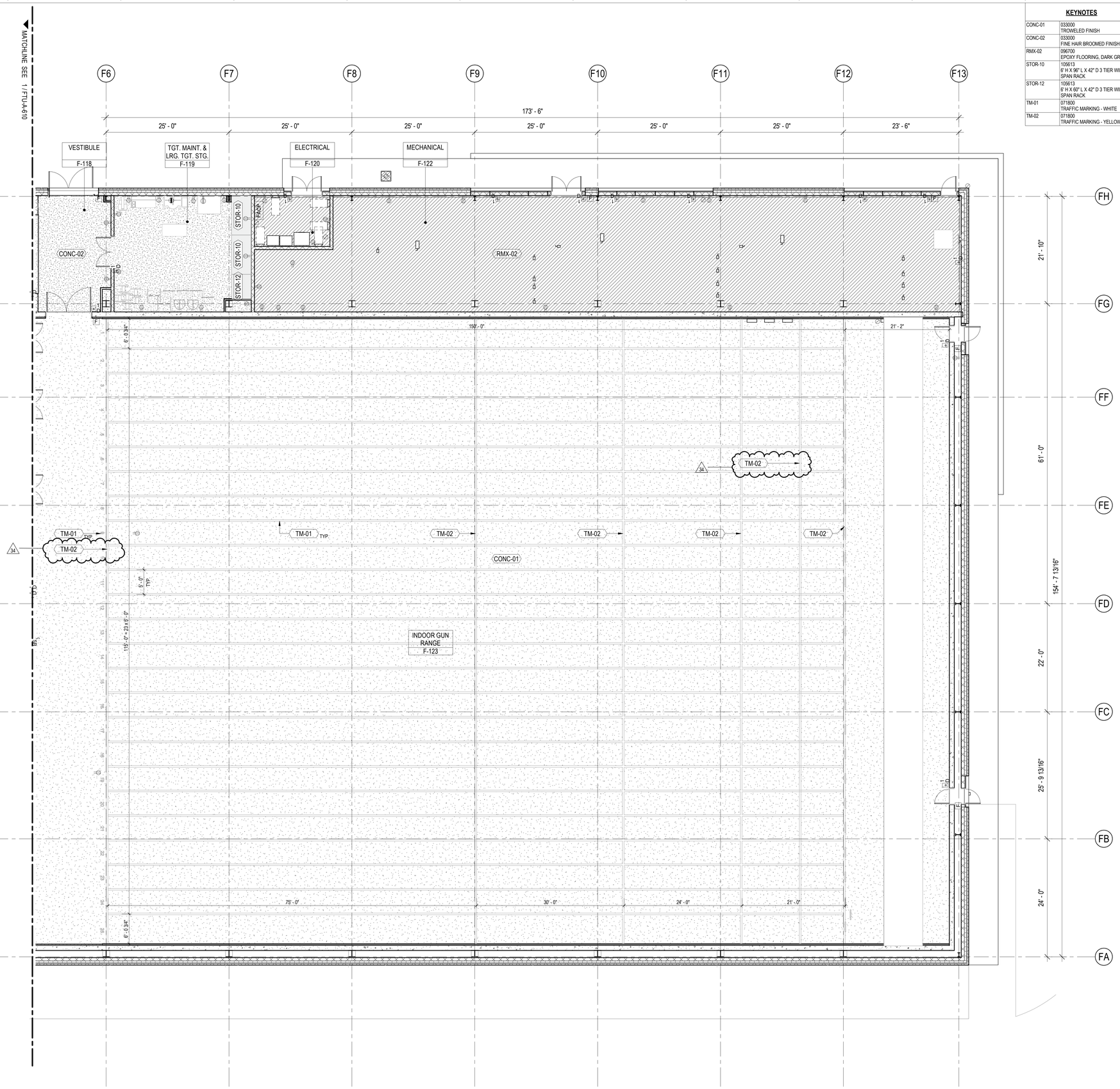

KEYNOTES

CONC-01	033000 TROWELED FINISH
CONC-02	033000 FINE HAIR BROOMED FINISH
RMX-02	096700 EPOXY FLOORING, DARK GRAY
STOR-10	105613 6' H X 66" L X 42" D 3 TIER WIDE SPAN RACK
STOR-12	105613 6' H X 60" L X 42" D 3 TIER WIDE SPAN RACK
TM-01	071800 TRAFFIC MARKING - WHITE
TM-02	071800 TRAFFIC MARKING - YELLOW

LEGEND

FIRE RATINGS

- 1/2 HOUR FIRE RATING
- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING

SCOPE REFERENCE HATCH

(XX) DRAWING NOTES

FLOOR FINISHES

PCFS-01	CONC-01
PCFS-02	CONC-02
CPT-01	CONC-03
CPT-02	CONC-04
CPT-03	RMX-01
RFL-01	RMX-02
RFL-02	RMX-03
RFL-03	QT-01
RFL-04	CT-01
BEQ-14	

POWER & DATA DEVICES

		SINGLE	DUPLEX	QUAD DUPLEX	DEDICATED DUPLEX	DEDICATED LOAD
1	ELECTRICAL OUTLET					
2	TELE/DATA RECEPTACLE	DATA RECEPT.	DATA & TELE RECEPT.	TELEPHONE RECEPT.		
3	THERMOSTAT	T				
4	USB POWER					
5	WIRELESS ACCESS POINT	AP				
6	ELECTRICAL SWITCH	SINGLE POLE S	TWO - POLE 2	THREE POLE 3		
7	JUNCTION BOX	J				
8	FURNITURE DUPLEX					
9	FLOOR BOX		SELF FLOOR MOUNTED	SET FLUSH MOUNTED	DATA FLOOR MOUNTED	

GENERAL NOTES

1. ALL DIFFUSERS, REGISTERS AND GRILLES ARE BY THE .2 HVAC CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY. REFER TO MECHANICAL DRAWINGS FOR QUANTITY/TYPE.
2. ALL PLUMBING FIXTURES, SPRINKLERS, FHCS, AND STANDPIPES AND RELATED EQUIPMENT ARE BY THE .3 PLUMBING CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY. REFER TO MECHANICAL DRAWINGS FOR QUANTITY/TYPE.
3. ALL RECEPTACLES, LIGHTS SWITCHES, TELE/DATA RECEPTACLES, TELECOM EQUIPMENT AND AV EQUIPMENT ARE BY THE .4 ELECTRICAL CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY. REFER TO MECHANICAL DRAWINGS FOR QUANTITY/TYPE.
4. REFERENCE GEN-G-103 FOR STANDARD MOUNTING HEIGHTS AND DETAILS.
5. REFERENCE GEN-G-103 FOR STANDARD DEVICE MOUNTING ARRANGEMENTS AND ALIGNMENTS
6. CHANGE OF FLOOR MATERIAL LINE IS FOR REFERENCE ONLY. REFER TO 700 SERIES DRAWINGS FOR FLOOR FINISH TRANSITION DETAILS.
7. CONTRACTOR TO COORDINATE CONTROL JOINT LOCATIONS IN CONCRETE SLAB TO BE APPROVED BY PROFESSIONAL.
8. REFER TO GEN-G-104 FOR ALL MATERIAL DESIGNATIONS.
9. IF DEVICE IS NOT DIMENSIONED IN PLAN, REFER TO ASSOCIATED ENLARGED ELEVATION FOR LOCATION.

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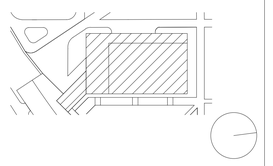

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ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

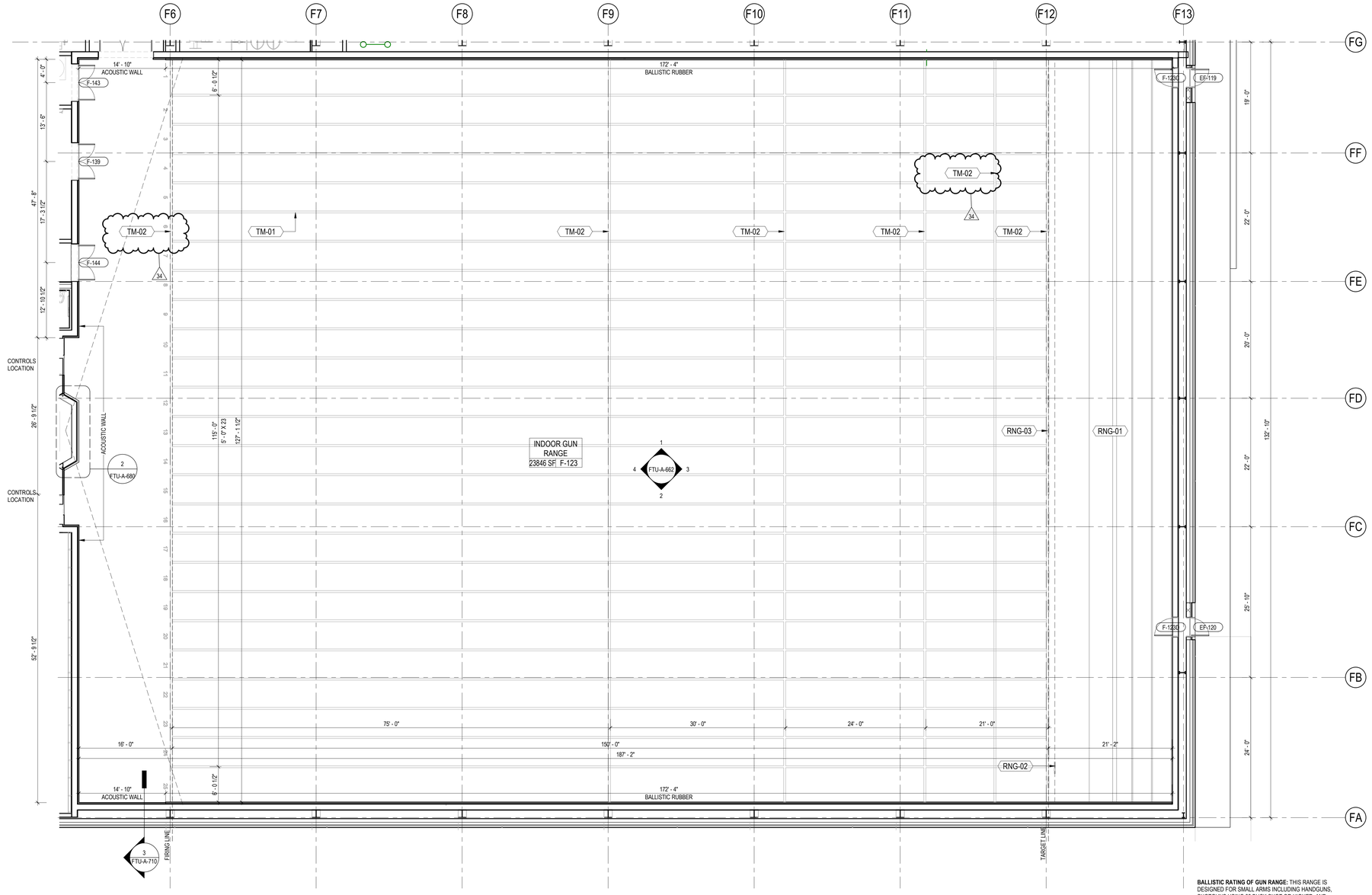
1 POWER/COMMUNICATION & FINISH PART PLAN B - LEVEL 1

SCALE: 1/8" = 1'-0" 0 4'-0" 8'-0" 16'-0" 32'-0"

POWER/COMMUNICATION & FINISH PART PLAN B - LEVEL 1

SHEET No. FTU-A-611

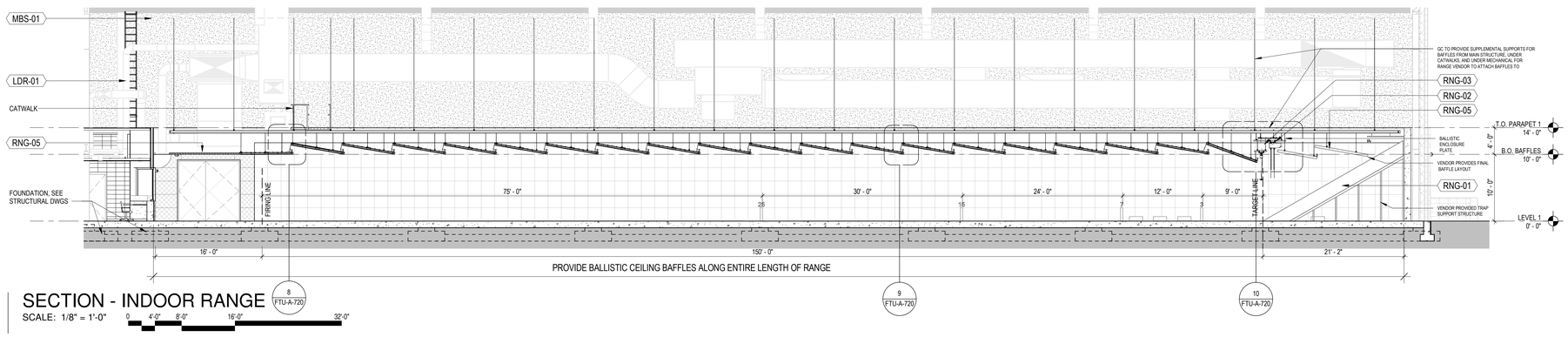
DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



BALLISTIC RATING OF GUN RANGE: THIS RANGE IS DESIGNED FOR SMALL ARMS INCLUDING HANDGUNS, SHOTGUNS USING 00 BUCK SHOT OR HIGHER, AND RIFLES WITH A MAXIMUM VELOCITY OF 3600 FPS AND MAXIMUM ENERGY OF 3600 FT. LBS.

1 PLAN - INDOOR RANGE

SCALE: 1/8" = 1'-0" 0 4'-0" 8'-0" 16'-0" 32'-0"



2 SECTION - INDOOR RANGE

SCALE: 1/8" = 1'-0" 0 4'-0" 8'-0" 16'-0" 32'-0"

LEGEND

FIRE RATINGS

- 1/2 HOUR FIRE RATING
- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING

XX DRAWING NOTE

1	SWITCH	SINGLE 1A	DOUBLE 1B	QUAD 1C	CONTROL PANEL 1D
2	ELECTRICAL OUTLET	SINGLE 2A	DUPLEX 2B	QUAD 2C	
3	DATA OUTLET	2 PORT 3A	6 PORT 3B	AV 3C	
4	FIRE ALRAM STROBE	4			
5	THERMOSTAT	5			
6	WALL CLOCK	6			
7	PULL STATION	7			
8	SECURITY CAMERA	8			
9	CARD READER	9			
10	ADA PUSH BOTTON	10			
11	FLOOR BOX	11A	FLEX FLOOR MOUNTED 11B	BAY FLOOR MOUNTED 11C	DESK DOOR MOUNTED 11D
12	WAP	12			
13	BEACON LIGHT	13			

GENERAL NOTES

1. ALL DIFFUSERS, REGISTERS AND GRILLES ARE BY THE .2 HVAC CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY, UNO.
2. ALL PLUMBING FIXTURES, SPRINKLERS, FHCS, AND STANDPIPES AND RELATED EQUIPMENT ARE BY THE .4 PLUMBING CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY, UNO.
3. ALL RECEPTACLES, LIGHTS SWITCHES, TELE/DATA RECEPTACLES, TELECOM EQUIPMENT AND AV EQUIPMENT ARE BY THE .4 ELECTRICAL CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY, UNO.
4. REFERENCE GEN-G-103 FOR STANDARD MOUNTING HEIGHTS AND DETAILS
5. REFERENCE ALSO POWER, COMMUNICATIONS AND FINISH PLANS AND GEN-G-103 FOR STANDARD DEVICE MOUNTING ARRANGEMENTS, ALIGNMENTS AND DIMENSIONAL INFORMATION.
6. ALIGN WALL TILE JOINTS TO FLOOR TILE JOIN LINES.
7. CONFIRM FINIAL TILE JOINT LAYOUT WITH PROFESSIONAL PRIOR TO INSTALLATION.
8. BEACON LIGHT - CONNECTED TO MECHANICAL SYSTEM, SEE MECH SPECS.

DRAWING NOTES

KEYNOTES

LDR-01	055000 MANUFACTURED FIXED BOH LADDER
MBS-01	133419 PRIMARY STRUCTURAL FRAMING (BY PEMB FABRICATOR / INSTALLER
RNG-01	119010 RUBBER BERM TRAP
RNG-02	119010 RUNNING MAN TARGETS
RNG-03	119010 LATERAL TARGET TURNERS
RNG-05	119010 RANGE CEILING BAFFLES
TM-01	071800 TRAFFIC MARKING - WHITE
TM-02	071800 TRAFFIC MARKING - YELLOW

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1

IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

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ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
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Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER
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1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING
CCI
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CIVIL ENGINEER
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LIGHTING
MCLA
1000 Patomic St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
AQUA Design International
7536 N. La Cholla Blvd, Tucson, AZ 85741

KEYPLAN

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
34	21 JUL 2023	ADDENDUM #34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

REGISTERED ARCHITECT COMMONWEALTH OF PENNSYLVANIA ENZO NG RAMIREZ

SIGNATURE DATE

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HERSHEY, DAUPHIN COUNTY, PA

INTERIOR PLAN / SECTION - INDOOR RANGE

SHEET No. FTU-A-660

DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED

DOOR SCHEDULE - NUMBER

NUMBER	ROOM NAME	DOOR TYPE	DOOR WIDTH	DOOR HEIGHT	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	DETAIL JAMB	DETAIL HEAD	DETAIL SILL	FIRE RATING	ACOUSTIC	SECURITY	HARDWARE	COMMENTS
EF-111		F2	6' - 0"	7' - 10"	HM	PT-03	2	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-		CARD READER	SEC 07 BL	INSULATED HM EXTERIOR DOOR, HW: TO MATCH MTL-10
EF-112		F2	7' - 8"	7' - 10"	HM	PT-03	2	HM	PT-03	J13	H14	S6	-	SG		EXT 03A BL	HW: TO MATCH MTL-10
EF-114	INDOOR RANGE	F	3' - 0"	7' - 0"	HM	PT-03	1	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-			EXT 01 BL	INSULATED HM EXTERIOR DOOR, HW: TO MATCH MTL-10
EF-115		F2	6' - 0"	6' - 10"	HM	PT-03	2	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-			EXT 03 BL	INSULATED HM EXTERIOR DOOR, HW: TO MATCH MTL-10
EF-116		F2	6' - 0"	7' - 10"	HM	PT-03	2	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-			EXT 03 BL	INSULATED HM EXTERIOR DOOR, HW: TO MATCH MTL-10
EF-117	INDOOR RANGE	F3	9' - 0"	7' - 10"	HM	PT-03	2	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-			EXT 03A BL	INSULATED HM EXTERIOR DOOR, HW: TO MATCH MTL-10, UNEVEN SWING DOOR WITH 4' AND 5' LEAVES
EF-118		F2	6' - 0"	7' - 10"	HM	PT-03	2	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-			EXT 03A BL	INSULATED HM EXTERIOR DOOR, HW: TO MATCH MTL-10
EF-119	INDOOR RANGE	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-			EXT 01A BL	INSULATED HM EXTERIOR DOOR, HW: TO MATCH MTL-10
EF-120	INDOOR RANGE	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-			EXT 01A BL	INSULATED HM EXTERIOR DOOR, HW: TO MATCH MTL-10
EF-125		F	3' - 0"	7' - 10"	HM	MTL-01	1	HM	MTL-01	J4	H5	S5	-			EXT 01A BL	INSULATED HM EXTERIOR DOOR, CONCEALED DOOR TO MATCH MP-01
F-101	VEST.	V2	8' - 0"	8' - 0"	HM	PT	2	HM	PT	J10	H11	S6	-	SG	CARD READER	SEC 07	
F-102A	CIRCULATION	V2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S6	-	SG	-	08	
F-102B	VEST.	V2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S6	-	SG	CARD READER	08	
F-103	FIREARMS STAFF OFFICE	V	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2	-	SG	-	07C	
F-104	FIREARMS SUPV. OFFICE	V	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	-	SG		07C	
F-105A	FTU STORAGE	V2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S2	-	-	CARD READER	SEC 06	
F-105B	COMBINED STORAGE	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S6	-	-	-	03A	
F-106	TELECOM RM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6 34	90 MIN	-	CARD READER	SEC 05	
F-107	COMBINED STORAGE	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S6	-	-	-	03A	
F-108	POW STORAGE	VAULT	3' - 0"	7' - 1"	STL	PT	VAULT	STL	PT	6/FTU-A-722	8/FTU-A-722	7/FTU-A-722	90 MIN	-	CARD READER	BO	
F-109	ELEC CLO.	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6 34	90 MIN	-	-	05A	
F-110	JCL	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	-	-	-	02	
F-111	ARMS VAULT	VAULT	3' - 0"	7' - 1"	STL	PT	VAULT	STL	PT	6/FTU-A-722	8/FTU-A-722	7/FTU-A-722	90 MIN	-	-	BO	
F-112	TOILET	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S6	-	-	-	06A	
F-113A	DIRTY LOCKER ROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	-	SG	-	02A	
F-113B	DIRTY LOCKER ROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2	-	SG	-	02A	
F-114	MALE TOILET	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2	-	SG	-	02A	
F-115	FEMALE TOILET	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2	-	SG	-	02A	
F-117	AMMO STORAGE	OHC	16' - 0"	7' - 0"	HM	PT	-		PT	9/FTU-A-722	11/FTU-A-722	10/FTU-A-722	-	-	CARD READER	BO	OHD-1
F-119	TGT. MAINT. & LRG. TGT. STG.	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S6 34	-	-	-	03	
F-121	FIREARMS REPAIR	F	3' - 0"	7' - 0"	BHM	PT	1	BHM	PT	J10	H11	S2	-	SG	-	02A	UL LEVEL 8 BR DOOR & FRAME
F-123	INDOOR GUN RANGE	F2	9' - 0"	9' - 0"	BHM	PT	2	BHM	PT	2/FTU-A-720	4/FTU-A-720	7/FTU-A-720	-	SG, STC 55	CARD READER	01	CARD READER,"RANGE IN USE" LIGHTS, UL LEVEL 8 BR DOOR & FRAME
F-123A	AIRLOCK	F	3' - 0"	7' - 0"	BHM	PT	1	BHM	PT	2/FTU-A-720	4/FTU-A-720	7/FTU-A-720	-	SG, STC 55		02A	UL LEVEL 8 BR DOOR & FRAME
F-123B	AIRLOCK	F	3' - 0"	7' - 0"	BHM	PT	1	BHM	PT	2/FTU-A-720	4/FTU-A-720	7/FTU-A-720	-	SG, STC 55		02A	UL LEVEL 8 BR DOOR & FRAME
F-123C	INDOOR GUN RANGE	F	3' - 0"	7' - 0"	BHM	PT	1	BHM	PT	2/FTU-A-720	4/FTU-A-720	7/FTU-A-720	-	SG, STC 55		02A	UL LEVEL 8 BR DOOR & FRAME
F-123D	INDOOR GUN RANGE	F	3' - 0"	7' - 0"	BHM	PT	1	BHM	PT	2/FTU-A-720	4/FTU-A-720	7/FTU-A-720	-	SG, STC 55		02A	UL LEVEL 8 BR DOOR & FRAME
F-130C	CLASSROOM STORAGE	F2	6' - 0"	7' - 0"	HM	PT	2	HM	PT	J10	H11	S6	-	-		03A	
F-131A	WEAPONS CLEANING	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2 34	-	SG		05	
F-131B	WEAPONS CLEANING	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2	-	SG	CARD READER	SEC 05	
F-134A	CLASSROOM	V	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2	-	SG		02	
F-134B	CLASSROOM	V	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S2	-	SG		02	
F-136	TOILET	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J2	H2	S2	-	SG		06A	
F-139	RANGE STORAGE	F2	6' - 0"	7' - 0"	BHM	PT	2	HM	PT	2/FTU-A-720	4/FTU-A-720	7/FTU-A-720	-	SG, STC 55		03	UL LEVEL 8 BR DOOR & FRAME
F-140	AIRLOCK	F	3' - 0"	7' - 0"	HM 34	PT	1	HM	PT	J10	H11	S6	-	SG	CARD READER	SEC 05C	"RANGE IN USE" LIGHTS
F-141	AIRLOCK	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6 34	-	SG	CARD READER	SEC 05C	"RANGE IN USE" LIGHTS
F-142A	CONTROL ROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	-	SG		02A	
F-142B	CONTROL ROOM	F	3' - 0"	7' - 0"	HM	PT	1	HM	PT	J10	H11	S6	-	SG		02A	
F-143	BRASS STORAGE	F2	6' - 0"	7' - 0"	BHM	PT	2	HM	PT	2/FTU-A-720	4/FTU-A-720	7/FTU-A-720	-	SG, STC 55		03	UL LEVEL 8 BR DOOR & FRAME
F-144	RANGE CLEANING CLO.	F2	6' - 0"	7' - 0"	BHM	PT	2	HM	PT	2/FTU-A-720	4/FTU-A-720	7/FTU-A-720	-	SG, STC 55		03	UL LEVEL 8 BR DOOR & FRAME

34 34

FINISH SCHEDULE

NUMBER	NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH
LEVEL 1					
F-101	VEST.	PCFS-01	RMX-04	PT-03	SEE RCP
F-102	CIRCULATION	PCFS-01	RMX-04	CMU-08A	SEE RCP
F-103	FIREARMS STAFF OFFICE	RMX-03	RMX-03	PT-01	SEE RCP
F-104	FIREARMS SUPV. OFFICE	RMX-03	RMX-03	PT-01	SEE RCP
F-105	FTU STORAGE	CONC-02	RB-02	PT-02	SEE RCP
F-106	TELECOM RM	CONC-02	RB-02	PT-01	SEE RCP
F-107	COMBINED STORAGE	CONC-02	RB-02	PT-02	EXPOSED
F-108	POW STORAGE	CONC-02	RB-02	PT-02	EXPOSED
F-109	ELEC CLO.	CONC-02	RB-02	PT-02	EXPOSED
F-110	JCL	CONC-02	RB-02	PT-02	EXPOSED
F-111	ARMS VAULT	CONC-02	RB-02	PT-02	SEE RCP
F-112	TOILET	RMX-01	RMX-01	CWT-01, PT-02	SEE RCP
F-113	DIRTY LOCKER ROOM	RMX-01	RMX-01	PT-02	SEE RCP
F-114	MALE TOILET	RMX-01	RMX-01	CWT-01, PT-02	SEE RCP
F-115	FEMALE TOILET	RMX-01	RMX-01	CWT-01, PT-02	SEE RCP
F-116	VEST.	RMX-04	RMX-04	PT-03	SEE RCP
F-117	AMMO STORAGE	CONC-02	RB-02	PT-02	EXPOSED
F-118	VESTIBULE	CONC-02	RB-02	PT-03	EXPOSED
F-119	TGT. MAINT. & LRG. TGT. STG.	CONC-02	RB-02	PT-02	EXPOSED
F-120	ELECTRICAL	RMX-02	RMX-02	PT-02	EXPOSED
F-121	FIREARMS REPAIR	RMX-04	RMX-04	PT-02	SEE RCP
F-122	MECHANICAL	RMX-02	RMX-02	PT-02	EXPOSED
F-123	INDOOR GUN RANGE	CONC-06	RB-02	RNG-06	SEE RCP
F-131	WEAPONS CLEANING	RMX-03	RMX-03	PT-01	SEE RCP
F-132	VEST.	RMX-04	RMX-04	PT-03	SEE RCP
F-133	CLASSROOM STORAGE	RMX-03	RMX-03	PT-02	SEE RCP
F-134	CLASSROOM	RMX-03	RMX-03	CMU-08A, PT-02	SEE RCP
F-136	TOILET	RMX-01	RMX-01	CWT-01, PT-02	SEE RCP
F-139	RANGE STORAGE	CONC-01	RB-02	PT-02	SEE RCP
F-140	AIRLOCK	CONC-01	RMX-04	PT-01	SEE RCP
F-141	AIRLOCK	CONC-01	RMX-04	PT-01	SEE RCP
F-142	CONTROL ROOM	CONC-01	RMX-04	PT-01	SEE RCP
F-143	BRASS STORAGE	CONC-01	RMX-01	PT-02	SEE RCP
F-144	RANGE CLEANING CLO.	RMX-03	RMX-03	PT-02	SEE RCP

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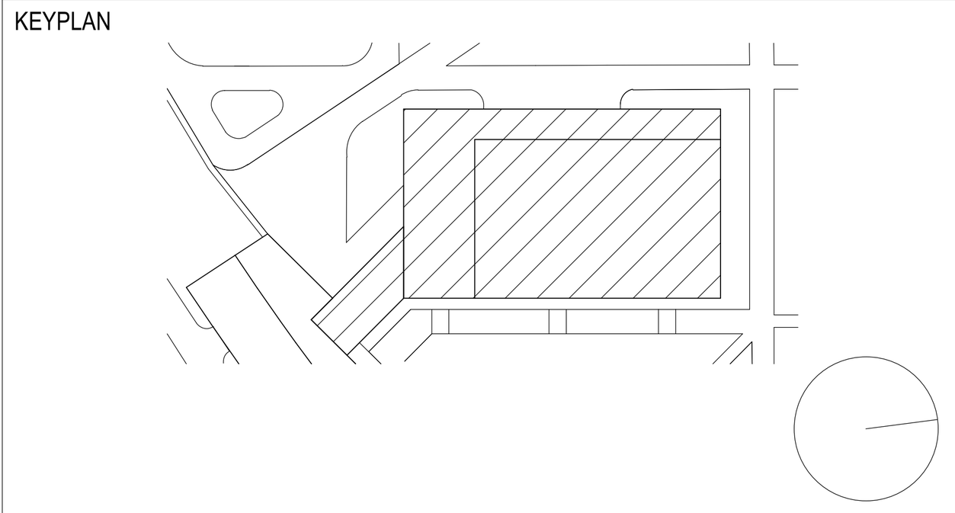
KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
34	21 JUL 2023	ADDENDUM #34			
1	19 MAY 2023	ISSUED FOR BID			

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IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

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ROOM, FINISH AND DOOR SCHEDULE

SHEET No. FTU-A-700

DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED

TYPE	DESCRIPTION	MFR.	CATALOG NO.	NO. OF LAMPS		WATTS	LUMENS	LAMP TYPE	DIMMING CONTROL	VOLTAGE	ACCEPTABLE ALTERNATE MFR.	LOCATION	NOTES
AW1	MOUNTING: SURFACE, WALL DIMENSIONS: 7.09"W X 3.94"H X 6.94"D OPTICS: MEDIUM SYMMETRIC DOWN ACCESSORY LENS: HEXCELL LOUVER FINISH: BLACK MAT - 9004 ADD'L ATTRIBUTES:	WE-EF LIGHTING	131-9970-9004	1	ea.	13	1182 lm delivered	LED module 3000K 80CRI	NON-DIM	UNV	BEGA LIGMAN LIGHTING	EGRESS DOORS & PATH	EGRESS DOORS & PATH
PS3	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 5.5"W DIMENSIONS: 5.5"W X 48"L X 3.5"H OPTICS: NA ACCESSORY LENS: CURVED LEN FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	LITHONIA	BLWP4-20L-ADP-MVOLTZ-GZ10-LP930	1	ea.	16	4334 lm delivered	LED LINEAR 3000K 90CRI	0-10V	120-277	HALOPHANE COOPER LIGHTING	LEVEL 1 - FTU - STORAGE	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RD1	MOUNTING: RECESSED, CEILING, APERTURE SIZE: 18.1"DIA DIMENSIONS: 18.1"DIA X 5.5"H OPTICS: NA ACCESSORY LENS: MATTE DIFFUSER FINISH: POWDER COAT, WHITE, ADD'L ATTRIBUTES:	GOTHAM	EVO4--30-15-AR-WD-LD-MVOLT-GZ10	1	ea.	13.7	1293 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	TYP CORRIDOR & RESTROOM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RD2	MOUNTING: RECESSED, CEILING, APERTURE SIZE: 18.1"DIA DIMENSIONS: 18.1"DIA x 5.5"H, OPTICS: NA ACCESSORY LENS:MATTE DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	GOTHAM	EVO4--30-20-AR-WD-LD-MVOLT-GZ10-90CRI-TRW	1	ea.	19.5	1689 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	FTU - LEVEL 1 CONTROL ROOM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RL1	MOUNTING: RECESSED, CEILING, APERTURE SIZE: 2-1/4"W DIMENSIONS: 2-1/4"W x LENGTH - 5"H OPTICS: NA ACCESSORY LENS: REGRESSED DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HP2-RG-V-930-F-96LG-120-SC-FC10-SW	1	ea.	9.3	542 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	FTU - LEVEL 1 CLASSROOM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RL2	MOUNTING: RECESSED, CEILING, APERTURE SIZE: 2-1/4"W DIMENSIONS: 2-1/4"W x LENGTH x 5"H,OPTICS: NA ACCESSORY LENS: REGRESSED DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HP2-RG-H-930-F-96LG-120-SC-FC10-SW	1	ea.	7.1	422 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	FTU - LEVEL 1 WEAPON CLEANING	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RP2	MOUNTING: RECESSED, CEILING, APERTURE SIZE: 2-1/4"W DIMENSIONS: 2-1/4"W x LENGTH - 5"H OPTICS: NA , ACCESSORY LENS: REGRESSED DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HP-WS-4W-2D-LENGTH-V-930-SW-120-SC-FC10-	1	ea.	9.3	577 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	TYP. RESTROOM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RT1	MOUNTING: RECESSED, CEILING, APERTURE SIZE: 2'X2' DIMENSIONS: 24"W X 5-1/8"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HPT-RSE-2X2-B-930-96-120-SC-FC9	1	ea.	36.1	3377 lm delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	TYPICAL OFFICE	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SC1	MOUNTING: SURFACE, CEILING ,APERTURE SIZE: 4-1/8"DIA DIMENSIONS: 7-5/16"DIA x 24"L x 2-11/16"H, OPTICS: NA ACCESSORY LENS: SOLITE CLEAR FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	DMF	DRD5S-4R-10-9-30-O	1	ea.	12	1000 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	TYP. SHOWER	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SF2	MOUNTING: Surface, Cove APERTURE SIZE: 2"W x Length DIMENSIONS: 2-5/16"W x Length x 3-1/2"H OPTICS: 30° x 30° ACCESSORY LENS: Clear FINISH: Powder Coat, Black ADD'L ATTRIBUTES: DMX Controls	LUMENPULSE	LOGHO-277-LENGTH-30K-60x60-SAM-BK-DMX/RDM-ET E + (8) LOG-277-2-RG BW30K-60x60-SAM-BK-DMX/RDM-ETE + LOGRD-LENGTH-BK	1	ea.	15.25	941 lm/FT delivered	LED module 3000K 90CRI	0-10V	120-277	GVA LIGHTING	FTU - RANGE	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DMX DIMMING CONTROL AND WIRING FOR FLEXIBLE SCENES •FIXTURE MOUNTS IN A COVE AT FTU RANGE, REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING DETAIL •AIM FIXTURES AT TARGET LINE 3'-6" AFF
SF3	MOUNTING: Surface, Cove APERTURE SIZE: 2"W x Length DIMENSIONS: 2-5/16"W x Length x 3-1/2"H OPTICS: 80° x 80° ACCESSORY LENS: Clear FINISH: Powder Coat, Black ADD'L ATTRIBUTES: DMX Controls	LUMENPULSE	LOGHO-277-LENGTH-30K-60x60-SAM-BK-DMX/RDM-ET E + (8) LOG-277-2-RG BW30K-60x60-SAM-BK-DMX/RDM-ETE + LOGRD-LENGTH-BK	1	ea.	15.25 30K 17.25 RGBW	941 lm/FT delivered - 3000K 725 lm/FT delivered RGBW	LED module 3000K + RGBW 90CRI	DMX/RDM	120-277	GVA LIGHTING	RANGE	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DMX DIMMING CONTROL AND WIRING FOR FLEXIBLE SCENES •FIXTURE MOUNTS IN A COVE AT FTU RANGE, REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING DETAIL •AIM FIXTURES OUT OF COVE •COMBINE STATIC WHITE AND (8) RGBW FIXTURES IN ONE CONTINUOUS ROW - PROVIDE JUMPER CABLES AS NEEDED TO ACCOMMODATE SPRINKLER HEADS
SF4	MOUNTING: Surface, Cove APERTURE SIZE: 2"W x Length DIMENSIONS: 2-5/16"W x Length x 3-1/2"H OPTICS: 80° x 80° ACCESSORY LENS: Clear FINISH: Powder Coat, Black ADD'L ATTRIBUTES: DMX Controls	LUMENPULSE	LOGHO-277-LENGTH-30K-60x60-SAM-BK-DMX/RDM-ET E + (7) LOG-277-2-RG BW30K-60x60-SAM-BK-DMX/RDM-ETE + LOGRD-LENGTH-BK	1	ea.	15.25 30K 17.25 RGBW	941 lm/FT delivered - 3000K 725 lm/FT delivered RGBW	LED module 3000K + RGBW 90CRI	DMX/RDM	120-277	GVA LIGHTING	RANGE	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DMX DIMMING CONTROL AND WIRING FOR FLEXIBLE SCENES •FIXTURE MOUNTS IN A COVE AT FTU RANGE, REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING DETAIL •AIM FIXTURES OUT OF COVE •COMBINE STATIC WHITE AND (7) RGBW FIXTURES IN ONE CONTINUOUS ROW - PROVIDE JUMPER CABLES AS NEEDED TO ACCOMMODATE SPRINKLER HEADS
SF5	MOUNTING: Surface, Ceiling APERTURE SIZE: 2-11/16"W x 124' DIMENSIONS: 2-11/16"W x 124' x 4"H OPTICS: 100° Flood ACCESSORY LENS: Clear FINISH: Powder Coat, Black ADD'L ATTRIBUTES: DMX Controls	LUMENPULSE	LLI2SRG-CM-D-277-C124'-d H030K+RGBW-WFL-DMX/RDM-BK-MOD	1	ea.	12w 30K 6w RGBW	941 lm/FT delivered - 3000K 115 lm/FT delivered RGBW	LED module 3000K + RGBW 90CRI	DMX/RDM	120-277	GVA LIGHTING	RANGE	•MODIFY FIXTURE FOR STATIC WHITE WITH (8) 2' RGBW SEGMENTS TO MATCH SF3 PATTERN •VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DMX DIMMING CONTROL AND WIRING FOR FLEXIBLE SCENES •FIXTURE MOUNTS IN A COVE AT FTU RANGE, REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING DETAIL •ALLOW FOR 5 DAYS FOR 3RD PARTY DMX COMMISSIONING AND PROGRAMMING
SF6	MOUNTING: Surface, Ceiling APERTURE SIZE: 2-11/16"W x 124' DIMENSIONS: 2-11/16"W x 124' x 4"H OPTICS: 100° Flood ACCESSORY LENS: Clear FINISH: Powder Coat, Black ADD'L ATTRIBUTES: DMX Controls	LUMENPULSE	LLI2SRG-CM-D-277-C124'-d H030K+RGBW-WFL-DMX/RDM-BK-MOD	1	ea.	12w 30K 6w RGBW	941 lm/FT delivered - 3000K 115 lm/FT delivered RGBW	LED module 3000K + RGBW 90CRI	DMX/RDM	120-277	GVA LIGHTING	RANGE	•MODIFY FIXTURE FOR STATIC WHITE WITH (7) 2' RGBW SEGMENTS TO MATCH SF4 PATTERN •VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DMX DIMMING CONTROL AND WIRING FOR FLEXIBLE SCENES •FIXTURE MOUNTS IN A COVE AT FTU RANGE, REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING DETAIL •ALLOW FOR 5 DAYS FOR 3RD PARTY DMX COMMISSIONING AND PROGRAMMING
X1	MOUNTING: WALL FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES: FIELD ADJUSTABLE CHEVRONS	EMERI-LITE	LSNXX RWCA	1	ea	23	-	LED	NON-DIM	UNV	-	EGRESS	•EXIT SIGN •FINISH PER ARCHITECT
X2	MOUNTING: CEILING FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES: FIELD ADJUSTABLE CHEVRONS	EMERI-LITE	LSNXX RWCA	1	ea	23	-	LED	NON-DIM	UNV	-	EGRESS	•EXIT SIGN •FINISH PER ARCHITECT

LIGHTING CONTROL SEQUENCE OF OPERATIONS

TYPICAL ROOM TYPE	SENSOR OPERATION	PHOTOCELL	TIMECLOCK BACKUP	NETWORKED?	SWITCH	OPERATION	EMERGENCY (SWITCHED/UNSWITCHED)	BASIS OF DESIGN - LUTRON CONTROLS ALTERNATE: CRESTRON	SWITCHED RECEPTACLES	NOTES
CORRIDORS	OCCUPANCY	NO	YES	YES	2-BUTTON	ON/OFF	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	AUOTMATIC ON, AUTOMATIC OFF BASED ON OCCUPANCY WITH LOCAL OVERRIDE SWITCH. TIMECLOCK OVERRIDE TO OFF.
CONTROL CENTERS	OCCUPANCY	NO	NO	NO	MULTI-BUTTON SCENE SELECT	SCENE RECALL WITH MANUAL...	SWITCHED	LUTRON ENERGI-SAVR-NODE LOCAL MULTI-ZONE CONTROL...	NO	AUOTMATIC ON, AUTOMATIC OFF OPERATIOIN WITH SCENE SETTINGS AND MANUAL DIMMING RAISE/LOWER.
COMBINED STORAGE	OCCUPANCY	NO	YES	YES	N/A	N/A	UNSWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	AUOTMATIC ON, AUTOMATIC OFF BASED ON OCCUPANCY WITH LOCAL OVERRIDE SWITCH. CENTRAL TIMECLOCK CONTROL FOR OPERATION 'ON' DURING DAYLIGHT HOUR...
CLOTHING STORAGE	OCCUPANCY	NO	YES	YES	N/A	N/A	UNSWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	AUOTMATIC ON, AUTOMATIC OFF BASED ON OCCUPANCY WITH LOCAL OVERRIDE SWITCH. CENTRAL TIMECLOCK CONTROL FOR OPERATION 'ON' DURING DAYLIGHT HOUR...
PRIVATE OFFICES	VACANCY	WHERE DAYLIGHT IS PRESENT	YES	YES	LOCAL RAISE/LOWER	MANUAL DIM	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	YES	MANUAL ON, AUTO OFF OPERATION WITH MANUAL DIMMING RAISE/LOWER. TIMECLOCK BACKUP TO OFF. 50% GENERAL USE RECEPTACLES ON OCCUPANCY SENSOR...
OPEN OFFICES	OCCUPANCY	WHERE DAYLIGHT IS...	YES	YES	LOCAL SCENE CONTROL WITH...	MANUAL DIM	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	YES	AUOTMATIC ON, AUTOMATIC OFF BASED ON OCCUPANCY WITH LOCAL OVERRIDE SWITCH. DAYLIGHT HARVESTING...
RESTROOMS - PUBLIC GROUP	OCCUPANCY	NO	YES	YES	SECURE ACCESS	ON/OFF	UNSWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	AUTOMATIC ON, AUTOMATIC OFF OPERATION WITH MANUAL OVERRIDE IN SECURE LOCATION.
RESTROOMS - PRIVATE	OCCUPANCY	NO	NO	NO	WALL SWITCH SENSOR	MANUAL DIM	SWITCHED	LUTRON MAESTRO WALLSWITCH DIMMING SENSOR	NO	AUOTMATIC ON, AUTOMATIC OFF OPERATIOIN WITH MANUAL DIMMING RAISE/LOWER.
ELEC / MECH / IT ROOMS	N/A	NO	NO	NO	LOCAL TOGGLE	ON/OFF	SWITCHED	MANUAL OPERATION	NO	MANUAL OPERATION
GENDER NEUTRAL-RESTROOM	OCCUPANCY	NO	NO	NO	WALL SWITCH SENSOR	ON/OFF	SWITCHED	LUTRON MAESTRO WALLSWITCH SENSOR	NO	MANUAL ON, AUTOMATIC OFF WITH MANUAL OVERRIDE.
EXTERIOR FAÇADE/LANDSCAPE/ SIGNAGE	N/A	OPEN LOOP PHOTOCELL	YES	YES	N/A	N/A	UNSWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	TIMECLOCK CONTROL BASED ON OWNER'S SCHEDULE, WITH DIMMING CAPABILITY. LANDSCAPE AND SIGN AGE LIGHTING TO BE OFF FROM MIDNIGHT TO 6AM.
EXTERIOR BUILDING MOUNT	N/A	OPEN LOOP PHOTOCELL	YES	YES	N/A	N/A	UNSWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	TIMECLOCK CONTROL BASED ON OWNER'S SCHEDULE, WITH DIMMING CAPABILITY. BUILDING MOUNTED ENTRY LIGHTING TO REMAIN ON DUSK TO DAWN.

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

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1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

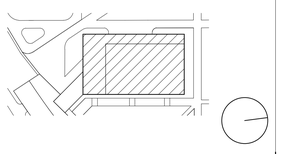
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
2	21 JUL 2023	ADDENDUM 34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033176E
PENNSYLVANIA

2023-06-16

SIGNATURE DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1

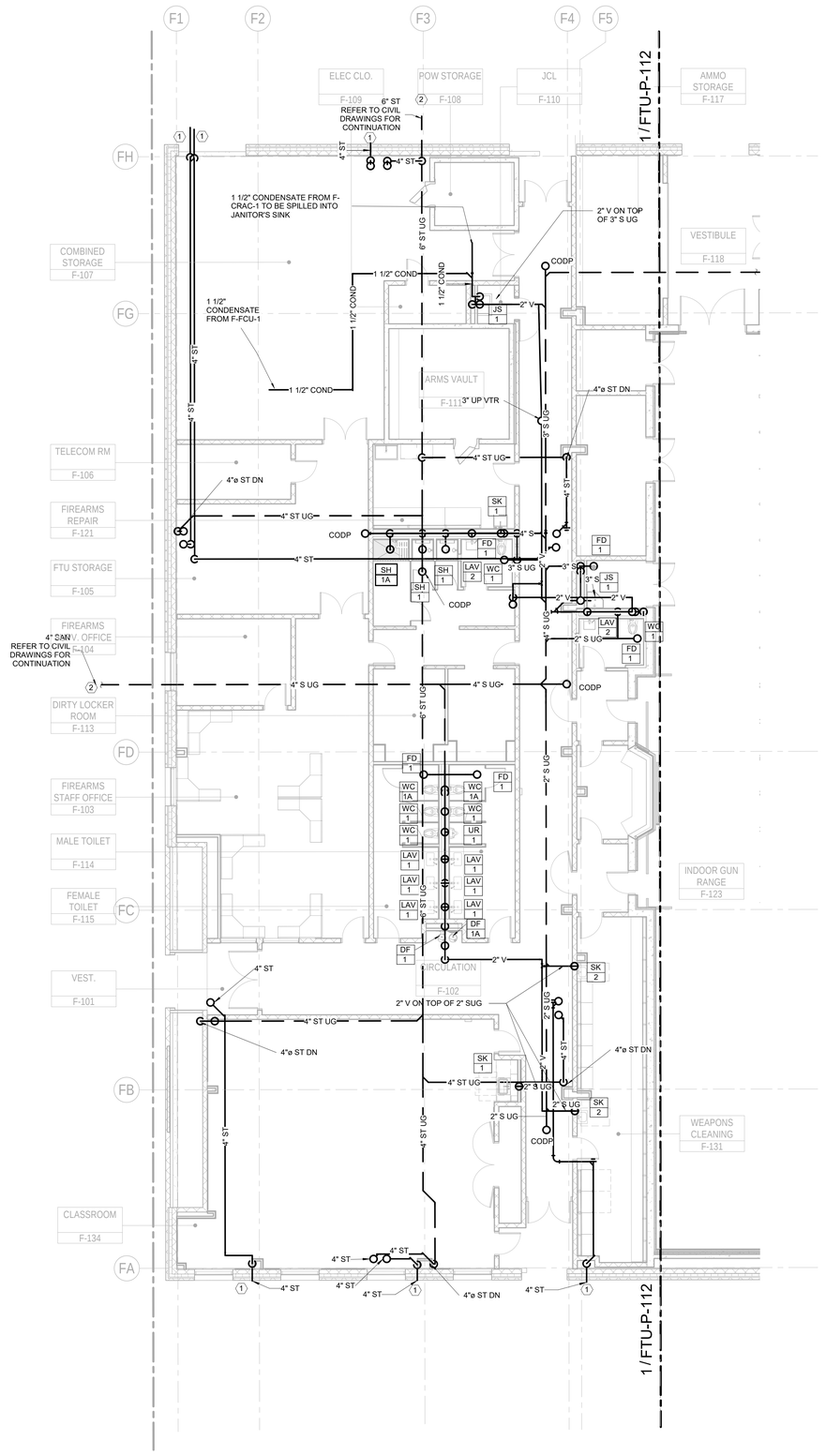
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

SCHEDULES

SHEET No. FTU-E-603

DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK		AS NOTED



1 FIREARMS UNITS - SAN & VENT - PART A - LEVEL 1 - PLUMBING

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

GENERAL NOTES:

1. ALL UNDERGROUND STORM WATER PIPING SHALL HAVE MINIMUM OF ½" PER FOOT OF SLOPE.

2. ALL UNDERGROUND SANITARY PIPING SHALL HAVE MINIMUM OF ¼" PER FOOT OF SLOPE.

3. ALL PENETRATIONS THROUGH FOUNDATION WALLS SHALL BE PROVIDED WITH LINK-SEAL TYPE PIPE SEAL FOR HYDROSTATIC SEAL.

4. ALL BENDS, CROSS CONNECTIONS UNDERGROUND SHALL BE MADE USING LONG SWEEP ELBOWS AND WYE FITTINGS.

5. REFER TO STRUCTURAL AND SITE/CIVIL DRAWINGS FOR UNDERGROUND PIPE TRENCH BACKFILL MATERIAL AND COMPACTION DETAILS.

6. ALL UNDERGROUND JOINTS SHALL BE BELL AND SPIGOT WITH COMPRESSION GASKETS

7. ELEVATIONS AND INVERTS SHOWN HERE ARE APPROXIMATE FOR PRILIMINARY COORDINATION ONLY.

8.CONTRACTOR SHALL SUBMIT SHOP-DRAWING FOR AEOR REVIEW AFTER COORDINATING WITH OTHER TRADES AND PRIOR TO COMMENCING ANY WORK.

9.ALL INSTALLATION ARE SUBJECT TO GETTING APPROVED BY AUTHRITY HAVING JURISDICTION (AHJ).

10.ALL WALL AND FLOOR CLEANOUTS, SERVING 4" AND SMALLER, SHALL BE THE SAME SIZE AS THE PIPING SYSTEM THEY SERVE. CLEANOUTS SERVING 5" AND 6" PIPE SYSTEM SHALL BE 4". CLEANOUTS SERVING 8" PIPING SYSTEM SHALL BE 6".

11.PROVIDE ACCESS PANELS IN HARD CEILINGS AND WALL FOR ACCESS TO ALL PLUMBING EQUIPMENT, ISOLATION VALVES, ETC. THE ACCESS PANELS AHLL BE 24" X 24" MINIMUM. PAINT THE PANELS WITH COLOR MATCHING WALL OR CEILING PAINT COLOR SURROUNDING.

SHEET NOTES:

1. TERMINATE SECONDARY ROOF DRAIN ABOVE GRADE USING WALL DOWNSPOUT NOZZLE. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR DOWNSPOUT INSTALLATION DETAIL. DOWNSPOUT NOZZLE SHALL HAVE INTEGRAL BIRD SCREEN.

2. REFER TO SITE/CIVIL DRAWINGS FOR CONTINUATION

TACTICAL TRAINING DESIGN
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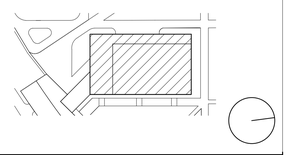

NO.	DATE	DESCRIPTION
	19 MAY 2023	ISSUED FOR BID
1	21 JULY 2023	ADDENDUM 34

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033176E
PENNSYLVANIA

2023-07-21
SIGNATURE DATE

ARCHITECT
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Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

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Core Buildings, BESO & Sitework
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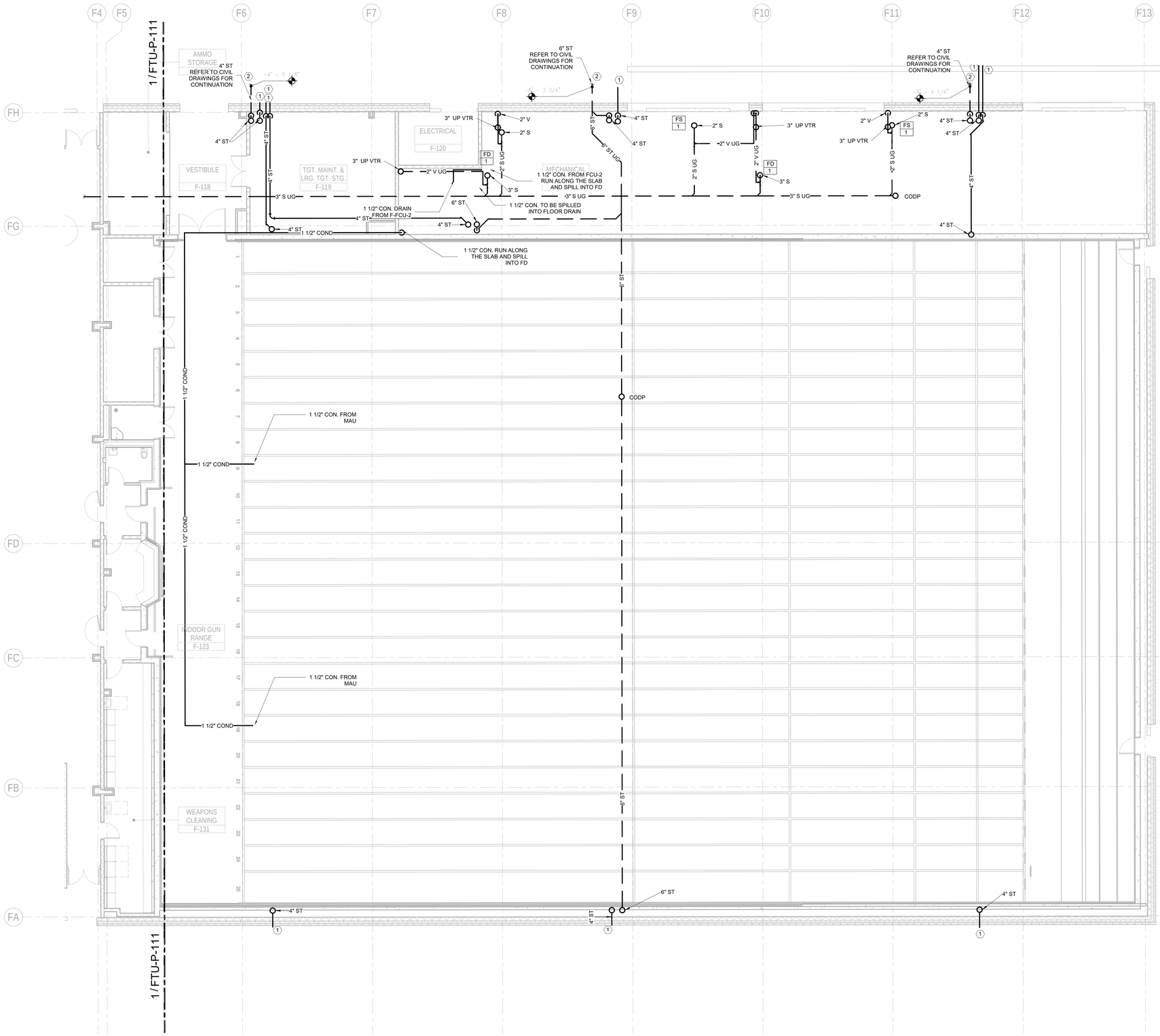
FIREARMS UNITS - FLOOR PART PLAN A - SAN & VENT - LEVEL 1 - PLUMBING

SHEET No.
FTU-P-111

DRAWN BY	CHECKED BY	DATE	SCALE
NV/KT	HS/JKA		AS NOTED



1 FIREARMS UNITS - SAN & VENT - PART B - LEVEL 1 - PLUMBING

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

GENERAL NOTES:

1. ALL UNDERGROUND STORM WATER PIPING SHALL HAVE MINIMUM OF ½" PER FOOT OF SLOPE.

2. ALL UNDERGROUND SANITARY PIPING SHALL HAVE MINIMUM OF ¼" PER FOOT OF SLOPE.

3. ALL PENETRATIONS THROUGH FOUNDATION WALLS SHALL BE PROVIDED WITH LINK-SEAL TYPE PIPE SEAL.

4. ALL BENDS, CROSS CONNECTIONS UNDERGROUND SHALL BE MADE USING LONG SWEEP ELBOWS AND WYE FITTINGS.

5. REFER TO STRUCTURAL AND SITE/CIVIL DRAWINGS FOR UNDERGROUND PIPE TRENCH BACKFILL MATERIAL AND COMPACTION DETAILS.

6. ALL UNDERGROUND JOINTS SHALL BE BELL AND SPIGOT WITH COMPRESSION GASKETS.

7. ELEVATIONS AND INVERTS SHOWN HERE ARE APPROXIMATE FOR PRILIMINARY COORDINATION ONLY.

8.CONTRACTOR SHALL SUBMIT SHOP-DRAWING FOR AEOR REVIEW AFTER COORDINATING WITH OTHER TRADES AND PRIOR TO COMENCING ANY WORK.

9.ALL INSTALLATION ARE SUBJECT TO GETTING APPROVED BY AUTHRITY HAVING JURISDICTION.

10.ALL WALL AND FLOOR CLEANOUTS, SERVING 4" AND SMALLER, SHALL BE THE SAME SIZE AS THE PIPING SYSTEM THEY SERVE. CLEANOUTS SERVING 5" AND 6" PIPE SYSTEM SHALL BE 4". CLEANOUTS SERVING 8" PIPING SYSTEM SHALL BE 6".

11.PROVIDE ACCESS PANELS IN HARD CEILINGS AND WALL FOR ACCESS TO ALL PLUMBING EQUIPMENT, ISOLATION VALVES, ETC. THE ACCESS PANELS AHLL BE 24" X 24" MINIMUM. PAINT THE PANELS WITH COLOR MATCHING PAINT COLOR SURROUNDING.

SHEET NOTES:

1. TERMINATE SECONDARY ROOF DRAIN ABOVE GRADE USING WALL DOWNSPOUT NOZZLE. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR DOWNSPOUT INSTALLATION DETAIL. DOWNSPOUT NOZZLE SHALL HAVE INTEGRAL BIRD SCREEN.

2. REFER TO SITE/CIVIL DRAWINGS FOR CONTINUATION

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POOL DESIGN
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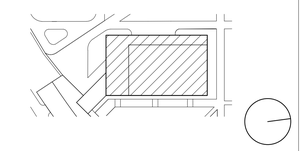
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	21 JULY 2023	ADDENDUM 34			
	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
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PE033174E
PENNSYLVANIA

SIGNATURE 2023-07-21 DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1

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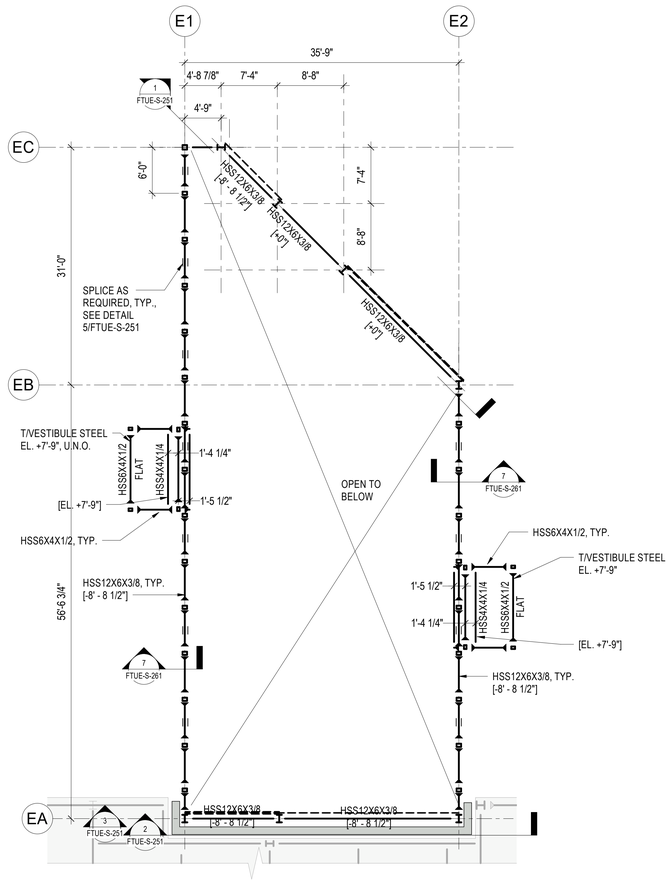
FIREARMS UNITS - FLOOR PART PLAN B - SAN & VENT - LEVEL 1 - PLUMBING

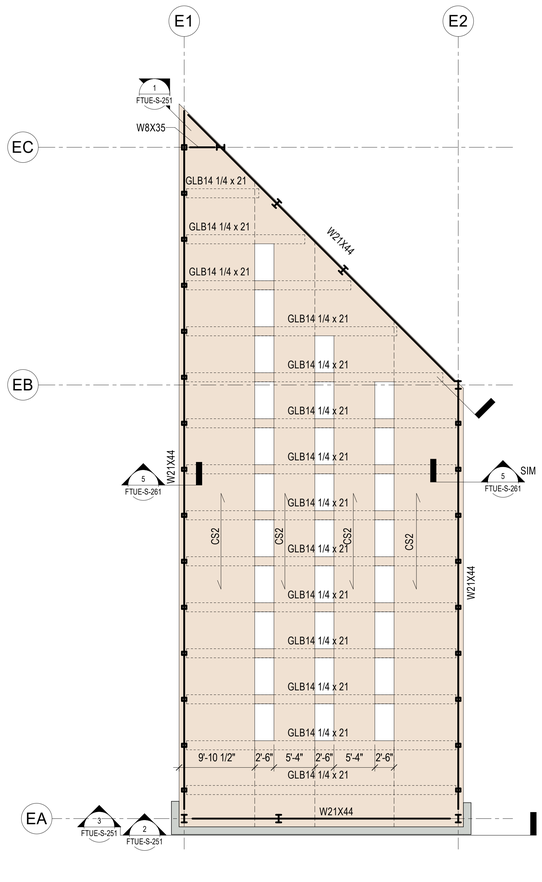
SHEET No. FTU-P-112

DRAWN BY	CHECKED BY	DATE	SCALE
NV/KT	HS/JKA		AS NOTED



1 INTERMEDIATE FRAMING PLAN

SCALE: 1/8" = 1'-0"



2 ROOF FRAMING PLAN

SCALE: 1/8" = 1'-0"

2 NOTES:
1. CS2 INDICATES AS 6 PLY CLT
3 2. CONNECTION BETWEEN CS2 AND GLB SHALL BE DESIGNED TO RESIST LINEAR FACTORED LOAD, 400 LBS/FT, ALONG GLB DIRECTION.

GENERAL SHEET NOTES:

1. ALL BUILDING ELEVATIONS ARE REFERENCED TO BUILDING REFERENCE DATUM. EL. +0 = NAVD 88 DATUM, SEE GEN-G-100
2. TOP OF CLT SLAB ELEVATION IS EL. 24'-10"
3. TOP OF STEEL ELEVATION IS -6 7/8" FROM TOP OF CLT SLAB ELELVATION, THUS [+/-XX'-XX"] DENOTES VERTICAL OFFSET
4. SEE ARCHITECTURAL AND MEP DRAWINGS FOR ADDITIONAL OPENING NOT SHOWN ON PLANS.
5. SEE ARCHITECTURAL AND MEP DRAWINGS FOR CURBS, PADS, AND FILLS SIZE AND LOCATIONS.
6. SEE MAQ-S-501 FOR STEEL COLUMN DETAILS
7. SEE MAQ-S-511 FOR STEEL DETAILS
8. SEE MAQ-S-521 FOR STEEL BRACE DETAILS
9. SEE MAQ-S-531 TO 532 FOR METAL DECK SLAB DETAILS
10. SEE MAQ-S-541 FOR CLT DECK SLAB DETAILS

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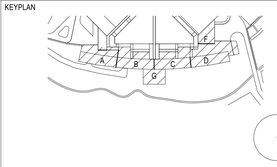
KEYPLAN



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3	21 JUL 2023	ADDENDUM 34			
2	14 JUL 2023	ADDENDUM 32			
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BONGHWAN KIM
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No. PE087243
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D.G.S. PROJECT No.
C-0211-0005 PHASE 5

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PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

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FRAMING PART PLAN E - LEVEL 2

SHEET No. FTUE-S-111

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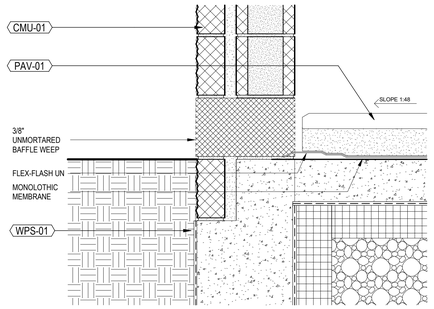
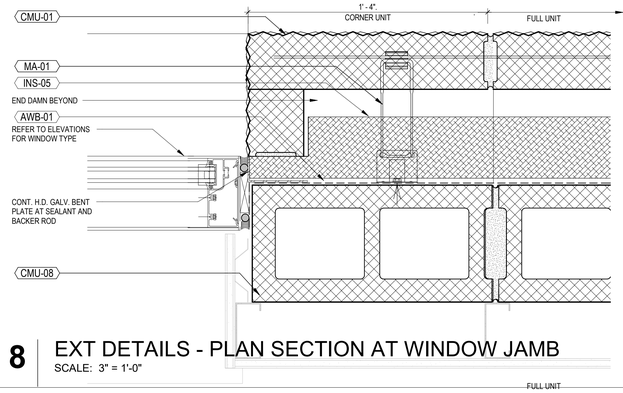
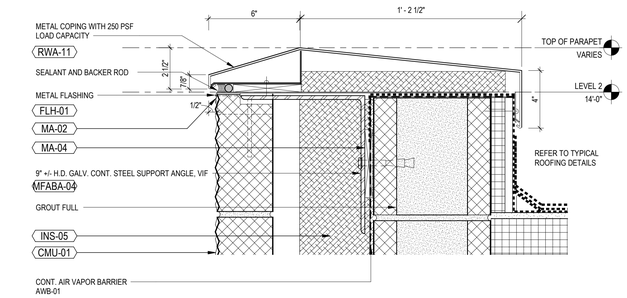
Author	Checker		AS NOTED



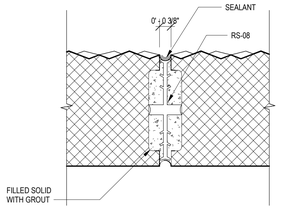
12 SCUPPER DTL. @ SITE WALL
SCALE: 1 1/2" = 1'-0"



8 EXT DETAILS - PLAN SECTION AT WINDOW JAMB
SCALE: 3" = 1'-0"



4 EXT DETAILS - SECTION CMU @ PARAPET
SCALE: 3" = 1'-0"



11 EXT DETAILS - PLAN AT CJ
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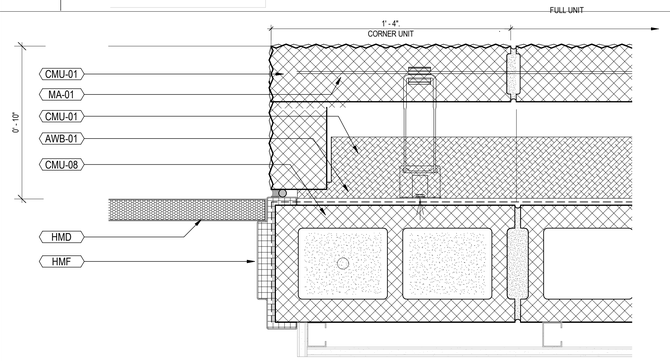

7 EXT DETAILS - JAMB @ HM DOOR
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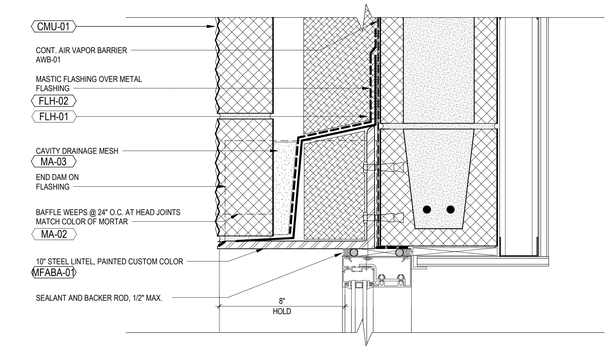

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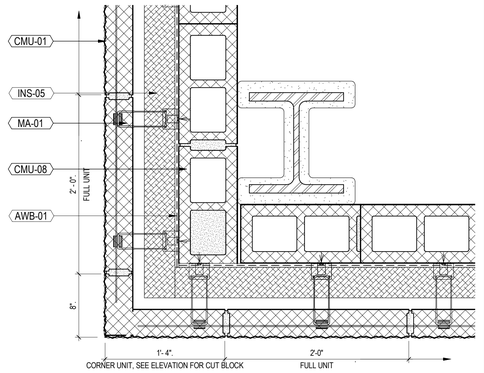

10 PLAN SECTION - CMU WALL CORNER
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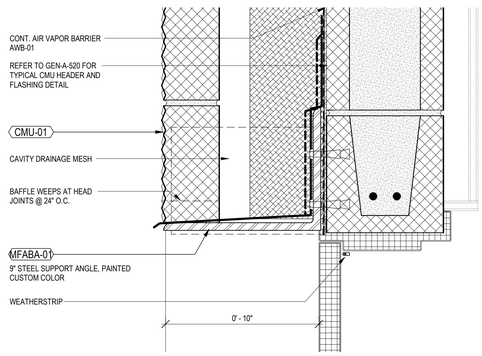

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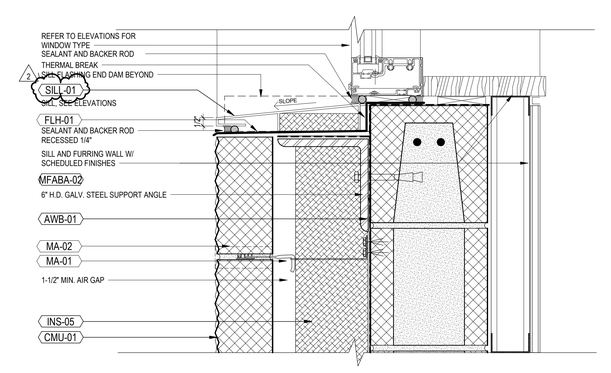

2 EXT DETAILS - SECTION CMU @ WINDOW SILL
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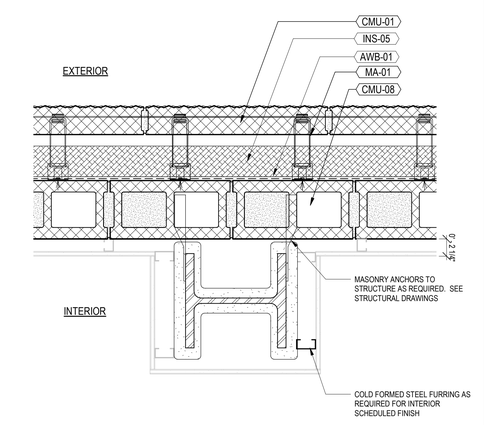

9 EXT DETAILS - PLAN CMU WALL AT COL.
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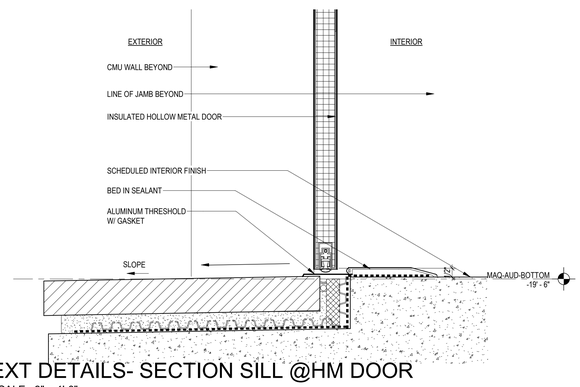

5 EXT DETAILS- SECTION SILL @HM DOOR
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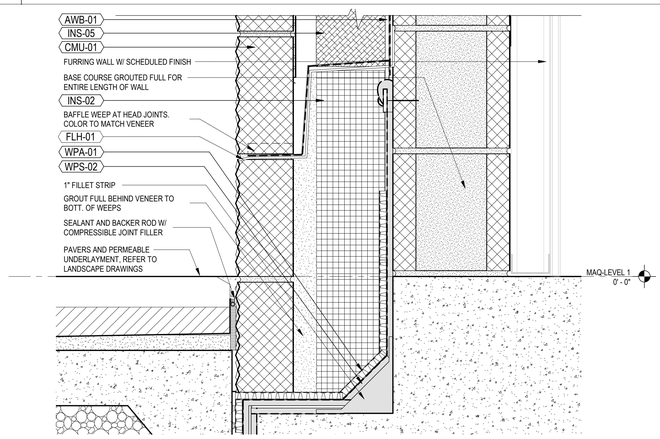

1 EXT DETAILS - SECTION CMU @ GROUND
SCALE: 3" = 1'-0"

KEYNOTES

AWB-01	072700 AIR BARRIERS
CMU-01	042000 CONCRETE MASONRY UNIT, 8" X 24" X 4" SPLIT FACE
CMU-08	042000 CONCRETE MASONRY UNIT, 8" X 16" X 8"
FLH-01	076200 SS FLASHING
HMD	081113 HOLLOW METAL DOOR
HMF	081113 HOLLOW METAL FRAME
INS-02	072100 XPS BOARD INSULATION 25 PSI
INS-05	072100 SEMI RIGID MINERAL FIBER INSULATION
MA-01	042000 MASONRY TIE
MA-02	042000 WEEP
MA-03	042000 MORTAR NET
MA-04	042000 THERMAL BREAK SHIM
MFABA-01	055000 HEAD LINTEL
MFABA-02	055000 SILL ANGLE
MFABA-04	055000 COPING ANGLE
PAV-01	075556 PAVERS
RWA-11	077000 METAL COPING CMU
SILL-01	057000 1/8" PAINTED ALUMINUM
WPA-01	071300 MOLDED POLYSTYRENE AND FABRIC DRAINAGE SHEET
WPS-01	071300 UNDERSLAB SHEET WATERPROOFING
WPS-02	071300 FOUNDATION WALL SHEET WATERPROOFING

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KEYPLAN

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SEAL

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TYPICAL CMU DETAILS

SHEET No. GEN-A-520

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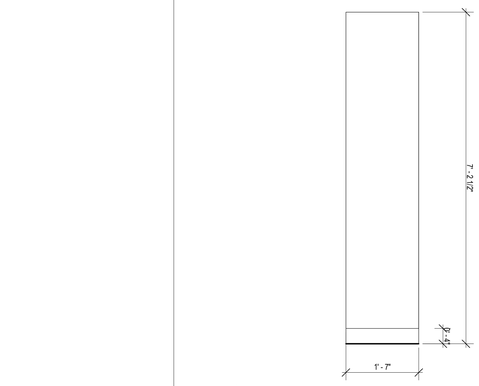

11 CUBBIES SIDE ELEVATION - LKR-04
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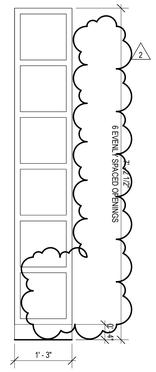

10 CUBBIES FRONT ELEVATION - LKR-04
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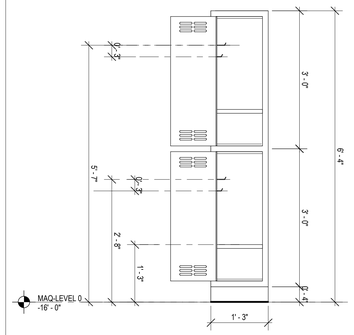

9 LOCKER INTERIOR ELEVATION - LKR-03
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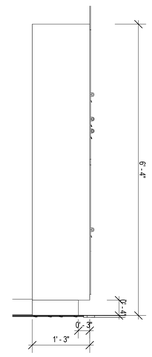

8 LOCKER SIDE ELEVATION- LKR-03
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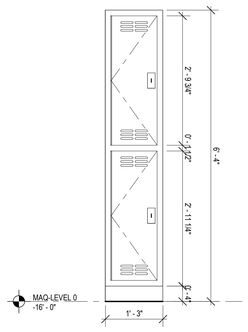

7 LOCKER FRONT ELEVATION - LKR-03
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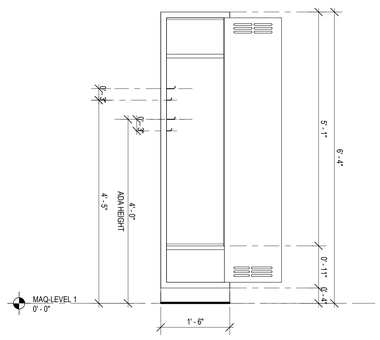

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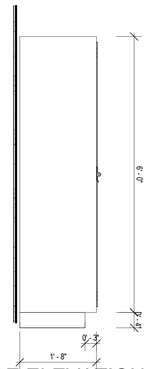

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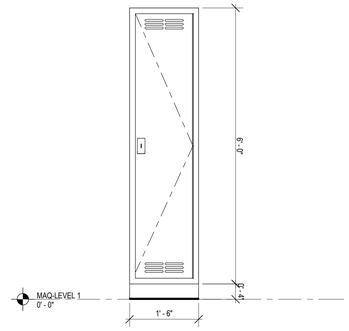

4 LOCKER FRONT ELEVATION - LKR-02
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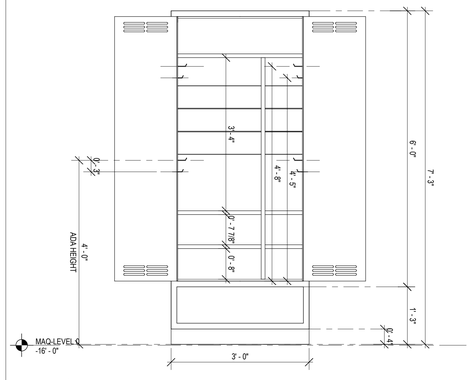

3 LOCKER INTERIOR ELEVATION - LKR-01
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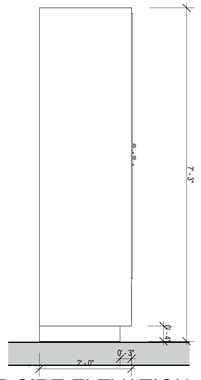

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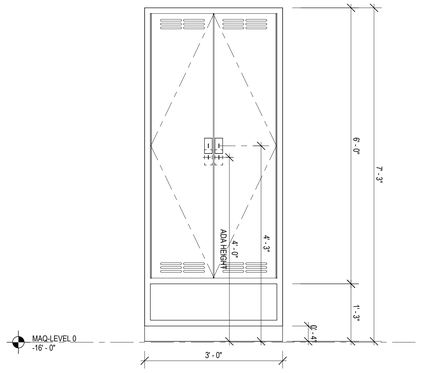

1 LOCKER FRONT ELEVATION - LKR-01
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KEYPLAN

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
2	21 JULY 2023	ADDENDUM 34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

SEAL

SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

LOCKER TYPES

SHEET No. GEN-A-772

DRAWN BY	CHECKED BY	DATE	SCALE
ML	TNB	SEPT 2022	AS NOTED

ELECTRICAL SYMBOLS

- DUPLEX RECEPTACLE, WALL RECESSED, 20A, 120V. 'GFI' INDICATES WITH FAULT CIRCUIT INTERRUPTER. 'IG' INDICATES WITH ISOLATED GROUND. 'U' INDICATES USB RECEPTACLES. 'F' INDICATES FURNITURE MOUNTED. '*' INDICATES CONTROLLED RECEPTACLE.
- QUADUPLEX RECEPTACLE, WALL RECESSED, 20A, 120V. 'GFI' INDICATES WITH FAULT CIRCUIT INTERRUPTER. 'IG' INDICATES WITH ISOLATED GROUND. 'U' INDICATES USB RECEPTACLES. 'F' INDICATES FURNITURE MOUNTED. '**' INDICATES CONTROLLED RECEPTACLE.
- SIMPLEX RECEPTACLE. REFER TO DRAWING FOR NEMA TYPE AND CURRENT RATING.
- SPECIAL RECEPTACLE. REFER TO DRAWING FOR NEMA TYPE AND CURRENT RATING.
- NEMA 16 TWIST LOCK RECEPTACLE. 208, 3 WIRE.
- QUADRUPLEX (DOUBLE DUPLEX) RECEPTACLE, 20A, 120V
- CEILING MOUNTED DUPLEX RECEPTACLE. 1P-20A, 120V
- J or J — UNIVERSAL JUNCTION BOX, CONNECT IN HUNG CEILING
- OUTLET (JUNCTION BOX) 4" SQUARE BOX MINIMUM
- S_M — MOTOR RATED SWITCH, NEMA-1 ENCLOSURE U.O.N.
- S_{RS} — RAISE AND LOWER PUSH BUTTON/KEY SWITCH CONTROLLER
- CONDUIT
- DEDICATED BRANCH CIRCUIT, HOMERUN TO PANEL
- MULTI-WIRE HOME RUN TO PANEL. ARROWS DENOTE NUMBER OF 1P-20A CIRCUITS.
- ELECTRICAL PANEL, 120/208V, CU BUS, BOLT-ON CIRCUIT BREAKERS AND SEPARATE CU GROUND BUS
- ELECTRICAL PANEL, 277/480V, CU BUS, BOLT-ON CIRCUIT BREAKERS AND SEPARATE CU GROUND BUS
- 3P-30A/30AF NEMA-1 — FUSED DISCONNECT SWITCH. TEXT INDICATES NUMBER OF POLES, RATING, FUSE RATING AND ENCLOSURE TYPE.
- 3P-30A NEMA-1 — NON-FUSED DISCONNECT SWITCH. TEXT INDICATES NUMBER OF POLES, RATING, FUSE RATING AND ENCLOSURE TYPE.
- COMBINATION DISCONNECT SWITCH AND MOTOR STARTER, NEMA-1 U.O.N., SIZE AS REQUIRED BY MOTOR SERVED
- R — MOTOR STARTER OR CONTACTOR. SUBSCRIPT DENOTES TYPE.
- VFD — VARIABLE FREQUENCY DRIVE
- T — TRANSFORMER, RATED AS NOTED
- X — MOTOR, HORSEPOWER INSCRIBED
- CIRCUIT BREAKER
- 100AS 100AF — FUSED SWITCH, TEXT INDICATES SWITCH AND FUSE RATING
- UNFUSED SWITCH
- AUTOMATIC TRANSFER SWITCH
- M — CURRENT TRANSFORMER AND METER
- GROUND BUS BAR
- FLOOR BOX WITH (2) 20A DUPLEX RECEPTACLES. PROVIDE 3/4" CONDUIT TRENCHED IN SLAB FOR POWER.
- FSD — FIRE SMOKE DAMPER
- CR — CARD READER, SECURITY SYSTEM
- DR — DOOR RELEASE, SECURITY SYSTEM
- RAN — GENERATOR REMOTE ANNUNCIATOR
- SECURITY CAMERA. PROVIDE 3/4" EMPTY CONDUIT TO ACCESSIBLE CEILING.
- F — OVERHEAD PROJECTOR

LIGHTING SYMBOLS

- A a — 2'x4' LIGHTING FIXTURE
- A a — 2'x2' LIGHTING FIXTURE
- A a — 1'x4' LIGHTING FIXTURE
- A a — RECESSED DOWNLIGHT LIGHTING FIXTURE
- A a — WALL MOUNTED LIGHTING FIXTURE
- A a — PENDANT LIGHTING FIXTURE
- EXIT SIGN. ARROWS INDICATE DIRECTION OF TRAVEL. 120/277 VOLT, SINGLE OR DOUBLE FACED AS NOTED.
- EMERGENCY LIGHTING FIXTURES, FED BY EMERGENCY POWER SOURCE. SUBSCRIPT 'EM' INDICATES SWITCHED LIGHTING FIXTURES. SUBSCRIPT 'EM/NL' INDICATES UNSWITCHED NIGHT LIGHTS.
- S_T — SINGLE POLE TOGGLE SWITCH. LOWER CASE SUBSCRIPT INDICATES FIXTURES CONTROLLED. 'K' INDICATES KEY OPERATED. 'L' INDICATES LOW VOLTAGE SWITCH.
- S_3 — 3 - WAY LIGHT SWITCH
- S_4 — 4 - WAY LIGHT SWITCH
- S_{OS} — OCCUPANCY SENSOR LIGHT SWITCH. 'VS' INDICATES VACANCY SENSOR SWITCH.

NOTES

ALL ABBREVIATIONS AND SYMBOLS MAY NOT APPEAR ON THE DRAWINGS OF THIS PROJECT.

REFER TO INDIVIDUAL BUILDING LIGHTING FIXTURE SCHEDULES FOR MORE INFORMATION.

ABBREVIATIONS

A	AMPERES
AFF	ABOVE FLOOR FINISH
B.O.	BY OTHERS
C OR CDT	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
EC	ELECTRICAL CONTRACTOR
EQP	EQUIPMENT
E	EXISTING
EL	ELEVATOR RECALL
ER	EXISTING TO RELOCATE
FACP	FIRE ALARM CONTROL PANEL
GND	GROUND
G	WIRE GUARD
GRD	GROUNDING
JB	JUNCTION BOX
KV	KILOVOLTS
KVA	KILOVOLT AMPERES
KW	KILOWATTS
LTG	LIGHTING
LV	LOW VOLTAGE
MTD	MOUNTED
NTS	NOT TO SCALE
R	REMOVE
RE	RELOCATE TO POSITION INDICATED
RL	RELOCATED POSITION
TEL	TELEPHONE
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VOLTS
W	WATTS
WP	WEATHERPROOF
XFMR	TRANSFORMER

LIGHTING SYMBOLS

SYMBOL	DESCRIPTION
S_D^3	3-WAY LIGHT SWITCH
S_D^3	4-WAY LIGHT SWITCH
S_{OS}^3	WALL MOUNTED OCCUPANCY SENSOR LIGHT SWITCH. VS INDICATES VACANCY SENSOR.
	DMX CONTROLS POWER SUPPLY

GENERAL CONSTRUCTION NOTES:

1. THE INTENT OF THE CONTRACT DOCUMENTS IS TO ALLOW FOR THE PERFORMANCE OF THE WORK. EVERY ITEM NECESSARILY REQUIRED MAY NOT BE SPECIFICALLY MENTIONED OR SHOWN. UNLESS EXPRESSLY STATED, ALL SYSTEMS AND EQUIPMENT SHALL BE COMPLETED AND APPROPRIATELY OPERABLE. FURNISH AND INSTALL ALL SPECIFIED AND APPROPRIATED ITEMS, AND ALL INCIDENTAL, ACCESSORY, AND OTHER ITEMS NOT SPECIFIED BUT REQUIRED FOR A COMPLETE AND FINISHED ASSEMBLY.
2. NO WORK DEFECTIVE IN WORKMANSHIP OR QUALITY OR DEFICIENT IN ANY REQUIREMENTS OF THE CONTRACT DOCUMENTS WILL BE ACCEPTABLE DESPITE THE ARCHITECT'S FAILURE TO DISCOVER OR POINT OUT DEFECTS OR DEFICIENCIES DURING CONSTRUCTION. DEFECTIVE WORK REVEALED WITHIN THE TIME REQUIRED BY GUARANTEES SHALL BE REPLACED BY WORK CONFORMING WITH THE INTENT OF THE CONTRACT. NO PAYMENT, EITHER PARTIAL OR FINAL, SHALL BE CONSTRUED AS AN ACCEPTANCE OF DEFECTIVE WORK OR IMPROPER MATERIALS
3. PATCH AND REPAIR ALL FIREPROOFING DAMAGE INCURRED DURING DEMOLITION AND/OR CONSTRUCTION. FIREPROOF AS REQUIRED BY CODE ALL NEW PENETRATIONS GENERATED BY THE WORK DESCRIBED IN THESE DOCUMENTS.
4. DURING THE COURSE OF CONSTRUCTION, ACTUAL LOCATIONS OF CONSTRUCTION ITEMS DENOTED IN THE CONSTRUCTION DOCUMENTS SHALL BE INDICATED TO SCALE, IN CONTRASTING INK ON THE DRAWINGS FOR ALL RUNS OF MECHANICAL, SPRINKLER, PLUMBING, AND ELECTRICAL WORK; INCLUDING SITE UTILITIES AND CONCEALED DEVIATIONS FROM THE DRAWINGS. UPON COMPLETION OF THE PROJECT THE ARCHITECT WILL PROVIDE THE CONTRACTOR WITH A REPRODUCIBLE SET OF ORIGINAL DOCUMENTS FOR "AS-BUILT" DOCUMENTATION. THIS SET SHALL BE CONSPICUOUSLY MARKED "AS-BUILTS" AND DELIVERED TO THE ARCHITECT.
5. THE CONTRACTOR IS RESPONSIBLE FOR CHECKING CONTRACT DOCUMENTS, FIELD CONDITIONS, AND DIMENSIONS FOR ACCURACY AND CONFIRMING THAT WORK IS BUILDABLE AS SHOWN BEFORE PROCEEDING WITH CONSTRUCTION. IF THERE ARE ANY QUESTIONS REGARDING THESE OR OTHER COORDINATION ISSUES, THE CONTRACTOR SHALL SUBMIT THEM, IN WRITING, TO THE ARCHITECT AND IS RESPONSIBLE FOR OBTAINING A WRITTEN CLARIFICATION FROM THE ARCHITECT BEFORE PROCEEDING WITH WORK IN QUESTION, OR RELATED WORK.
6. EXECUTE WORK IN ACCORDANCE WITH ANY AND ALL APPLICABLE LOCAL, STATE, FEDERAL CODES, MANUFACTURER'S RECOMMENDATIONS, TRADE AND REFERENCE STANDARDS INCLUDING BUT NOT LIMITED TO: UBC, SEISMIC CODES, NEC, NFPA, ASMC, UMC, LATEST ENFORCED EDITIONS.
7. ALL INSTALLED PLUMBING, MECHANICAL, AND ELECTRICAL EQUIPMENT SHALL OPERATE QUIETLY AND FREE OF VIBRATION.
8. UPON NOTIFICATION OF COMPLETION OF THE WORK AND DELIVERY OF THE CONTRACTOR'S PUNCH-LIST, THE ARCHITECT SHALL PREPARE A PUNCH- LIST OF CORRECTIONS, UNSATISFACTORY AND/OR INCOMPLETE WORK, FINAL PAYMENT WILL BE CONTINGENT UPON THE COMPLETION OF THESE ITEMS UNDER THE TERMS OF THE OWNER/CONTRACTOR AGREEMENT.
9. ALL MATERIALS SHALL BE NEW, UNUSED, AND OF THE HIGHEST QUALITY IN EVERY RESPECT UNLESS OTHERWISE NOTED. MANUFACTURED MATERIALS AND EQUIPMENT SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS, U.O.N.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING AND SUPERVISING ALL SAFETY PRECAUTIONS IN CONNECTION WITH THE WORK.
11. "SIMILAR" OR "SIM." MEANS COMPARABLE CHARACTERISTICS TO THE CONDITION NOTED. VERIFY DIMENSIONS AND ORIENTATION ON PLAN.
12. ALL DRAWINGS AND WRITTEN MATERIAL HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF THE ARCHITECT, AND THE SAME MAY NOT BE DUPLICATED, USED, OR DISCLOSED WITHOUT THE WRITTEN CONSENT TO THE ARCHITECT.

FIRE ALARM SYMBOLS

SYMBOL	DESCRIPTION
F	FIRE ALARM PULL STATION. MOUNTED AT 48" AFF.
	SPEAKER/STROBE OR HORN/STROBE, WALL MOUNTED. BUILDINGS MAQ, GYM, AND FTU WILL HAVE VOICE ANNOUCIATED FIRE ALARM SYSTEMS. STA, ATO, BSO, P&S, AND OFR WILL HAVE HORN/STROBE FIRE ALARMS
	STROBE, LIGHT, WALL MOUNTED
CO	CARBON MONOXIDE DETECTOR
S	SMOKE DETECTOR CEILING MOUNT(PHOTOELECTRIC TYPE) SUBSCRIPT 'CO' DENOTES ADDRESSABLE CO/SMOKE COMBINATION DETECTOR WITH SOUNDBASE
	SPEAKER ONLY(AUDIBLE NOTIFICATION)
FAA	FIRE ALARM ANUNCIATOR
FARA	FIRE ALARM REMOTE ANUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FAPR	FIRE ALARM PRINTER
TS	TAMPER SWITCH
FS	FLOW SWITCH

FIRE ALARM NOTES:

1. THE WORD PROVIDE IN THESE ELECTRICAL SPECIFICATIONS AND DRAWINGS MEANS TO FURNISH AND INSTALL.
2. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL CHASES, OPENINGS, HOLES, SLEEVES, DRILLING ETC. PERTAINING TO HIS WORK.
3. SUBMIT SHOP DRAWINGS FOR ALL ELECTRICAL EQUIPMENT AND DEVICES. OBTAIN LOCAL FIRE MARSHALL APPROVAL PRIOR TO SUBMISSION OF SHOP DRAWINGS
4. FLEXIBLE STEEL CONDUITS MAY BE USED ABOVE HUNG CEILING AND IN WALLS IN LENGTHS AS REQUIRED . ALL METAL CONDUIT SHALL BE GALVANIZED ELECTRIC METALLIC TUBING WITH SET-SCREW FITTINGS.
5. MINIMUM CONDUIT SIZE SHALL BE 3/4" UNLESS OTHERWISE NOTED.
6. FURNITURE, IF SHOWN, IS FOR REFERENCE ONLY AND IS NOT IN CONTACT, U.O.N.
7. ALL EXISTING AND NEW FLOOR OR WALL PENETRATIONS FOR CONDUITS SHALL BE FULLY PACKED AND SEALED IN ACCORDANCE WITH THE APPLICABLE BUILDING AND FIRE CODES.
8. FURNISH AND INSTALL UNDERWRITERS LABORATORIES, INC. (UL) LABELED DEVICES THROUGHOUT.
9. NO CONDUIT SHALL BE RUN IN ANY FLOOR IN CONTACT WITH THE EARTH UNLESS OTHERWISE DIRECTED ON THE PLAN
10. FIRE ALARM WIRING ABOVE CEILINGS MUST BE APPROVED FOR PLENUM USE. WIRING IN EXPOSED AREAS (STORAGE, MECHANICAL/ELECTRICAL ROOMS/ETC.) SHALL BE IN CONDUIT AND THE CONDUIT AND BOXES SHALL BE PAINTED RED PRIOR TO INSTALLATION. WIRING ON FINISHED EXPOSED SURFACES (IN LOBBIES, CORRIDORS, OFFICES ETC.) SHALL BE IN SURFACE METAL RACEWAY AS APPROVED BY THE OWNER.
11. PULL AND JUNCTION BOXES SHALL BE SURFACE TYPE IN UNFINISHED AREAS AND FLUSH TYPE IN FINISHED AREAS, UNLESS OTHERWISE NOTED. THE JUNCTION AND PULL BOXES SHALL BE LOCATED APPROXIMATELY WHERE INDICATED ON THE PLAN TO SUIT CONDUIT ENTRANCE, BUT SHALL IN ALL CASES, BE LOCATED TO AVOID INTERFERENCE WITH EQUIPMENT FROM OTHER TRADES AND SHALL BE LOCATED SO THAT COVERS ARE READILY ACCESSIBLE.
12. SURVEY FIELD CONDITIONS AND VERIFY THAT WORK IS FEASIBLE AS SHOWN. VERIFY LOCATION OF OUTLETS IN RELATION TO STRUCTURAL AND OTHER ELEMENTS AS REQUIRED. NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.
13. EXISTING FIRE ALARM SYSTEM AND DEVICES, WIRING ETC. SHALL NOT BE DISABLED IN ANY RESPECT PRIOR TO THE NEW DEVICES BEING INSTALLED, TESTED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION (AHJ).
14. EXISTING FIRE ALARM SYSTEM AND DEVICES, WIRING ETC. SHALL NOT BE DISABLED IN ANY RESPECT PRIOR TO THE NEW DEVICES BEING INSTALLED, TESTED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION (AHJ).
15. FIRE ALARM SYSTEM MANUFACTURER SHALL BE "----------". SUBSTITUTION OF MANUFACTURER WILL NOT BE CONSIDERED.
16. RISER DIAGRAM IS A GENERALIZED REPRESENTATION OF THE FIRE ALARM SYSTEM AND IS INTENDED ONLY TO REPRESENT THE OVERALL SYSTEM ARCHITECTURE. IT IS NOT A WIRING DIAGRAM. FIRE ALARM VENDOR SHALL PROVIDE A DETAILED SYSTEM LAYOUT AND DESIGN, INCLUDING ALL DEVICE LOCATIONS, BOOSTER PANELS, CONTROL AND MONITORING MODULES, AND BATTERY CALCULATIONS THAT COMPLIES WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
DEVICES SHALL BE INDIVIDUALLY WIRED TO THE FACP AS RECOMMENDED BY THE FACP MANUFACTURER. ALL FIRE ALARM WIRING SHALL BE CONTINUOUS WITHOUT SPLICES AND SHALL BE INSTALLED PER BUILDING STANDARD
17. ALL FIRE ALARM WIRING SHALL BE CONTINUOUS WITHOUT SPLICES AND SHALL BE INSTALLED PER BUILDING STANDARD.
18. PROVIDE BOOSTER PANEL(S)/POWER MODULE(S), SIGNAL LINE CIRCUIT (ADDRESS) EXPANSION MODULES OR INTERFACES, AND ANY OTHER REQUIRED FIRE ALARM SYSTEM EXPANSION COMPONENTS THAT ARE REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM THAT MEETS THE CODES AND REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION (AHJ).
19. RELEASE WILL BE CONDITIONAL UPON SUBMITTAL OF SIGNED AND SEALED FIRE ALARM SYSTEM SHOP DRAWINGS. SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO SYSTEM INSTALLATION, AND SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL OF THE FOLLOWING:
A) A FLOOR PLAN DRAWN TO SCALE THAT INDICATES THE USE OF ALL ROOMS.
B) LOCATIONS OF ALARM-INITIATING DEVICES.
C) LOCATIONS OF ALARM NOTIFICATION APPLIANCES, INCLUDING CANDELA RATINGS FOR VISIBLE ALARM NOTIFICATION APPLIANCES.
D) LOCATION OF FIRE ALARM CONTROL UNIT, TRANSPONDERS AND NOTIFICATION POWER SUPPLIES.
E) ANNUNCIATORS.
F) POWER CONNECTION.
G) BATTERY CALCULATIONS.
H) CONDUCTOR TYPE AND SIZES.
I) VOLTAGE DROP CALCULATIONS.
J) MANUFACTURERS' DATA SHEETS INDICATING MODEL NUMBERS AND LISTING INFORMATION FOR EQUIPMENT, DEVICES AND MATERIALS.
K) DETAILS OF CEILING HEIGHT AND CONSTRUCTION.
L) THE INTERFACE OF FIRE SAFETY CONTROL FUNCTIONS.
M) CLASSIFICATION OF THE SUPERVISING STATION.
N) FIRE DEPARTMENT RESPONSE POINT(S) AND ANNUNCIATOR LOCATION(S).
O) COMPLETE SEQUENCE OF OPERATIONS DETAILING ALL INPUTS AND OUTPUTS.
P) ALL DOCUMENTS PREPARED BY PEOPLE OTHER THAN THE DESIGN PROFESSIONAL SHALL BE REVIEWED BY THE DESIGN PROFESSIONAL AND A SIGNED AND SEALED LETTER SUBMITTED INDICATING THAT THEY HAVE BEEN REVIEWED AND FOUND TO BE IN CONFORMANCE WITH THE REGULATIONS FOR THE DESIGN OF THE BUILDING PER NJAC 5:23-2.15(F)1.XI(1). A STAMP OR LABEL PLACED ON DRAWINGS BY THE DESIGN PROFESSIONAL IS NOT ACCEPTABLE. (THE DESIGN PROFESSIONAL IS THE ARCHITECT OR ENGINEER THAT IS RESPONSIBLE FOR THE TOTAL DESIGN OF THE PROJECT.)
Q) SHOP DRAWING FOR FIRE ALARM SYSTEMS SHALL BE SIGNED AND SEALED BY A COMMONWEALTH OF PENNSYLVANIA LICENSED PROFESSIONAL ARCHITECT OR ENGINEER. SUBMITTAL TO MEET THE SUBMITTAL REQUIREMENTS OF IBC 2015 SECTION 907.1.2

LIGHTNING PROTECTION SYMBOLS

- AIR TERMINAL
- V.T.R.
- ROOF DRAIN
- THRU-ROOF
- STUBOUT LOCATION
- ROBBINS CAT. NO. A3 ALUMINUM CABLE EXPOSED (24 STR., X 14 GA.)
- CAT. NO. 6 COPPER CABLE DOWNLEAD (30 STR., X 17 GA. - 2 AWG.)
- ROBBINS CAT. NO. A11C ALUMINUM BONDING WIRE (#4 AWG.)
- GROUND ROD LOCATION

GENERAL NOTES

THE DESIGN & DETAILS SHOWN WILL MEET THE REQUIREMENTS OF UNDERWRITERS LABORATORY CODE 96/96A, NATIONAL FIRE PROTECTION ASSOCIATION CODE 780 & THE LIGHTNING PROTECTION INSTITUTE CODE 175 FOR LIGHTNING PROTECTION SYSTEMS

1. A CONDUCTOR BEND SHALL NOT FORM A SHARPER ANGLE THAN 90 DEGREES OR HAVE A RADIUS LESS THAN 8 INCHES.
2. METAL BODIES OF INDUCTANCE LOCATED WITHIN 6' OF A MAIN LIGHTNING COMPONENT SHALL BE BONDED TO THE LIGHTNING PROTECTION SYSTEM. (INCLUDING BUT NOT LIMITED TO METAL VENTS, FLASHING, LOUVERS & ROOF DRAINS)
3. CONNECTIONS TO GROUND AND/OR COUNTERPOISE SHALL BE MADE AT A POINT NOT LESS THAN 2'-0 BELOW GRADE, AND 3'-0 TO 8'-0 AWAY FROM FOUNDATION WALL.
4. AIR TERMINAL SHALL BE PLACED AT THE LOCATIONS INDICATED, NOT MORE THAN 2'-0 FROM THE ENDS OF RIDGES, OUTSIDE CORNERS, OR OUTSIDE EDGES OF MAIN ROOFS, AND MUST EXTEND A MINIMUM OF 10" ABOVE THE OBJECT TO BE PROTECTED.
5. MID-ROOF AIR TERMINALS SHALL BE SPACED AT 50'-0" O.C. MAX. SPACING.
6. PERIMETER AIR TERMINALS THAT ARE LESS THAN 24" IN HEIGHT SHALL BE SPACED AT 20'-0" O.C. MAX. PERIMETER AIR TERMINALS THAT ARE 24" IN HEIGHT OR GREATER SHALL BE SPACED AT 25'-0" O.C. MAX.
7. JOB CONDITIONS MAY DICTATE SLIGHT VARIATIONS IN AIR TERMINAL AND GROUND ROD LOCATIONS, BUT IN NO INSTANCE SHALL A VARIATION BREAK COMPLIANCE WITH THESE NOTES AND REQUIREMENTS.
8. CONDUCTORS SHALL MAINTAIN A HORIZONTAL OR DOWNWARD PATH FREE FROM "U" AND "V" POCKETS. ANY RISE IN CONDUCTOR SHALL BE NO STEEPER THAN 3" OF RISE PER 12" OF RUN.
9. COPPER LIGHTNING PROTECTION MATERIALS SHALL NOT BE PLACED ON ALUMINUM, GALVALUM, OR BARE GALVANIZED STEEL SURFACES. ALUMINUM MATERIALS SHALL NOT BE PLACED ON COPPER SURFACES.
10. FOR THE SAKE OF CLARITY WE HAVE NOT CALLED OUT EACH INDIVIDUAL ITEM OF LIGHTNING PROTECTION MATERIALS ON THE ROOF PLAN. WE HAVE SHOWN TYPICAL DETAILS AND HAVE CALLED OUT EACH OF THESE DETAILS ON THE ROOF PLAN, ONLY IN SCATTERED LOCATIONS.
11. ALL MISCELLANEOUS STEEL INCLUDING BUT NOT LIMITED TO STRUCTURAL STEEL, REBAR, FRAMING & RAILINGS, SHALL BE MADE ELECTRICALLY CONTINUOUS THROUGH CONSTRUCTION (NOT THE RESPONSIBILITY OF THE LIGHTNING PROTECTION CONTRACTOR)
12. ELECTRIC, TELEPHONE, ANTENNA SYSTEM, AND OTHER MISCELLANEOUS GROUNDS SHALL BE CONNECTED WITH MAIN SIZED CONDUCTOR TO ANY LIGHTNING PROTECTION GROUND.
13. A LIGHTNING ARRESTOR, PROTECTOR, OR ANTENNA-DISCHARGE UNIT MUST BE INSTALLED ON EACH ELECTRIC AND TELEPHONE SERVICE ENTRANCE AND RADIO AND TELEVISION ANTENNA LEAD IN. (TO BE PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.)
14. ALL ADHESIVE FIXTURES SHALL BE SET WITH AN ADHESIVE COMPOUND COMPATIBLE WITH THE ROOFING MATERIAL. ADHESIVES SHALL BE APPROVED IN ADVANCE BY THE ROOFING CONTRACTOR.
15. BOND ALL METAL PIPES SUCH AS WATER, GAS, FIRE, STORM, SEWER WHICH ENTER THE STRUCTURE TO THE NEAREST DOWNLEAD, GROUND ROD OR COUNTERPOISE.
16. SEAL THE ENDS OF CONDUIT MOISTURE TIGHT WITH DUCT SEAL, SILICONE OR LEAD WEDGES (NOT THE RESPONSIBILITY OF THE LIGHTNING PROTECTION CONTRACTOR).
17. CABLE MUST BE FASTENED EVERY 3'-0" O.C. MAXIMUM.
18. THE LIGHTNING PROTECTION INSTALLER IS TO CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE THE WORK IS STARTED. INSTALLERS WHO FAIL TO VERIFY, REVIEW, AND COORDINATE THE WORK SHALL TAKE FULL RESPONSIBILITY FOR THE WORK AND ANY PORTION OF THE WORK THAT IS IMPROPERLY INSTALLED OR LOCATED. THE INSTALLER SHALL NOTIFY THE DESIGNER IF DIMENSIONAL ERRORS OR DESIGN CONFLICTS OCCUR, AND SHALL PROCEED ONLY UPON CLARIFICATION OR REVISION AS ISSUED BY ROBBINS LIGHTNING, INC.
19. ALL LIGHTNING PROTECTION SYSTEMS REQUIRE PROPERLY INSTALLED SURGE PROTECTIVE DEVICES AS OUTLINED IN PARAGRAPH 13 OF UL 96A.
20. WHERE POSSIBLE, SECURELY INSERT CABLE INTO EXISTING SPLICER OR POINT BASE TO CONSERVE SPLICERS.
21. PICTURES NEED TO BE TAKEN WHERE BONDS ARE GOING TO BE CONCEALED OR BURIED SUCH AS WATER, GAS, & ELECTRIC BONDS; GROUND RODS; THRU WALLS & THRU ROOFS, (INTERIOR PICTURES).
22. THIS SYSTEM INCLUDES BONDING TO GAS PIPING PER CURRENT CODES. IF "CSST" GAS PIPING IS PRESENT, CURRENT PRACTICE MAY BE INADEQUATE TO PREVENT FLASHOVER FROM THE LIGHTNING PROTECTION SYSTEM. BONDING METHODS ARE UNDER CODE REVIEW. THE LIGHTNING PROTECTION MANUFACTURER, INSTALLER, LPI AND LPI-IP ACCEPT NO LIABILITY DUE TO LACK OF CONSENSUS ON MEASURES REQUIRED TO PREVENT DAMAGE, INJURY, OR LOSS DUE TO "CSST" FAILURES.
23. ALL ADDITIONAL GROUNDING SHALL BE PROVIDED & INSTALLED BY OTHERS. I.E.: TRANSFORMERS, BUS-BAR, ETC.
24. ALL CIRCUITS SERVING DORMITORY AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER AS PER 212.12(A)(6). REFER TO PANEL SCHEDULES FOR LOCATIONS.

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231 E. Buffalo St #502, Milwaukee, WI 53202

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DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

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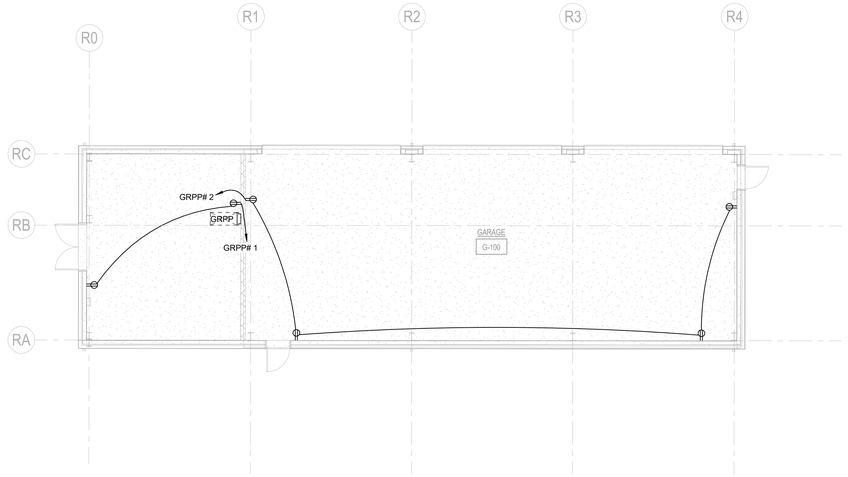
ELECTRICAL SYMBOLS, ABBEVIATIONS AND NOTES

SHEET No. GEN-E-001

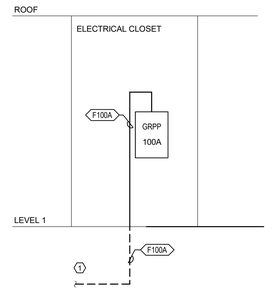
DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK	APR 2022	AS NOTED



1 MUSEUM GARAGE - ELECTRICAL SYSTEMS

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

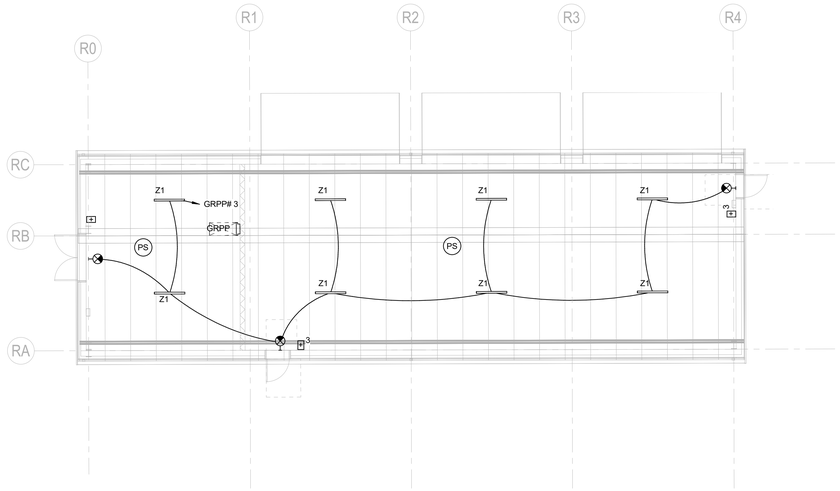


2 SINGLE LINE DIAGRAM

SCALE: N.T.S.

0 4'-0" 8'-0" 16'-0" 32'-0"

FEEDER SCHEDULE	
F100A	2#1+1#1G IN 2" C



3 MUSEUM GARAGE - ELECTRICAL LIGHTING SYSTEMS

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

Branch Panel: GRPP

Location: STORAGE G-101 **Volts:** 120/208 Single **A.I.C. Rating:** 22,000
Supply From: **Phase:** 1 **Mains Type:** MCB
Mounting: Surface **Wires:** 3 **Bussing:** 100A
Enclosure: Type 1 **Mains Rating:** 100 A
Feeder:

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	GARAGE RCPTS	2#12+1#12G	20 A	1	360	720			1	20 A	2#12+1#12G	GARAGE RCPTS	2
3	LIGHTING GARAGE	2#12+1#12G	20 A	1			153	3350	2	40 A	2#6+1#6G 1-1/2"C	EV CHARGER	4
5	SPARE	--	20 A	1	0	3350							6
7	SPARE	--	20 A	1			0	0	1	20 A	--	SPARE	8
9	SPARE	--	20 A	1	0	0			1	20 A	--	SPARE	10
11	SPARE	--	20 A	1			0	0	1	20 A	--	SPARE	12
13	SPARE	--	20 A	1	0	0			1	20 A	--	SPARE	14
15	SPACE	--	--	1			--	--	1	--	--	SPACE	16
17	SPACE	--	--	1	--	--			1	--	--	SPACE	18
19	SPACE	--	--	1			--	--	1	--	--	SPACE	20
21	SPACE	--	--	1	--	--			1	--	--	SPACE	22
23	SPACE	--	--	1			--	--	1	--	--	SPACE	24
			Total Load		4364 VA		3491 VA						
			Design Amp		38 A								

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	138 VA	100.00%	138 VA		
Other	15 VA	100.00%	15 VA	**Total Conn. Load:**	7849 VA
Power	6700 VA	100.00%	6700 VA	**Total Est. Demand:**	7849 VA
Receptacle	1080 VA	100.00%	1080 VA	**Total Conn.:**	38 A
				Total Est. Demand:	38 A

Notes:

TYPE	DESCRIPTION	MFR	CATALOG NO.	LAMP QUANTITY	WATTS	LUMENS	LAMP TYPE	POWER SUPPLY	DIMMING CONTROL	VOLTAGE	ACCEPTABLE ALTERNATE MANUFACTURE...	LOCATION	NOTES
X1	MOUNTING: WALL FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES: FIELD ADJUSTABLE CHEVRONS	COLUMBIA	LSNXX NRWA	1 ea.		LED	NON-DIM	UNV	0-10V	120-277V		BACK OF HOUSE SPACES	•EXIT SIGN •FINISH PER ARCHITECT
Z1	MOUNTING: PENDANT, RECESSED, SURFACE FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES:	COLUMBIA	MPS-4-40-U-* *-ELL14 FOR EM BATTERY PACK	1 ea.		LED module, 4000K, 80 CRI	NON-DIM	UNV	0-10V	120-277V		BACK OF HOUSE SPACES	•FINISH PER ARCHITECT •ARCHITECT TO VERIFY CEILINGS FOR COMPATIBLE MOUNTING.

GENERAL NOTES

1. REFER TO GEN-E-001 FOR SYMBOLS, ABBREVIATIONS AND NOTES.
2. REFER TO GEN-E-701 FOR DETAILS.
3. CONDUIT ROUTING AND TRANSFORMER PAD AND UTILITY POLE LOCATIONS ON SITE ARE FOR REFERENCE ONLY. REFER TO SITE/CIVIL PLANS FOR EXACT LOCATION AND ROUTING.
4. ALL CIRCUITS INDICATED ON THIS PLAN SHALL BE FED FROM PANEL 'GRPP'

SHEET NOTES

1. SINGLE PHASE 100A PANELBOARD FED FROM EXISTING SINGLE PHASE SERVICE FROM MUSEUM.

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

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CIVIL ENGINEER
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VERTICAL TRANSPORT
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5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT
Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

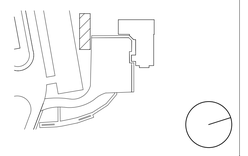
LANDSCAPE
Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING
MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION
2	21 JUL 2023	ADDENDUM 34
1	19 MAY 2022	ISSUED FOR BID

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033176E
PENNSYLVANIA

2023-06-16
SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE
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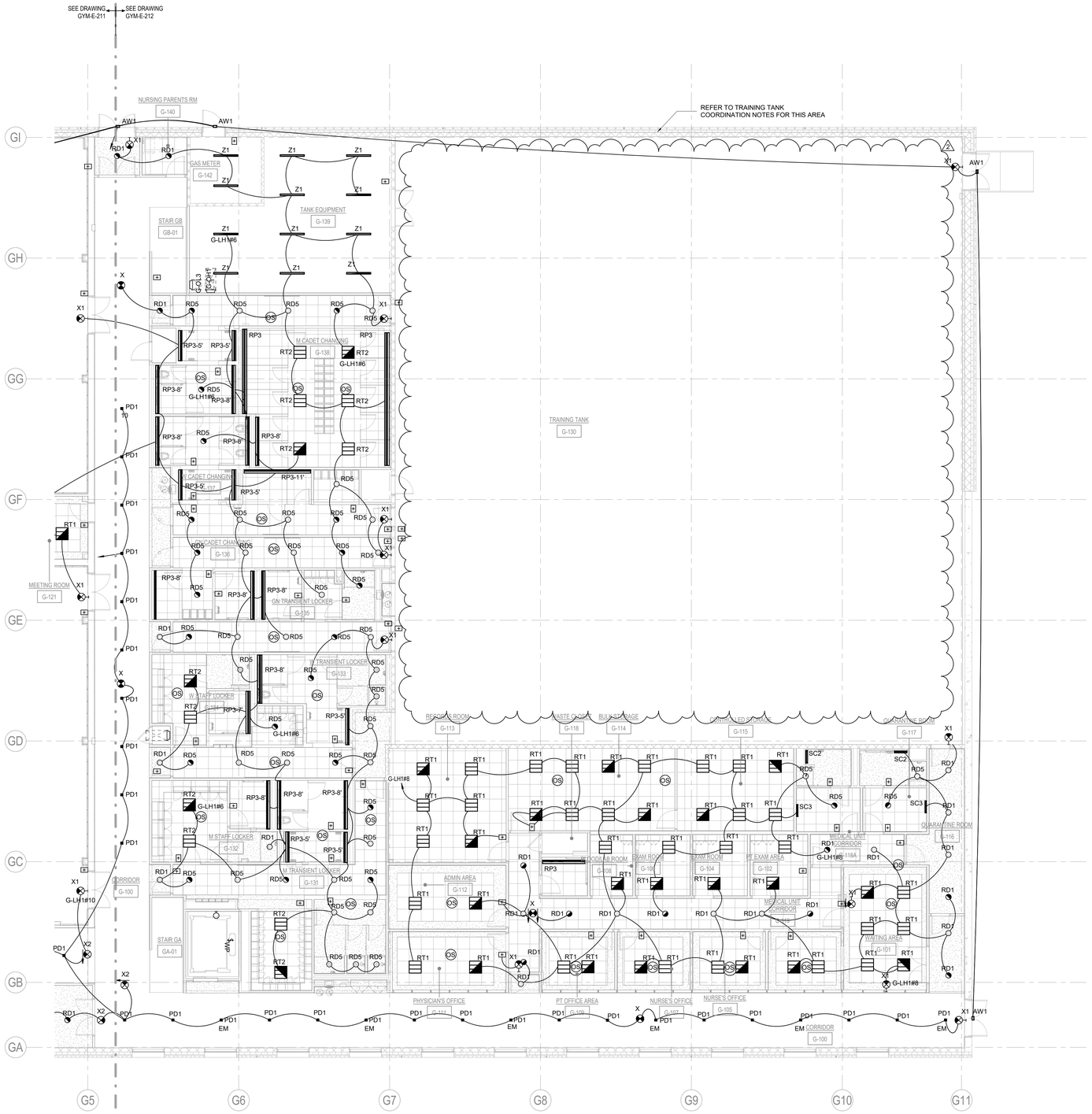
MUSEUM GARAGE - ELECTRICAL SYSTEMS

SHEET No.
GRG-E-100

DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK		AS NOTED



1 LEVEL 1 - PART B - LIGHTING SYSTEMS
SCALE: 1/8" = 1'-0"
0 4'-0" 8'-0" 16'-0" 32'-0"

GENERAL NOTES

1. REFER TO GEN-E-001 FOR SYMBOLS, ABBREVIATIONS AND NOTES.
2. REFER TO BSO-E-601 FOR PANEL AND LIGHTING FIXTURE SCHEDULES AND LIGHTING CONTROL NARRATIVE.
3. REFER TO GEN-E-701 FOR DETAILS.
4. NOTE THAT ALL NEW EXPOSED CABLES ABOVE THE CEILING SHALL BE PLENUM RATED.
5. PLACE THE LIGHTING CONTROL SENSORS TEMPORARILY UNTIL COMMISSIONED AND ACCEPTED, THEN PERMANENTLY INSTALL THE DEVICES.
6. ALL LIGHTING FIXTURES ON EMERGENCY SHALL BE CONNECTED TO UL924 RELAY IN ADDITION TO NORMAL CIRCUIT. IN THE EVENT OF AN EMERGENCY, THEY SHALL AUTOMATICALLY TURN TO 100% BRIGHTNESS IRRESPECTIVE OF THE POSITION OF THE LIGHT SWITCH.
7. ALL EMERGENCY LIGHTING FIXTURES SHALL HAVE 90 MINUTE BATTERY BACK-UP.
8. PROVIDE NORMAL POWER SENSING CIRCUIT FOR ALL EMERGENCY LIGHTING FIXTURES AND CONNECT TO LINE-SIDE OF ALL CONTROL DEVICES.
9. ALL EXIT DISCHARGE LIGHTING FIXTURES ABOVE EGRESS DOORS SHALL BE EMERGENCY TYPE.

TRAINING TANK COORDINATION NOTES

1. NO STAINLESS STEEL SHOULD BE SPECIFIED IN THESE AREAS.
2. NO STAINLESS-STEEL HANGERS, STRAPS OR FASTENERS SHOULD BE USED IN ANY OVERHEAD EQUIPMENT, CONDUIT, DUCT RUNS OR MOUNTING. STAINLESS STEEL IS SUBJECT TO STRESS CORROSION CRACKING IN CHLORINATED ENVIRONMENTS, AND CAN FAIL SUDDENLY AND CATASTROPHICALLY.
3. THE FOLLOWING MATERIALS ARE ACCEPTABLE FOR USE:
4. GENERAL:
   A. ALUMINUM
   B. HOT-DIP GALVANIZED STEEL
   C. RUST-INHIBITIVE PRIMED AND PAINTED STEEL
5. SPECIFIC USE CASES:
   A. STRUCTURAL STEEL: COATED WITH RUST-INHIBITIVE, ZINC-RICH PRIMER
   B. STRUCTURAL STEEL FASTENERS: ALL EXPOSED ENDS SHOULD BE COATED WITH A ZINC-RICH PAINT, AND FASTENERS (NUTS, WASHERS, ETC) SHOULD BE GALVANIZED STEEL
   C. DECK: GALVANIZED STEEL
   D. WINDOW MULLIONS: POWDER COATED ALUMINUM
   E. DUCTWORK: GALVANIZED AT A MINIMUM. PVC COATED HOT-DIPPED GALVANIZED PREFERED
   F. DUCTWORK HANGERS: GALVANIZED. HANGER RODS SHOULD BE PAINTED IN ZINC-RICH PAINT, AND ALL EXPOSED COMPONENTS (NUTS, BOLTS, WASHERS, FASTENERS, ETC) SHOULD BE GALVANIZED
   G. MASONRY ANCHORS: GALVANIZED STEEL
   H. LIGHT FIXTURES: COATED ALUMINUM HOUSING PREFERED, GALVANIZED STEEL HANGERS. GASKETS NEED TO BE PROVIDED BETWEEN DISSIMILAR METALS (STEEL AND ALUMINUM) TO PREVENT GALVANIC ACTION AND CORROSION.
   I. SPRINKLER PIPING, HEADS AND HANGERS: HEADS - CHROME PLATED BRASS. PIPE - HOT-DIP GALVANIZED STEEL. HANGERS- GALVANIZED OR RUST-INHIBITIVE PRIMED STEEL.
   J. ELECTRICAL AND TELECOMMUNICATIONS CONDUIT: GALVANIZED STEEL.

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KEYPLAN

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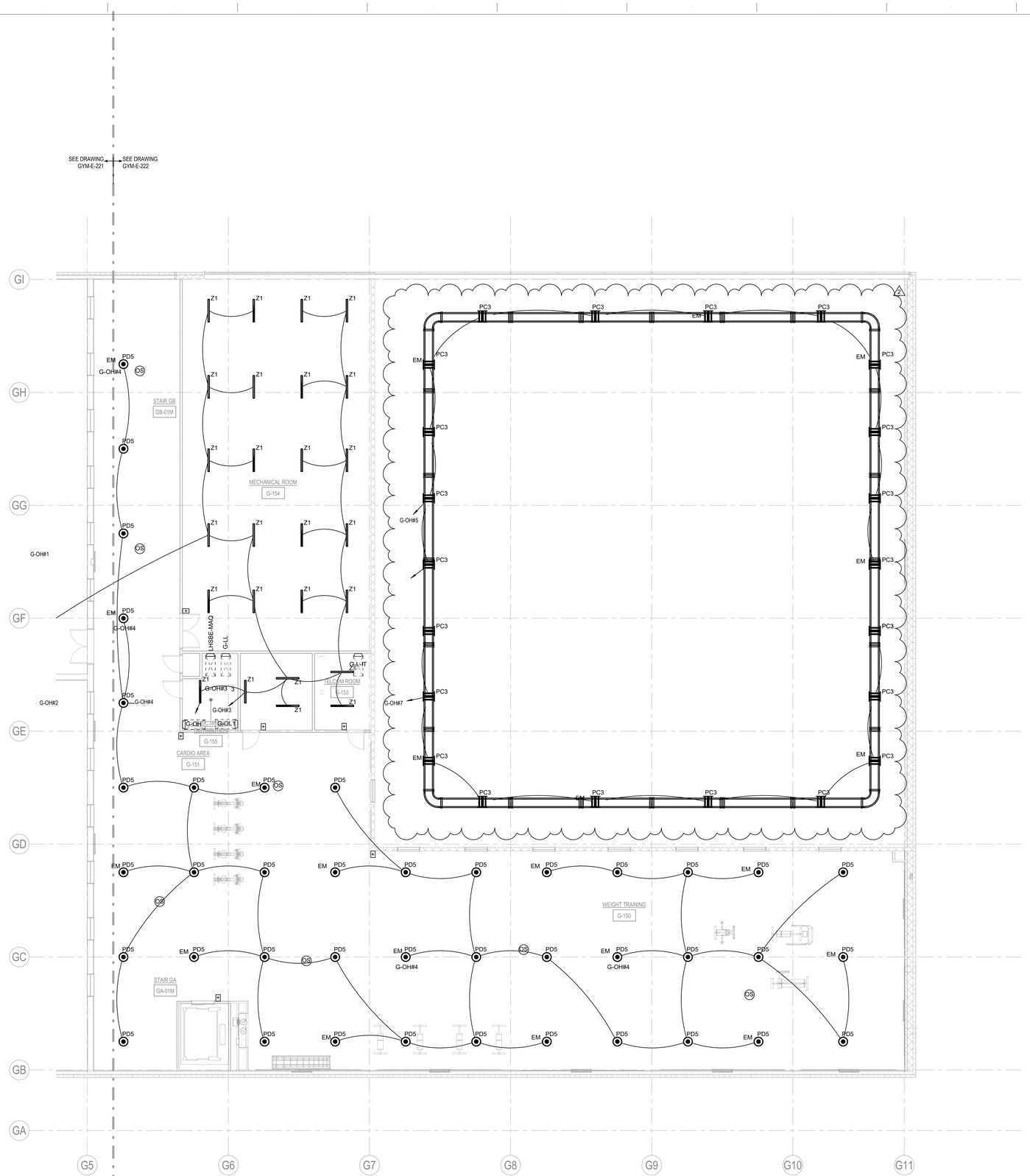
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

LEVEL 1 - PART B - LIGHTING SYSTEMS

SHEET No. GYM-E-212

DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK		AS NOTED



1 LEVEL 2 - PART B - LIGHTING SYSTEMS
SCALE: 1/8" = 1'-0"
0 4'-0" 8'-0" 16'-0" 32'-0"

GENERAL NOTES

1. REFER TO GEN-E-001 FOR SYMBOLS, ABBREVIATIONS AND NOTES.
2. REFER TO BSO-E-601 FOR PANEL AND LIGHTING FIXTURE SCHEDULES AND LIGHTING CONTROL NARRATIVE.
3. REFER TO GEN-E-701 FOR DETAILS.
4. NOTE THAT ALL NEW EXPOSED CABLES ABOVE THE CEILING SHALL BE PLENUM RATED.
5. PLACE THE LIGHTING CONTROL SENSORS TEMPORARILY UNTIL COMMISSIONED AND ACCEPTED, THEN PERMANENTLY INSTALL THE DEVICES.
6. ALL LIGHTING FIXTURES ON EMERGENCY SHALL BE CONNECTED TO UL924 RELAY IN ADDITION TO NORMAL CIRCUIT. IN THE EVENT OF AN EMERGENCY, THEY SHALL AUTOMATICALLY TURN TO 100% BRIGHTNESS IRRESPECTIVE OF THE POSITION OF THE LIGHT SWITCH.
7. ALL EMERGENCY LIGHTING FIXTURES SHALL HAVE 90 MINUTE BATTERY BACK-UP.
8. PROVIDE NORMAL POWER SENSING CIRCUIT FOR ALL EMERGENCY LIGHTING FIXTURES AND CONNECT TO LINE-SIDE OF ALL CONTROL DEVICES.
9. ALL EXIT DISCHARGE LIGHTING FIXTURES ABOVE EGRESS DOORS SHALL BE EMERGENCY TYPE.

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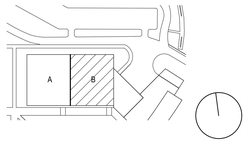

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1	19 MAY 2023	ISSUED FOR BID			

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ENGINEER PE033176E
PENNSYLVANIA

2023-06-16
SIGNATURE DATE

ARCHITECT
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250 Greenwich St, New York, 10007

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DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

LEVEL 2 - PART B - LIGHTING SYSTEMS

SHEET No. GYM-E-222

DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK		AS NOTED

Branch Panel: G-OH

Location: ELECTRICAL DISTRIBUTION G-155 **Volts:** 480/277 Wye **A.I.C. Rating:** 22,000
Supply From: OHSBE-MAQ **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 225A
Enclosure: Type 1 **Mains Rating:** 200 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	G-125 LTS	2#12+1#12G	20 A	1	3885	3726					1	20 A	2#12+1#12G	G-120 LTS	2
3	MEZZ LTS	2#12+1#12G	20 A	1			1590	2739			1	20 A	2#12+1#12G	MEZZ FITNESS LTS	4
5	TANK LTS	2#12+1#12G	20 A	1					5196	0	1	20 A	--	Spare	6
7	TANK LTS	2#10+1#10G	20 A	1	4330	0					1	20 A	--	Spare	8
9	Spare	--	20 A	1			0	0			1	20 A	--	Spare	10
11	Spare	--	20 A	1					0	0	1	20 A	--	Spare	12
13	Spare	--	20 A	1	0	0					1	20 A	--	Spare	14
15	Spare	--	20 A	1			0	--			1	--	--	Space	16
17	Space	--	--	1					--	--	1	--	--	Space	18
19					16114	15074									20
21	G-OH1	SEE SINGLE LINE DIAGRAM	100 A	3			16114	14136			3	125 A	SEE SINGLE LINE DIAGRAM	XMER G-T1	22
23									16114	8966					24
				Total Load	43129 VA		34568 VA		30275 VA						
				Design Amp	130 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	1650 VA	100.00%	1650 VA		
Lighting	9201 VA	100.00%	9201 VA	Total Conn. Load:	107968 VA
Other	12589 VA	100.00%	12589 VA	Total Est. Demand:	97329 VA
Power	53252 VA	100.00%	53252 VA	Total Conn.:	130 A
Receptacle	31280 VA	65.98%	20640 VA	Total Est. Demand:	117 A

Notes:

Branch Panel: G-OL1

Location: ELECTRICAL DISTRIBUTION G-155 **Volts:** 120/208 Wye **A.I.C. Rating:** 22,000
Supply From: XMER G-T1 **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 400A
Enclosure: Type 1 **Mains Rating:** 200 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	G-150 RECPTS	2#12+1#12G	20 A	1	540	1080					1	20 A	2#12+1#12G	CARDIO RECPTS	2
3	TREADMILL	2#12+1#12G	20 A	1			180	180			1	20 A	2#12+1#12G	TREADMILL	4
5	TREADMILL	2#12+1#12G	20 A	1					180	180	1	20 A	2#12+1#12G	TREADMILL	6
7	GFI ICE MAKER	2#12+1#12G	20 A	1	500	720					1	20 A	2#12+1#12G	DRNKN FTNS	8
9	EL. RM. MAINT	2#12+1#12G	20 A	1			540	900			1	20 A	2#12+1#12G	LVL 2 MAINT	10
11	SSDS FAN	2#12+1#12G	20 A	1					169	0	1	20 A	--	Spare	12
13	Spare	--	20 A	1	0	0					1	20 A	--	Spare	14
15	Spare	--	20 A	1			0	0			1	20 A	--	Spare	16
17	Spare	--	20 A	1					0	0	1	20 A	--	Spare	18
19					7740	4494									20
21	G-OL2	SEE SINGLE LINE DIAGRAM	100 A	3			8700	3689			3	60 A	SEE SINGLE LINE DIAGRAM	G-OL3	22
23									6624	1818					24
				Total Load	15074 VA		14136 VA		8966 VA						
				Design Amp	106 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	1650 VA	100.00%	1650 VA		
Other	324 VA	100.00%	324 VA	Total Conn. Load:	38167 VA
Power	4979 VA	100.00%	4979 VA	Total Est. Demand:	27531 VA
Receptacle	31280 VA	65.98%	20640 VA	Total Conn.:	106 A
				Total Est. Demand:	76 A

Notes:

Branch Panel: G-LH1

Location: AV EQUIPMENT ROOM G-122 **Volts:** 480/277 Wye **A.I.C. Rating:** 22,000
Supply From: G-LH **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 60 A
Enclosure: Type 1 **Mains Rating:** 60 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	G-UH-1	2#12+1#12G	20 A	1	700	970					1	15 A	2#12+1#12G	G-5-FPB-1	2
3	G-UH-5	2#12+1#12G	20 A	1			700	970			1	15 A	2#12+1#12G	G-5-FPB-2	4
5	G-UH-4	2#12+1#12G	20 A	1					700	2271	1	20 A	2#12+1#12G	LTS LVL 1	6
7	G-UH-6	2#12+1#12G	15 A	1	1500	2112					1	20 A	2#12+1#12G	LTS LVL 1	8
9							2216	914			1	20 A	2#12+1#12G	CORR LTS	10
11	G-UH-2	3#12+1#12G IN 3/4"C	15 A	3					2216	3000	1	20 A	2#6+1#10G IN 1"C	EXT SITE LIGHTS	12
13					2216	3000					1	20 A	2#6+1#10G IN 1"C	EXT SITE LIGHTS	14
15	G-FCU-3	2#12+1#12G	20 A	1			700	3000			1	20 A	2#6+1#10G IN 1"C	EXT SITE LIGHTS	16
17	G-UH-3	2#12+1#12G	20 A	1					700	3000	1	20 A	2#6+1#10G IN 1"C	EXT SITE LIGHTS	18
19	EXT SITE LIGHTS	2#6+1#10G IN 1"C	20 A	1	3000	3000					1	20 A	2#6+1#10G IN 1"C	EXT SITE LIGHTS	20
21	EGRESS LIGHTING	2#12+1#12G	20 A	1			1205	0			1	20 A	--	Spare	22
23	Spare	--	20 A	1					0	0	1	20 A	--	Spare	24
25	Spare	--	20 A	1	0	0					1	20 A	--	Spare	26
27	Spare	--	20 A	1			0	0			1	20 A	--	Spare	28
29	Spare	--	20 A	1					0	0	1	20 A	--	Spare	30
31	Space	--	--	1	--	--					1	--	--	Space	32
33	Space	--	--	1			--	--			1	--	--	Space	34
35	Space	--	--	1					--	--	1	--	--	Space	36
37	Space	--	--	1	--	--					1	--	--	Space	38
39	Space	--	--	1			--	--			1	--	--	Space	40
41	Space	--	--	1					--	--	1	--	--	Space	42
				Total Load	16439 VA		9705 VA		11882 VA						
				Design Amp	46 A										

2 (revision cloud)

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	4924 VA	100.00%	4924 VA		
Other	8493 VA	100.00%	8493 VA	Total Conn. Load:	38023 VA
Power	24648 VA	100.00%	24648 VA	Total Est. Demand:	38023 VA
				Total Conn.:	46 A
				Total Est. Demand:	46 A

Notes: EXTERIOR LIGHTS WILL BE FED TO 16-RELAY PANEL BEFORE FEEDING TO HANDHOLE.

Branch Panel: G-OL2

Location: AV EQUIPMENT ROOM G-122 **Volts:** 120/208 Wye **A.I.C. Rating:** 22,000
Supply From: G-OL1 **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 100 A
Enclosure: Type 1 **Mains Rating:** 100 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	G-116,117 RECPTS	2#12+1#12G	20 A	1	720	1440					1	20 A	2#12+1#12G	G-119,118A RECPTS	2
3	MED SUITE RECPTS	2#12+1#12G	20 A	1			900	540			1	20 A	2#12+1#12G	EXAM TABLES	4
5	OFFICES RECPTS	2#12+1#12G	20 A	1					1080	1080	1	20 A	2#12+1#12G	OFFICES RECPTS	6
7	CORR. RECPTS	2#12+1#12G	20 A	1	720	1080					1	20 A	2#12+1#12G	STORAGE RCPTS	8
9	G-115 REFS	2#12+1#12G	20 A	1			360	1440			1	20 A	2#12+1#12G	G-111 112 RCPTS	10
11	G-111 112 RCPTS	2#12+1#12G	20 A	1					540	1080	1	20 A	2#12+1#12G	TANK RCPTS	12
13	TANK RCPTS	2#12+1#12G	20 A	1	1080	180					1	20 A	2#12+1#12G	G-142 RECPT	14
15	MOTHER'S RM	2#12+1#12G	20 A	1			360	1440			1	20 A	2#12+1#12G	CORR. RECPTS	16
17	G-125 RECPTS	2#12+1#12G	20 A	1					720	900	1	20 A	2#12+1#12G	G-121,123,124	18
19	G-120 RECPTS	2#12+1#12G	20 A	1	900	1080					1	20 A	2#12+1#12G	M LKR RCPTS	20
21	W, GN LKR RCPTS	2#12+1#12G	20 A	1			1260	1440			1	20 A	2#12+1#12G	CHANGING RCPTS	22
23	CHANGING RCPTS	2#12+1#12G	20 A	1					900	324	1	20 A	2#12+1#12G	G-ERV-1&2,G-FCU-1...	24
25	AV RACK	2#10+1#10G	20 A	1	360	180					1	20 A	2#10+1#10G	AV RECP	26
27	HAND DRYER	2#10+1#10G	20 A	1			600	360			1	20 A	2#12+1#12G	AV RACK	28
29	Spare	--	20 A	1					0	0	1	20 A	--	Spare	30
31	Spare	--	20 A	1	0	0					1	20 A	--	Spare	32
33	Spare	--	20 A	1			0	0			1	20 A	--	Spare	34
35	Spare	--	20 A	1					0	0	1	20 A	--	Spare	36
37	Space	--	--	1	--	--					1	--	--	Space	38
39	Space	--	--	1			--	--			1	--	--	Space	40
41	Space	--	--	1					--	--	1	--	--	Space	42
				Total Load	7740 VA		8700 VA		6624 VA						
				Design Amp	64 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	324 VA	100.00%	324 VA		
Power	600 VA	100.00%	600 VA	Total Conn. Load:	23064 VA
Receptacle	22140 VA	72.58%	16070 VA	Total Est. Demand:	16994 VA
				Total Conn.:	64 A
				Total Est. Demand:	47 A

Notes:

Branch Panel: G-LL

Location: ELECTRICAL DISTRIBUTION G-155 **Volts:** 120/208 Wye **A.I.C. Rating:** 22,000
Supply From: XMER G-T2 **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 100 A
Enclosure: Type 1 **Mains Rating:** 100 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1					300	300									2
3	G-EF-1	3#12+1#12G IN 3/4"C	15 A	3			300	300			3	15 A	3#12+1#12G IN 3/4"C	G-EF- 2	4
5									300	300					6
7	MECH MAINT	2#12+1#12G	20 A	1	1260	180					1	20 A	2#12+1#12G	FOR DWH COTROL...	8
9							800	180			1	20 A	2#12+1#12G	ELEV. PIT RECEPT.	10
11	ELEVATOR SUMP PUMP	2#10+1#10G	20 A	3					800	50	1	20 A	2#12+1#12G	BOOSTER POWER...	12
13					800	50					1	20 A	2#12+1#12G	FIRE ALARM...	14
15	RACK RECPTS	2#12+1#12G	20 A	1			360	50			1	20 A	2#12+1#12G	BOOSTER POWER...	16
17	RACK RECPTS	2#12+1#12G	20 A	1					360	1360					18
19	Spare	--	20 A	1	0	1080					3	30 A	SEE SINGLE LINE DIAGRAM	G-L-IT	20
21	Spare	--	20 A	1			0	1000							22
23	Spare	--	20 A	1					0	0	1	20 A	--	Spare	24
25	Spare	--	20 A	1	0	0					1	20 A	--	Spare	26
27	Spare	--	20 A	1			0	0			1	20 A	--	Spare	28
29	Spare	--	20 A	1					0	0	1	20 A	--	Spare	30
31	Spare	--	20 A	1	0	0					1	20 A	--	Spare	32
33	Spare	--	20 A	1			0	0			1	20 A	--	Spare	34
35	Space	--	--	1					--	--	1	--	--	Space	36
37	Space	--	--	1	--	--					1	--	--	Space	38
39	Space	--	--	1			--	--			1	--	--	Space	40
41	Space	--	--	1					--	--	1	--	--	Space	42
				Total Load	3960 VA		2980 VA		3160 VA						
				Design Amp	28 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Power	4321 VA	100.00%	4321 VA		
Receptacle	5780 VA	100.00%	5780 VA	Total Conn. Load:	10100 VA
				Total Est. Demand:	10100 VA
				Total Conn.:	28 A
				Total Est. Demand:	28 A

Notes:

Branch Panel: G-OL3

Location: TANK EQUIPMENT G-139 **Volts:** 120/208 Wye **A.I.C. Rating:** 22,000
Supply From: G-OL1 **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 60 A
Enclosure: Type 1 **Mains Rating:** 60 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	G-139 MAINT	2#12+1#12G	20 A	1	1260	1470					1	20 A	2#10+1#10G	CHEM CONTR.	2
3	OZONE SYSTEM	2#8+1#10G IN...	35 A	1			504	1200			1	20 A	2#12+1#12G	OZONE ALARM	4
5	WATER BOILER	2#12+1#12G	20 A	1					180	240	1	20 A	2#10+1#10G	CHEM FEED PUMP	6
7	CO2 MONITOR	2#12+1#12G	20 A	1	360	504					1	20 A	2#10+1#10G	OZONE SYSTEM	8
9	FLUSH-O-METERS	2#12+1#12G	20 A	1			1650	504			1	20 A	2#10+1#10G	OZONE SYSTEM	10
11	RECEPTACLES	2#12+1#12G	20 A	1					720	720	1	20 A	2#12+1#12G	RECEPTACLES	12
13	Spare	--	20 A	1	0	0					1	20 A	--	Spare	14
15	Space	--	--	1			--	--			1	--	--	Space	16
17	Space	--	--	1					--	--	1	--	--	Space	18
19	Space	--	--	1	--	--					1	--	--	Space	20
21	Space	--	--	1			--	--			1	--	--	Space	22
23	Space	--	--	1					--	--	1	--	--	Space	24
				Total Load	4494 VA		3689 VA		1818 VA						
				Design Amp	28 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	1650 VA	100.00%	1650 VA		
Power	4223 VA	100.00%	4223 VA	Total Conn. Load:	9962 VA
Receptacle	4140 VA	100.00%	4140 VA	Total Est. Demand:	9962 VA
				Total Conn.:	28 A
				Total Est. Demand:	28 A

Notes:

Branch Panel: G-LH

Location: ELECTRICAL DISTRIBUTION G-155 **Volts:** 480/277 Wye **A.I.C. Rating:** 22,000
Supply From: LHSBE-MAQ **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 400A
Enclosure: Type 1 **Mains Rating:** 400 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A		B		C		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1					2216	2216									2
3	G-AHU-1 SUPPLY	3#12+1#12G IN 3/4"C	15 A	3			2216	2216			3	15 A	3#12+1#12G IN 3/4"C	G-AHU-2 SUPPLY	4
5									2216	2216					6
7					2216	2216									8
9	G-AHU-1 RETURN	3#12+1#12G IN 3/4"C	15 A	3			2216	2216			3	15 A	3#12+1#12G IN 3/4"C	G-AHU-2 RETURN	10
11									2216	2216					12
13					2216	5540									14
15	G-AHU-3 SUPPLY	3#12+1#12G IN 3/4"C	15 A	3			2216	5540			3	15 A	3#12+1#12G IN 3/4"C	G-AHU-5 SUPPLY	16
17									2216	5540					18
19					2216	5540									20
21	G-AHU-3 RETURN	3#12+1#12G IN 3/4"C	15 A	3			2216	5540			3	15 A	3#12+1#12G IN 3/4"C	G-AHU-5 RETURN	22
23									2216	5540					24
25					13296	2383									26
27	G-DHU-1	3#2+1#8G IN 1-1/2"C	40 A	3			13296	2383			3	30 A	3#12+1#12G IN 3/4"C	G-DOAS-1 SUPPLY	28
29									13296	2383					30
31					2383	2383									32
33	G-DOAS-1 RETURN	3#12+1#12G IN 3/4"C	15 A	3			2383	2383			3	15 A	3#12+1#12G IN 3/4"C	G-DOAS-1 WHEEL	34
35									2383	2383					36
37	G-FCU-4	3#12+1#12G	20 A	1	700	700					1	15 A	3#12+1#12G	G-FCU-5	38
39							12470	3960							40
41	ELEVATOR	4#1+1#6G IN 1-1/2"C	110 A	3					12470	2980	3	25 A	3#10+1#10G IN 3/4"C	XMER G-T2	42
43					12470	3160									44
45	Spare	--	20 A	1			0	0			1	20 A	--	Spare	46
47	Spare	--	20 A	1					0	0	1	20 A	--	Spare	48
49	Spare	--	20 A	1	0	16439									50
51	Spare	--	20 A	1			0	9705			3	60 A	SEE SINGLE LINE DIAGRAM	G-LH1	52
53	Spare	--	20 A	1					0	11882					54
				Total Load	78284 VA		70957 VA		72153 VA						
				Design Amp	266 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	4924 VA	100.00%	4924 VA		
Other	9893 VA	100.00%	9893 VA	Total Conn. Load:	221393 VA
Power	200842 VA	100.00%	200842 VA	Total Est. Demand:	221393 VA
Receptacle	5780 VA	100.00%	5780 VA	Total Conn.:	266 A
				Total Est. Demand:	266 A

Notes:

Branch Panel: G-OH1

Location: TANK EQUIPMENT G-139 **Volts:** 480/277 Wye **A.I.C. Rating:** 22,000
Supply From: G-OH **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 225A
Enclosure: Type 1 **Mains Rating:** 125 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1					1660	5567									2
3	OZONE BOOSTER PUMP - P-3	3#10+1#10G IN 3/4"C	20 A	3			1660	5567			3	40 A	3#8+1#10G IN 3/4"C	PUMP - P-1	4
5									1660	5567					6
7					1660	5567									8
9	OZONE BOOSTER PUMP - P-4	3#10+1#10G IN 3/4"C	20 A	3			1660	5567			3	40 A	3#8+1#10G IN 3/4"C	PUMP - P-2	10
11									1660	5567					12
13					1660	0					1	20 A	--	Spare	14
15	OZONE BOOSTER PUMP - P-5	3#10+1#10G IN 3/4"C	20 A	3			1660	0			1	20 A	--	Spare	16
17									1660	0	1	20 A	--	Spare	18
19	Spare	--	20 A	1	0	0					1	20 A	--	Spare	20
21	Spare	--	20 A	1			0	--			1	--	--	Space	22
23	Spare	--	20 A	1					0	--	1	--	--	Space	24
				Total Load	16114 VA		16114 VA		16114 VA						
				Design Amp	58 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Power	48342 VA	100.00%	48342 VA		
				Total Conn. Load:	48342 VA
				Total Est. Demand:	48342 VA
				Total Conn.:	58 A
				Total Est. Demand:	58 A

Notes:

Branch Panel: G-L-IT

Location: TELCOM ROOM G-153 **Volts:** 120/208 Wye **A.I.C. Rating:** 22,000
Supply From: G-LL **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 60 A
Enclosure: Type 1 **Mains Rating:** 30 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	RACK RECPTS	2#12+1#12G	20 A	1	180	180					1	20 A	2#12+1#12G	RACK RECPTS	2
3	IT ROOM MAINT	2#12+1#12G	20 A	1			720	360			1	20 A	2#12+1#12G	ACCESS CONTROL	4
5	SERVER RECEPT.	2#12+1#12G	20 A	2					500	500	2	20 A	2#12+1#12G	SERVER RECEPT.	6
7					500	500									8
9	Spare	--	20 A	1			0	0			1	20 A	--	Spare	10
11	Spare	--	20 A	1					0	0	1	20 A	--	Spare	12
13	Spare	--	20 A	1	0	0					1	20 A	--	Spare	14
15	Spare	--	20 A	1			0	0			1	20 A	--	Spare	16
17	Spare	--	20 A	1					0	0	1	20 A	--	Spare	18
19	Space	--	--	1	--	--					1	--	--	Space	20
21	Space	--	--	1			--	--			1	--	--	Space	22
23	Space	--	--	1					--	--	1	--	--	Space	24
				Total Load	1360 VA		1080 VA		1000 VA						
				Design Amp	10 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	3440 VA	100.00%	3440 VA		
				Total Conn. Load:	3440 VA
				Total Est. Demand:	3440 VA
				Total Conn.:	10 A
				Total Est. Demand:	10 A

Notes:

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AV/IT ENGINEER
Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER
Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING
CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER
Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT
Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT
Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

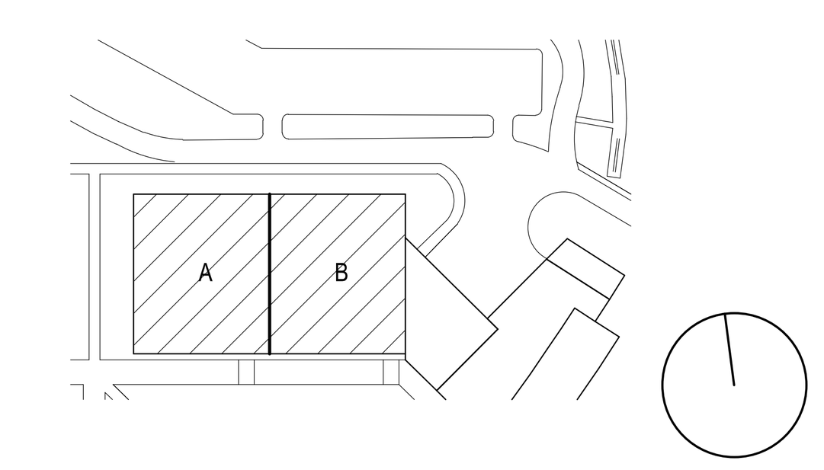
LANDSCAPE
Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING
MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
AQUA Design International
7536 N. La Cholla Blvd, Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
2	21 JUL 2023	ADDENDUM 34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E

2023-06-16

SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING:
0 1

IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

SCHEDULES

SHEET No. GYM-E-601

DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK		AS NOTED

TYPE	DESCRIPTION	MFR.	CATALOG NO.	NO. OF LAMPS	WATTS	LUMENS	LAMP TYPE	DIMMING CONTROL	VOLTAGE	ACCEPTABLE ALTERNATE MFR.	LOCATION	NOTES
AD1	MOUNTING: RECESSED, CEILING APERTURE SIZE: 4.1"DIA DIMENSIONS: 4"DIA X 5.5"H OPTICS: NA ACCESSORY LENS: MATTE DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	GOTHAM	EVO4--30-15-AR-WD-LD-MVOLT-GZ10	1	ea.	13.7	1293 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	EXTERIOR ENTRIES	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
AW1	MOUNTING: SURFACE, WALL DIMENSIONS: 7.09"W X 3.94"H X 6.94"D OPTICS: MEDIUM SYMMETRIC DOWN ACCESSORY LENS: HEXCELL LOUVER FINISH: BLACK MAT - 9004 ADD'L ATTRIBUTES:	WE-EF LIGHTING	131-9970-9004	1	ea.	13	1182 lm delivered	LED module 3000K 80CRI	NON-DIM	UNV	BEGA LIGMAN LIGHTING	ENTRANCE FACADE, EGRESS DOORS & PATH	•EGRESS DOORS & PATH
PC1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 2-1/4" DIMENSIONS:2-1/4"W X LENGTH X 4-9/16"H OPTICS: NA ACCESSORY LENS: MATTE DIFFUSE FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	FINELITE	HP2-P-B-H-B-930-F-F-96LG-120-SC-FC10-SW	/ft.		9.2	671 lm/ft delivered	LED linear 3000K 90CRI	0-10	120-277	AXIS WHITEGOODS	LEVEL 2-4 - MAQ - DORM CORRIDOR	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PC2	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: N/A DIMENSIONS: 22"Dia x 21.48"H OPTICS: Glass Refracting Lens, Wide Flood Distribution ACCESSORY LENS: N/A FINISH: White, Polyester Powder Coat Paint ADD'L ATTRIBUTES: Wire Guard over lens	HOLOPHANE	PHS-24L-WDFR-30K-90-PM	1	ea.	185	15554 lm delivered DN	LED linear 3000K 90CRI	0-10V DIM TO 10%	120-277		GYMNASIUM	•VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN INSTALLATION •CONTRACTOR SHALL CONFIRM OVERALL MOUNTING HEIGHT WITH INSTALLED CEILING DEVICES ALIGN WITH BOTTM OF UNLESS OTHEWISE NOTED •VERIFY DIMMING DRIVER WITH SUBMITTED DIMMING SYSTEM
PC2A	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: N/A DIMENSIONS: 22"Dia x 21.48"H OPTICS: Glass Refracting Lens, Wide Flood Distribution ACCESSORY LENS: N/A FINISH: White, Polyester Powder Coat Paint ADD'L ATTRIBUTES: Wire Guard over lens	HOLOPHANE	PHS-12L-WDFR-30K-90-PM	1	ea.	83	7711 lm delivered DN	LED linear 3000K 90CRI	0-10V DIM TO 10%	120-277		GYMNASIUM MEZZANINE	•VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN INSTALLATION •CONTRACTOR SHALL CONFIRM OVERALL MOUNTING HEIGHT WITH INSTALLED CEILING DEVICES ALIGN WITH BOTTM OF UNLESS OTHEWISE NOTED •VERIFY DIMMING DRIVER WITH SUBMITTED DIMMING SYSTEM
PC3	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: N/A DIMENSIONS: 18"W x 24"L x 4"H OPTICS: Deep Asymetric ACCESSORY LENS: N/A FINISH: White, Textured ADD'L ATTRIBUTES:	SPI LIGHTING	LRU-12239-L433-W-PT02-120-277V-3000K-DF-DA-	1	ea.	433	54,904 lm delivered DN	LED MODULE 3000K 90CRI	0-10V DIM TO 10%	120-277		TANK	•VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN INSTALLATION •CONTRACTOR SHALL CONFIRM OVERALL MOUNTING HEIGHT WITH INSTALLED CEILING DEVICES ALIGN WITH BOTTOM OF UNLESS OTHEWISE NOTED •VERIFY DIMMING DRIVER WITH SUBMITTED DIMMING SYSTEM
PD1	MOUNTING: Suspended, Ceiling APERTURE SIZE: 3-7/64"DIA DIMENSIONS: 3-7/64"DIA x 5"H OPTICS: 60° Wide Flood ACCESSORY LENS: Matte Diffuse FINISH: Polyester Powder Coat, Matte Black ADD'L ATTRIBUTES: 50° cutoff, Field interchangable optic	GOTHAM	ICO2CC-30-20-AR-LD-400-MVOLT-UGZ-SGBCC-CCA-N-C120-90CRI-DBL	1	ea.	21.2	1302 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	THROUGHOUT	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PD5	MOUNTING: Suspended, Ceiling APERTURE SIZE: 20"DIA DIMENSIONS: 20"DIA x 13.4"H x 60" Suspension OPTICS: Direct/Indirect ACCESSORY LENS: Matte Diffuse FINISH: Polyester Powdercoat, Architect shall verify finish ADD'L ATTRIBUTES: Field Cuttable mounting & power cable	EUREKA	4274DI-20-LED.C4-30-80-277-DV-AC-60-RC1-BLKE-SGF-WH	1	ea.	66.8	3425 lm DN 1885 lm UP delivered	LED module 3000K 80CRI	0-10V	120-277V	BUZZISPACE	MEZZANINE WEIGHT ROOM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •REFER TO ELEVATIONS FOR DESIRED MOUNTING HEIGHT
PL3	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 4" DIMENSIONS: 4"W X LENGTH X 4-9/16"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	FINELITE	HP4-P-ID-B-B-930-F-F-96LG-120-SC-FC10-SW	/ft	/ft	9.2	1015 lm/ft delivered	LED linear 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	LEVEL 1 & 2	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PS3	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 5.5"W DIMENSIONS: 5.5"W X 48"L X 3.5"H OPTICS: NA ACCESSORY LENS: CURVED LEN FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	LITHONIA	BLWP4-20L-ADP-MVOLTZ-GZ10-LP930	1	ea.	39	4334 lm delivered	LED LINEAR 3000K 90CRI	0-10V	120-277	HALO HOME COOPER LIGHTING	LEVEL 1 - BSO/FTU - STORAGE	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RD1	MOUNTING: RECESSED, CEILING APERTURE SIZE: 18.1"DIA DIMENSIONS: 18.1"DIA X 5.5"H OPTICS: NA ACCESSORY LENS: MATTE DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	GOTHAM	EVO4--30-15-AR-WD-LD-MVOLT-GZ10	1	ea.	13.7	1293 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	TYP CORRIDOR & RESTROOM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RD2	MOUNTING: RECESSED, CEILING APERTURE SIZE: 18.1"DIA DIMENSIONS: 18.1"DIA X 5.5"H OPTICS: NA ACCESSORY LENS: MATTE DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	GOTHAM	EVO4--30-20-AR-WD-LD-MVOLT-GZ10	1	ea.	19.5	1689 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	LEVEL 1 - FTU - CONTROL ROOM LEVEL 1-MAQ - CAFETERIA	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RD5	MOUNTING: RECESSED, CEILING APERTURE SIZE: 18.1"DIA DIMENSIONS: 18.1"DIA X 5.5"H OPTICS: NA ACCESSORY LENS: MATTE DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES: CORROSION RESISTANT	GOTHAM	EVO4--30-15-AR-WD-LD-MVOLT-GZ10	1	EA	13.7	1293 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	TYP CORRIDOR & RESTROOM	•FINISH PER TO BE CORROSION RESISTANT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RP2	MOUNTING: RECESSED, CEILING APERTURE SIZE: 4"W DIMENSIONS: 4"W X LENGTH X 5-1/8"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER WITH 2" REGRESSED FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HP-WS-4W-2D-LENGTH-B-930-SW-120-SC-FC10-	1	ea.	9.3	577 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	CHANGING ROOM, TYP. RESTROOM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RP3	MOUNTING: RECESSED, CEILING APERTURE SIZE: 4"W DIMENSIONS: 4"W X LENGTH X 5-1/8"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER WITH 2" REGRESSED FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES: CORROSION RESISTANT	FINELITE	HP-WS-4W-2D-LENGTH-B-930-SW-120-SC-FC10-	1	EA	9.3	577 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	CHANGING ROOM, TYP. RESTROOM	•FINISH TO BE CORROSION RESISTANT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RT1	MOUNTING: RECESSED, CEILING APERTURE SIZE: 2'X2' DIMENSIONS: 24"W X 5-1/8"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HPT-RSE-2X2-B-930-96-120-SC-FC9	1	ea.	36.1	3377 lm delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	OFFICE MAQ - KITCHEN	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RT2	MOUNTING: RECESSED, CEILING APERTURE SIZE: 2'X2' DIMENSIONS: 24"W X 5-1/8"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HPT-RSE-2X2-B-930-96-120-SC-FC9	1	EA	36.1	3377 lm delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	OFFICE MAQ - KITCHEN	•FINISH TO BE CORROSION RESISTANT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RT3	MOUNTING: RECESSED, CEILING APERTURE SIZE: 2'X2' DIMENSIONS: 24"W X 5-1/8"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HPT-RSE-2X2-B-930-96-120-SC-FC9	1	ea.	36.1	3377 lm delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	LEVEL 1 - ATO/P&S - OFFICE	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SC2	MOUNTING: Surface, Wall APERTURE SIZE: NA DIMENSIONS: 1-5/46"W x 2-3/16"D X 25"L OPTICS: NA ACCESSORY LENS: Solite Clear FINISH: Powder Coat, White ADD'L ATTRIBUTES:	WAC	WS-35825-WT	1	ea.	22	1054 lm delivered	LED module 3000K 90CRI	0-10V	120-277		QUARANTINE ROOMS	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SC3	MOUNTING: Recessed, Ceiling APERTURE SIZE: 2-1/4"W DIMENSIONS: 2-1/4"W x LENGTH x 4-9/16"H OPTICS: NA ACCESSORY LENS: Flat Diffuser FINISH: Powder Coat, White ADD'L ATTRIBUTES:	FINELITE	HP2-WM-ID-LENGTH-B-B-930-F-F-96LG-120-SC-FC10	1	ft.	9.2	671 lm/ft delivered	LED module 3000K 90CRI	0.10V	120-277	AXIS WHITEGOODS	QUARANTINE ROOMS	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SW1	MOUNTING: SURFACE, WALL APERTURE SIZE: 2.25"W DIMENSIONS: 4.5"W X 23.41"L X 3.95"H OPTICS: ACCESSORY LENS: FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	INFELITE	3541-23-LED-30-120V-WH	1	ea.	13.8	624 UP &582 DOWN lm delivered	LED MODULE 3000K 90CRI	0-10V	120-277		TYP RESTROOM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
Z1	MOUNTING: PENDANT, RECESSED, SURFACE FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES:	COLUMBIA	MPS-4-40-U-*-*-ELL14 FOR EM BATTERY PACK	1	ea.			LED module, 4000K, 80 CRI	NON-DIM	UNV		BACK OF HOUSE SPACES	•FINISH PER ARCHITECT •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
Z2	MOUNTING: PENDANT, RECESSED, SURFACE FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES:	COLUMBIA	MPS-2-40-U-*-*-ELL14 FOR EM BATTERY PACK	1	ea.			LED module, 4000K, 80 CRI	NON-DIM	UNV		BACK OF HOUSE SPACES	•FINISH PER ARCHITECT •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
X1	MOUNTING: WALL FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES: FIELD ADJUSTABLE CHEVRONS	COLUMBIA	LSNXX NRWA	23			LED		NON-DIM	UNV		EGRESS	•EXIT SIGN •FINISH PER ARCHITECT
X2	MOUNTING: CEILING FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES: FIELD ADJUSTABLE CHEVRONS	COLUMBIA	LSNXX NRWA	23			LED		NON-DIM	UNV		EGRESS	•EXIT SIGN •FINISH PER ARCHITECT

LIGHTING CONTROL SEQUENCE OF OPERATIONS

TYPICAL ROOM TYPE	SENSOR OPERATION	PHOTOCELL	TIMECLOCK BACKUP	NETWORKED?	SWITCH	OPERATION	EMERGENCY (SWITCHED/UNSWITCHED)	BASIS OF DESIGN - LUTRON CONTROLS ALTERNATE: CRESTRON	SWITCHED RECEPTACLES	NOTES
CORRIDORS	OCCUPANCY	NO	YES	YES	2-BUTTON	ON/OFF	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	AUOTMATIC ON, AUTOMATIC OFF BASED ON OCCUPANCY WITH LOCAL OVERRIDE SWITCH. TIMECLOCK OVERRIDE TO OFF.
CONTROL CENTERS	VACANCY	NO	NO	NO	MULTI-BUTTON SCENE SELECT	SCENE RECALL WITH MANUAL DIM	SWITCHED	LUTRON ENERGI-SAVR-NODE LOCAL MULTI-ZONE CONTROL SYSTEM	NO	MANUAL ON, AUTOMATIC OFF OPERATIOIN WITH SCENE SETTINGS AND MANUAL DIMMING RAISE/LOWER.
RESTRICTED ACCESS STAIRWELLS	OCCUPANCY	NO	NO	NO	N/A	N/A	UNSWITCHED	INTEGRAL SENSORS	NO	INTEGRAL SENSOR IN LUMINAIRE DIMS LIGHT TO 50% OR LESS WHEN VACANCY DETECTED.
HV STORAGE	OCCUPANCY	INTEGRAL TO LUMINAIRE	YES	YES	N/A	N/A	UNSWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	INTEGRAL SENSOR IN LUMINAIRE DIMS LIGHT TO 50% OR LESS WHEN VACANCY DETECTED. CENTRAL TIMECLOCK CONTROL FOR OPERATION 'ON' DURING DAYLIGHT HOUR...
CLOTHING STORAGE	OCCUPANCY	INTEGRAL TO LUMINAIRE	YES	YES	N/A	N/A	UNSWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	INTEGRAL SENSOR IN LUMINAIRE DIMS LIGHT TO 50% OR LESS WHEN VACANCY DETECTED. CENTRAL TIMECLOCK CONTROL FOR OPERATION 'ON' DURING DAYLIGHT HOUR...
LOADING DOCK	OCCUPANCY	INTEGRAL TO LUMINAIRE	YES	YES	TOGGLE OVERRIDE	N/A	UNSWITCHED	STAND ALONE CONTROLS	NO	INTEGRAL SENSOR IN LUMINAIRE DIMS LIGHT TO 50% OR LESS WHEN VACANCY DETECTED. CENTRAL TIMECLOCK CONTROL FOR ON/OFF OVERRIDE.
PRIVATE OFFICES	VACANCY	WHERE DAYLIGHT IS PRESENT	YES	YES	LOCAL RAISE/LOWER	MANUAL DIM	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	YES	MANUAL ON, AUTO OFF OPERATIOIN WITH MANUAL DIMMING RAISE/LOWER. TIMECLOCK BACKUP TO OFF. 50% GENERAL USE RECEPTACLES ON OCCUPANCY SENSOR...
OPEN OFFICES	OCCUPANCY	WHERE DAYLIGHT IS PRESENT	YES	YES	LOCAL SCENE CONTROL WITH MANUAL...	MANUAL DIM	SWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	YES	TIMECLOCK CONTROL WITH MANUAL SCENE SETTINGS. DAYLIGHT HARVESTING AUTOMATICALLY DIMS LIGHTING BASED ON DAYLIGHT AVAILABILITY....
CONFERENCE ROOM	VACANCY	NO	YES	YES	MULTI-BUTTON SCENE SELECT	SCENE RECALL	SWITCHED	LUTRON ENERGI-SAVR-NODE LOCAL MULTI-ZONE CONTROL SYSTEM	NO	MANUAL SCENE SELECT WALL STATIONS WITH OCCUPANCY SENSOR OVERRIDE TO OFF WHEN VACANCY DETECTED. MANUAL ON.
RESTROOMS - PUBLIC GROUP	OCCUPANCY	NO	YES	YES	SECURE ACCESS	ON/OFF	UNSWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	AUTOMATIC ON, AUTOMATIC OFF OPERATION WITH MANUAL OVERRIDE IN SECURE LOCATION.
RESTROOMS - PRIVATE	VACANCY	WHERE DAYLIGHT IS PRESENT	NO	NO	WALL SWITCH SENSOR	MANUAL DIM	SWITCHED	LUTRON MAESTRO WALLSWITCH DIMMING SENSOR	NO	MANUAL ON, AUTO OFF OPERATIOIN WITH MANUAL DIMMING RAISE/LOWER.
BREAK / PANTRY	VACANCY	WHERE DAYLIGHT IS PRESENT	NO	NO	LOCAL RAISE/LOWER	MANUAL DIM	SWITCHED	LUTRON STAND ALONE ENERGI-SAVR-NODE SYSTEM	NO	MANUAL ON, AUTO OFF OPERATIOIN WITH MANUAL DIMMING RAISE/LOWER.
ELEC / MECH / IT ROOMS	N/A	NO	NO	NO	LOCAL TOGGLE	ON/OFF	SWITCHED	MANUAL OPERATION	NO	MANUAL OPERATION
GENDER NEUTRAL-RESTROOM	VACANCY	NO	NO	NO	WALL SWITCH SENSOR	ON/OFF	SWITCHED	LUTRON MAESTRO WALLSWITCH SENSOR	NO	MANUAL ON, AUTOMATIC OFF WITH MANUAL OVERRIDE.
EXTERIOR FACADE/LANDSCAPE/ SIGNAGE	N/A	OPEN LOOP PHOTOCELL	YES	YES	N/A	N/A	UNSWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	TIMECLOCK CONTROL BASED ON OWNER'S SCHEDULE, WITH DIMMING CAPABILITY. LANDSCAPE AND SIGN AGE LIGHTING TO BE OFF FROM MIDNIGHT TO 6AM.
EXTERIOR BUILDING MOUNT	N/A	OPEN LOOP PHOTOCELL	YES	YES	N/A	N/A	UNSWITCHED	LUTRON QUANTUM CENTRAL CONTROL SYSTEM	NO	TIMECLOCK CONTROL BASED ON OWNER'S SCHEDULE, WITH DIMMING CAPABILITY. BUILDING MOUNTED ENTRY LIGHTING TO REMAIN ON DUSK TO DAWN.

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

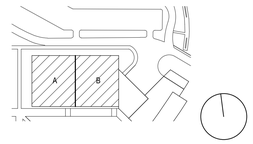
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

AQUA Design International
7536 N. La Cholla Blvd, Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION
2	21 JUL 2023	ADDENDUM 34
1	19 MAY 2023	ISSUED FOR BID

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E
PENNSYLVANIA

2023-06-16
SIGNATURE DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

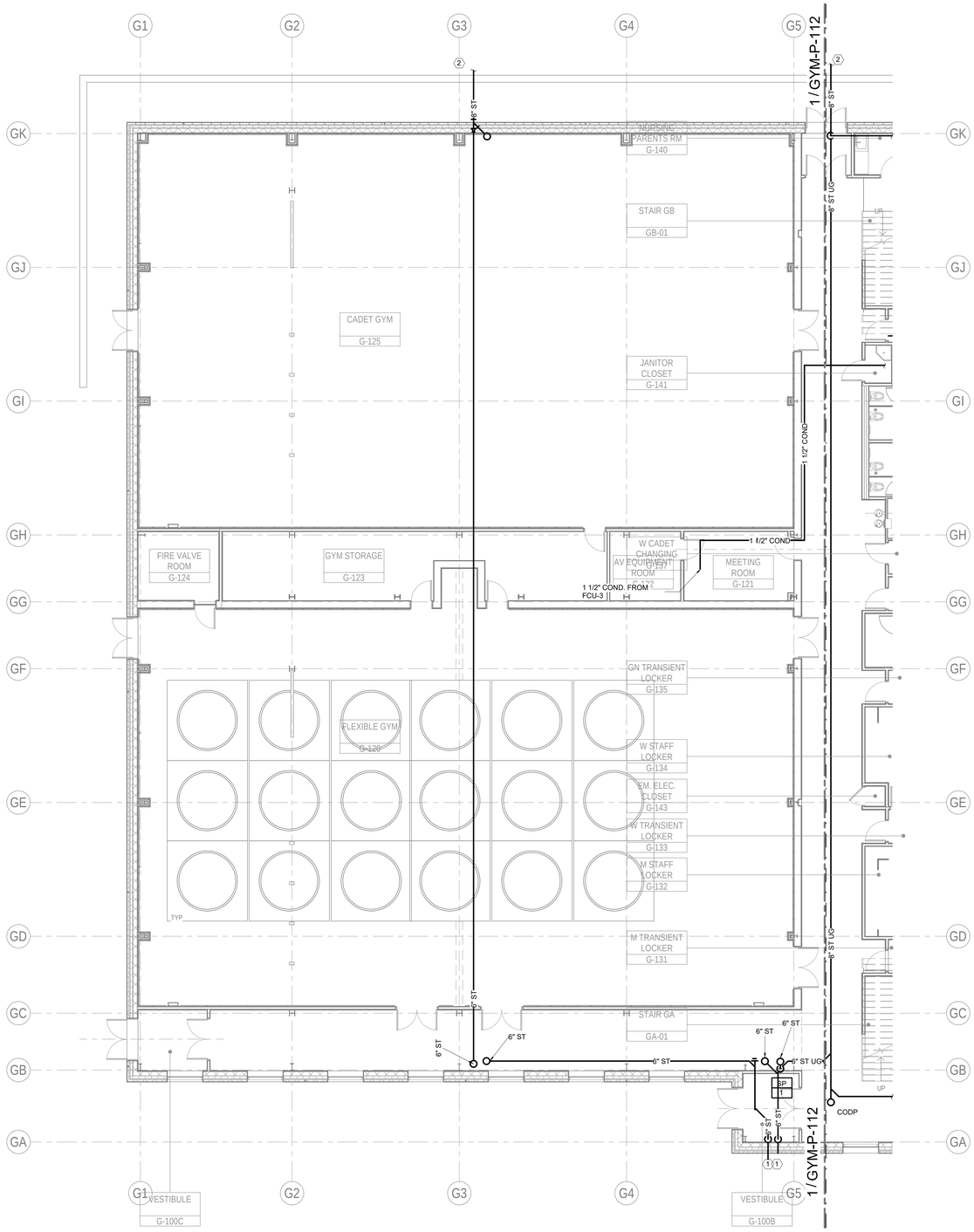
VERIFY SCALE
BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

LIGHTING SCHEDULES

SHEET No. GYM-E-602

DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK		AS NOTED



1 GYMNASIUM - FLOOR PART PLAN A - SAN & VENT- LEVEL 1 - PLUMBING

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

GENERAL NOTES:

1. ALL UNDERGROUND STORM WATER PIPING SHALL HAVE MINIMUM OF ⅛" PER FOOT OF SLOPE.

2. ALL UNDERGROUND SANITARY PIPING SHALL HAVE MINIMUM OF ¼" PER FOOT OF SLOPE.

3. ALL PENETRATIONS THROUGH FOUNDATION WALLS SHALL BE PROVIDED WITH LINK-SEAL TYPE PIPE SEAL FOR HYDROSTATIC SEAL.

4. ALL BENDS, CROSS CONNECTIONS UNDERGROUND SHALL BE MADE USING LONG SWEEP ELBOWS AND WYE FITTINGS.

5. REFER TO STRUCTURAL AND SITE/CIVIL DRAWINGS FOR UNDERGROUND PIPE TRENCH BACKFILL MATERIAL AND COMPACTION DETAILS.

6. ALL UNDERGROUND JOINTS SHALL BE BELL AND SPIGOT WITH COMPRESSION GASKETS.

7. ELEVATIONS AND INVERTS SHOWN HERE ARE APPROXIMATE FOR PRILIMINARY COORDINATION ONLY.

8.CONTRACTOR SHALL SUBMIT SHOP-DRAWING FOR AEOR REVIEW AFTER COORDINATING WITH OTHER TRADES AND PRIOR TO COMMENCING ANY WORK.

9.ALL INSTALLATION ARE SUBJECT TO GETTING APPROVED BY AUTHRITY HAVING JURISDICTION (AHJ).

10.ALL WALL AND FLOOR CLEANOUTS, SERVING 4" AND SMALLER, SHALL BE THE SAME SIZE AS THE PIPING SYSTEM THEY SERVE. CLEANOUTS SERVING 5" AND 6" PIPE SYSTEM SHALL BE 4". CLEANOUTS SERVING 8" PIPING SYSTEM SHALL BE 6".

11.PROVIDE ACCESS PANELS IN HARD CEILINGS AND WALL FOR ACCESS TO ALL PLUMBING EQUIPMENT, ISOLATION VALVES, ETC. THE ACCESS PANELS AHLL BE 24" X 24" MINIMUM. PAINT THE PANELS WITH COLOR MATCHING WALL OR CEILING PAINT COLOR SURROUNDING.

SHEET NOTES:

1. TERMINATE SECONDARY ROOF DRAIN ABOVE GRADE USING WALL DOWNSPOUT NOZZLE. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR DOWNSPOUT INSTALLATION DETAIL. DOWNSPOUT NOZZLE SHALL HAVE INTEGRAL BIRD SCREEN.

2. REFER TO SITE/CIVIL DRAWINGS FOR CONTINUATION.

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1

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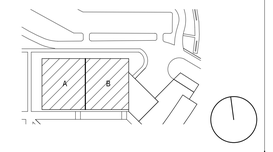
KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	21 JULY 2023	ADDENDUM 34			
	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033176E
PENNSYLVANIA

2023-07-21
SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

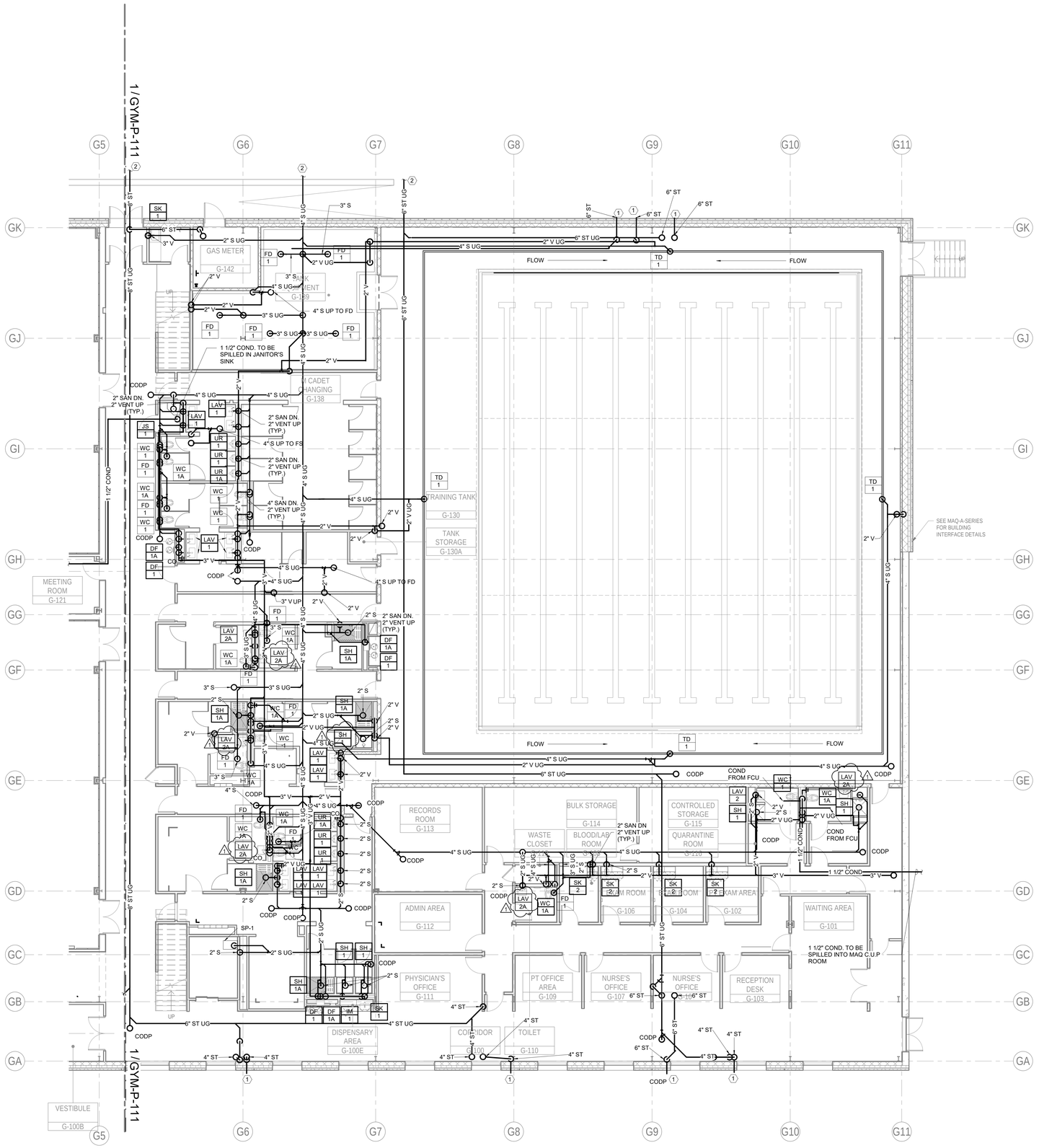
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

GYMNASIUM - FLOOR PART PLAN A - SAN & VENT- LEVEL 1 - PLUMBING

SHEET No. GYM-P-111

DRAWN BY	CHECKED BY	DATE	SCALE
NV/KT	HS/JKA		AS NOTED



1 GYMNASIUM - FLOOR PART PLAN B - SAN & VENT- LEVEL 1 - PLUMBING

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

GENERAL NOTES:

1. ALL UNDERGROUND STORM WATER PIPING SHALL HAVE MINIMUM OF ¼" PER FOOT OF SLOPE.

2. ALL UNDERGROUND SANITARY PIPING SHALL HAVE MINIMUM OF ¼" PER FOOT OF SLOPE.

3. ALL PENETRATIONS THROUGH FOUNDATION WALLS SHALL BE PROVIDED WITH LINK-SEAL TYPE PIPE SEAL FOR HYDROSTATIC SEAL.

4. ALL BENDS, CROSS CONNECTIONS UNDERGROUND SHALL BE MADE USING LONG SWEEP ELBOWS AND WYE FITTINGS.

5. REFER TO STRUCTURAL AND SITE/CIVIL DRAWINGS FOR UNDERGROUND PIPE TRENCH BACKFILL MATERIAL AND COMPACTION DETAILS.

6. ALL UNDERGROUND JOINTS SHALL BE BELL AND SPIGOT WITH COMPRESSION GASKETS.

7. ELEVATIONS AND INVERTS SHOWN HERE ARE APPROXIMATE FOR PRILIMINARY COORDINATION ONLY.

8.CONTRACTOR SHALL SUBMIT SHOP-DRAWING FOR AEOR REVIEW AFTER COORDINATING WITH OTHER TRADES AND PRIOR TO COMMENCING ANY WORK.

9.ALL INSTALLATION ARE SUBJECT TO GETTING APPROVED BY AUTHRITY HAVING JURISDICTION (AHJ).

10.ALL WALL AND FLOOR CLEANOUTS, SERVING 4" AND SMALLER, SHALL BE THE SAME SIZE AS THE PIPING SYSTEM THEY SERVE. CLEANOUTS SERVING 5" AND 6" PIPE SYSTEM SHALL BE 4". CLEANOUTS SERVING 8" PIPING SYSTEM SHALL BE 6".

11.PROVIDE ACCESS PANELS IN HARD CEILINGS AND WALL FOR ACCESS TO ALL PLUMBING EQUIPMENT, ISOLATION VALVES, ETC. THE ACCESS PANELS AHLL BE 24" X 24" MINIMUM. PAINT THE PANELS WITH COLOR MATCHING WALL OR CEILING PAINT COLOR SURROUNDING.

SHEET NOTES:

1. TERMINATE SECONDARY ROOF DRAIN ABOVE GRADE USING WALL DOWNSPOUT NOZZLE. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR DOWNSPOUT INSTALLATION DETAIL. DOWNSPOUT NOZZLE SHALL HAVE INTEGRAL BIRD SCREEN.
2. REFER TO SITE/CIVIL DRAWINGS FOR CONTINUATION.

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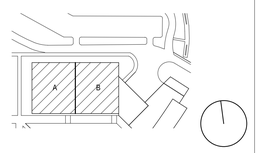

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HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

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0 1

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GYMNASIUM - FLOOR PART PLAN B - SAN & VENT - LEVEL 1 - PLUMBING

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SHEET No. GYM-P-112

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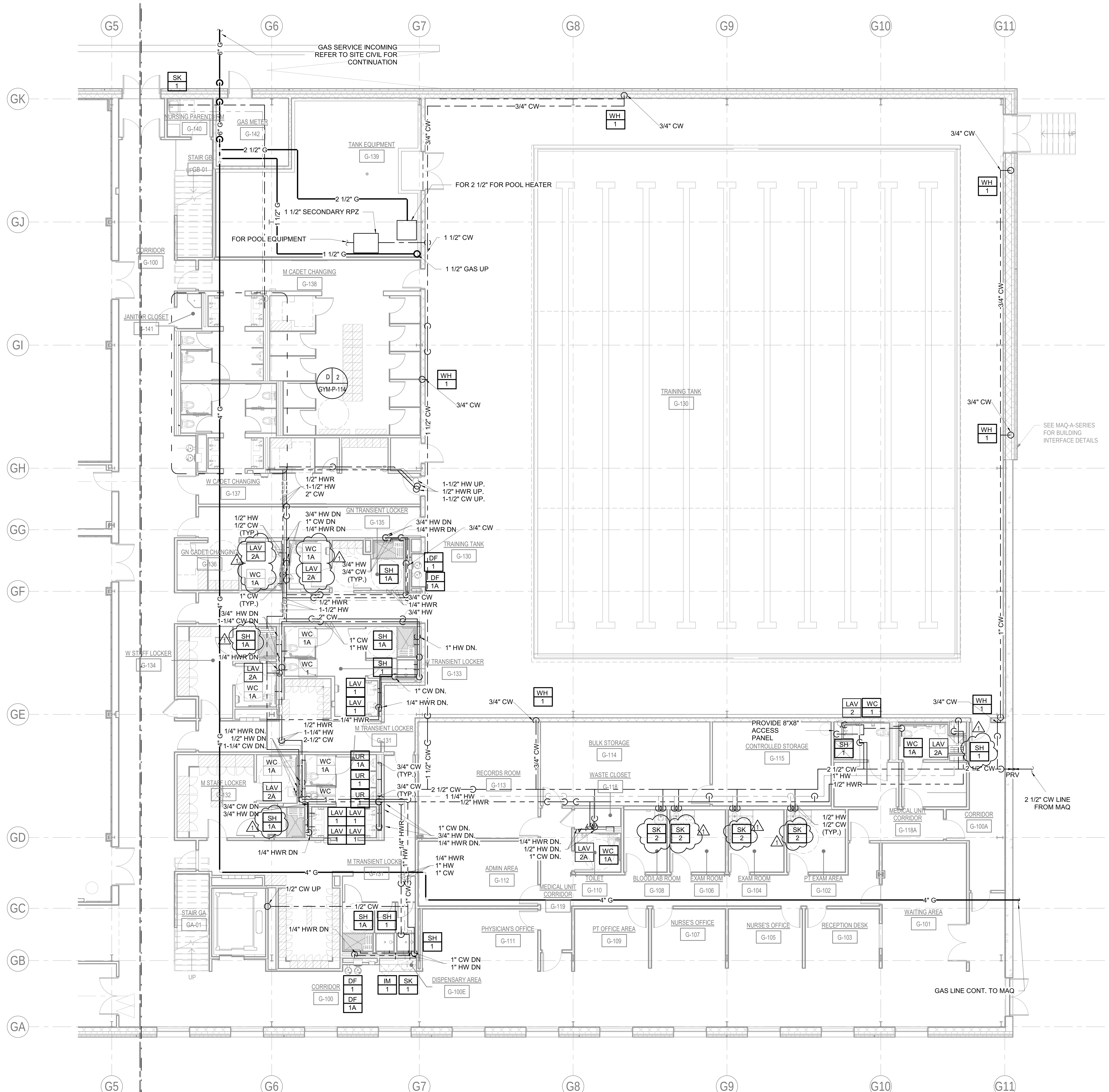
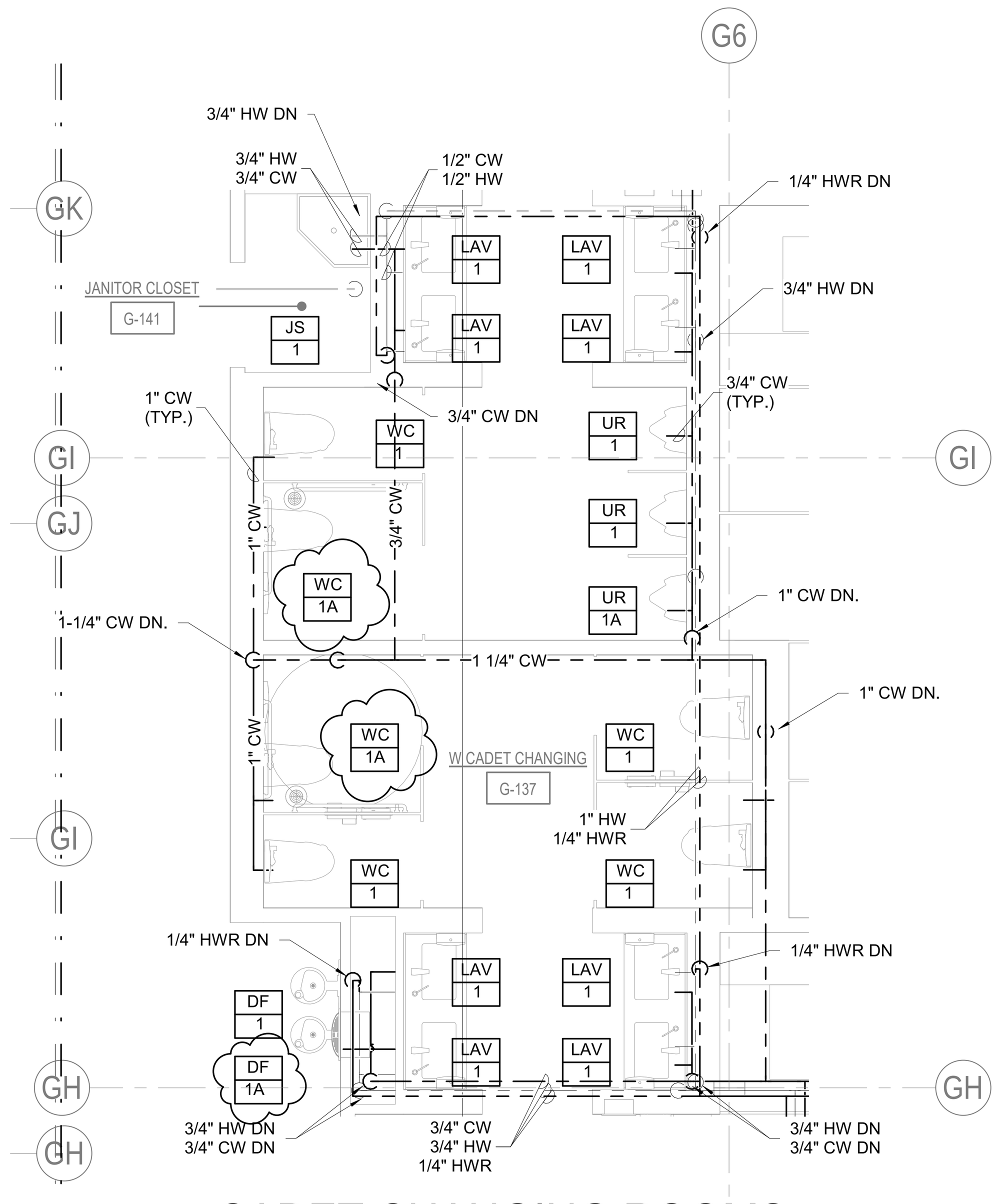


1 GYMNASIUM - FLOOR PART PLAN B - DOMESTIC WATER SUPPLY - LEVEL 1 - PLUMBING

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"



2 CADET CHANGING ROOMS - DOMESTIC WATER SUPPLY

SCALE: 1/4" = 1'-0"

0 2'-0" 4'-0" 8'-0" 16'-0"

GENERAL NOTES:

GENERAL NOTES:

1. ALL PIPING SHALL BE INSTALLED IN SUCH A MANNER AS TO AVOID FREEZING. ALL WATER PIPING SHALL BE INSTALLED BELOW ATTIC/ROOF INSULATION AND NO PIPING SHALL BE INSTALLED WITHIN EXTREIOR WALLS.

2. THE INSTALLATION OF PLUMBING SYSTEMS SHALL IN NO WAY CRUSH OR COMPROIMISE BUILDING INSULATION AND ALL BELOW GRADE WATER PIPING SHALL BE INSTALLED NO LESS THAN 6" BELOW FROST DEPTH.

3. ALL PIPING SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO BUILDING LINES. THEY SHALL BE SUPPORTED AND ANCHORED AS REQUIRED TO FACILITATE EXPANSION AND CONTRACTION.

4. ALL PIPING SHALL BE CONCEALED EXCEPT IN UNFINISHED SPACES OR OPEN CEILING SPACES.

5. INSULATION AND VAPOR BARRIER SHALL BE PROVIDED ON ALL PIPING AND/OR EQUIPMENT SUBJECT TO HEAT LOSS, CONDENSATION OR CONSTITUTING A POTENTIAL BURN HAZARD.

6. ACCESS DOORS AND/OR PANELS SHALL BE PROVIDED AT ALL MAINTENANCE AND SERVICE LOCATIONS FOR CONCEALED CONTROL DEVICES, VALVES AND PLUMBING EQUIPMENT/DEVICES. UNLESS SIZE OF ACCESS DOOR IS SPECIFICALLY NOTED, PANELS SHALL BE SIZED 18" X 18" MINIMUM AND SHALL BE PAINTED WITH SAME COLOR AS SURROUNDING PAINT COLOR.

7. ALL PIPING SHALL BE SUPPORTED DIRECTLY FROM STRUCTURAL ELEMENTS. NO OTHER COMPONENTS SHALL BE SUPPORTED FROM PLUMBING PIPING.

8. PROVIDE LOCAL TEMPERING VALVES FOR ALL LAVATORIES, SHOWERS AND HAND SINKS. TEMPERING VALVES SHALL CONFORM WITH ASSE 1070.

9. PROVIDE WATER HAMMER ARRESTORS AT ALL QUICK CLOSING VALVES WITH ISOLATION VALVE AND WITH ACCESS OR ACCESS PANELS.

10. ALL THREADED HOSE CONNECTIONS TO DOMESTIC WATER SYSTEM SHALL HAVE AN APPROVED VACUUM BREAKER .I.E. HOSE BIBBS, WALL HYDRANTS, SYSTEM DRAINS, EQUIPMENT DRAINS, ETC.

11. PROVIDE INDIVIDUAL SHUT-OFF VALVES FOR EACH PLUMBING FIXTURE, INCLUDING DRINKING FOUNTAINS.

12. ALL PIPING, FITTINGS, VALVES SHALL COMPLY TO LEAD-FREE ACT.

13. CONTRACTOR SHALL PROVIDE TAGS TO EACH VALVES AND PLUMBING EQUIPMENT. CONTRACTOR SHALL PROVIDE VALVE TAG SCHEDULE TO OWNER AT THE END OF JOB.

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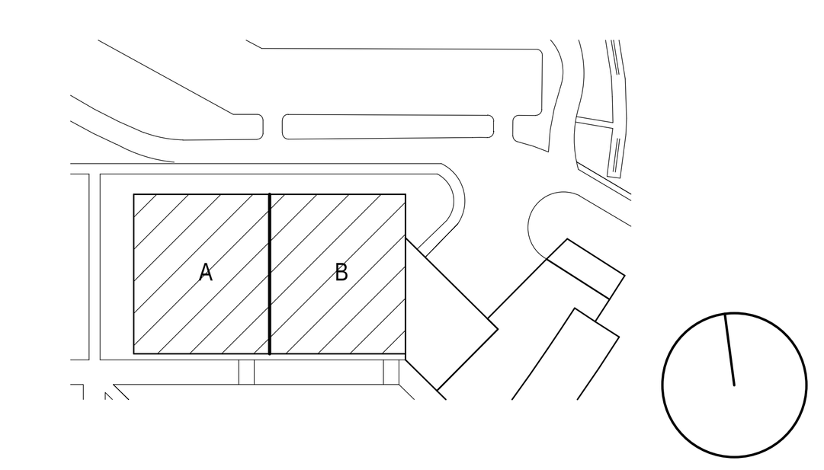

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2023-07-21

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
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D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

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GYMNASIUM - FLOOR PART PLAN B - DOMESTIC WATER SUPPLY - LEVEL 1 - PLUMBING

SHEET No. GYM-P-114

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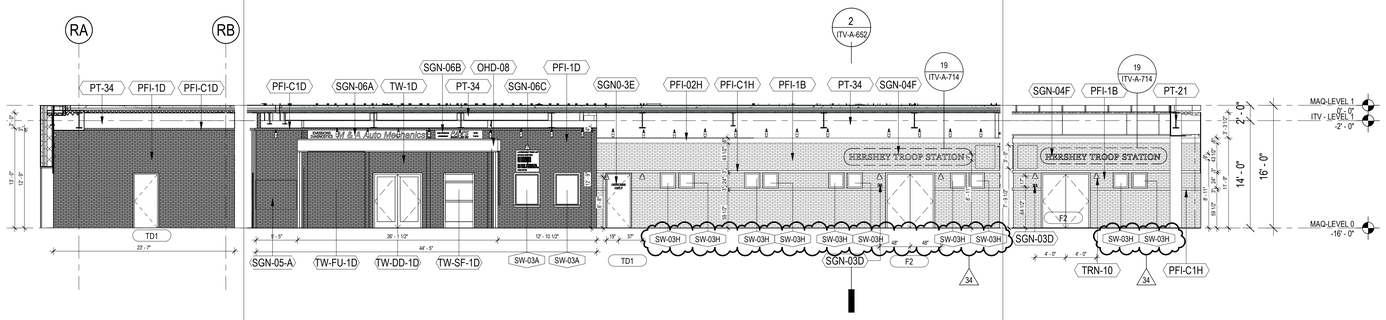


5 BUILDING 4 - EAST ELEVATION

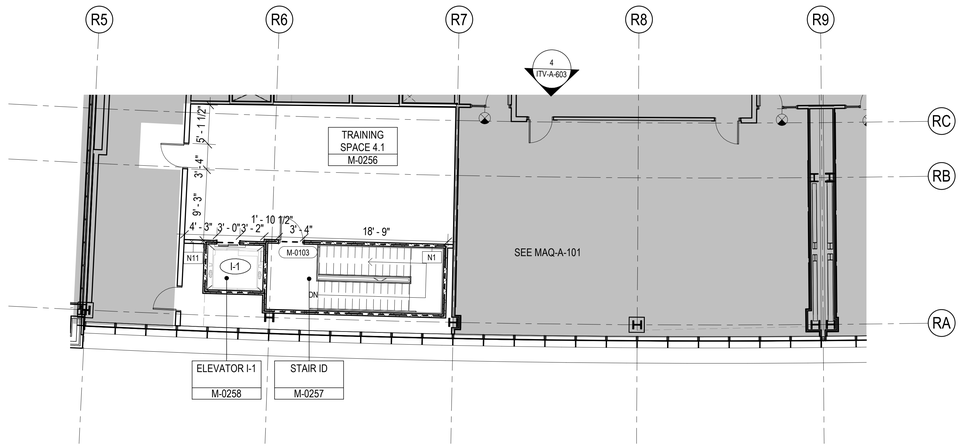
SCALE: 1/8" = 1'-0"

4 BUILDING 4 - NORTH ELEVATION

SCALE: 1/8" = 1'-0"

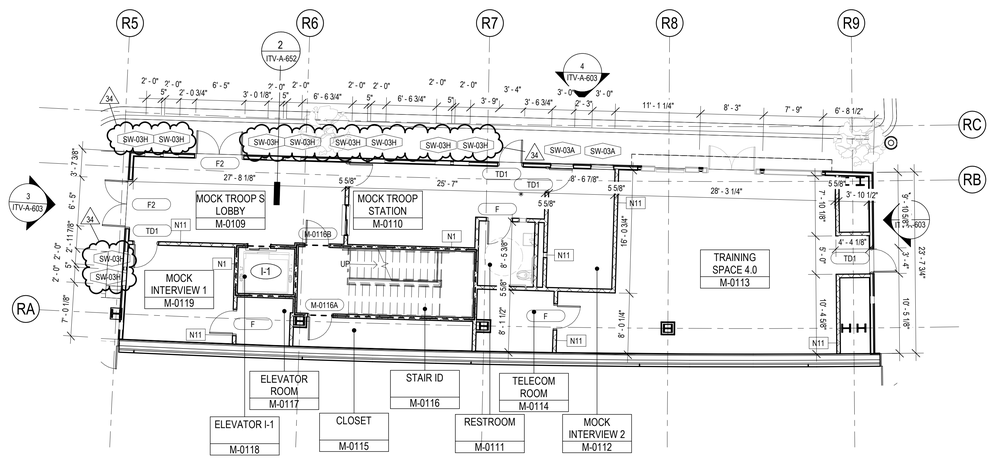
3 BUILDING 4 - WEST ELEVATION

SCALE: 1/8" = 1'-0"



2 BUILDING 4 FLOOR PLAN - LEVEL 1

SCALE: 1/8" = 1'-0"



1 BUILDING 4 FLOOR PLAN - LEVEL 0

SCALE: 1/8" = 1'-0"

PANEL LEGEND

TACTICAL WALL PANEL TAG

TW-XX-XX
- PANEL FINISH
- PANEL TYPE
- MOVABLE PANEL

FINISH TYPES - (PFI)

1A	STL BRICK - WEATHERED ORANGE
1B	USED BRICK - WHITE
1C	CLEAN BRICK - HISTORIC RED
1D	CLEAN BRICK - TAN
1E	SIDING - PAINT - SEA SERPENT
1F	STONE - TUSCANY - SLATE GREY
1J	STUCCO CLAD - PAINT - SEA SERPENT

PANEL TYPES

FU	FULL PANEL	SW	SINGLE WINDOW PANEL
DW	DOUBLE WINDOW PANEL	SD	SINGLE DOOR PANEL
DD	DOUBLE DOOR PANEL	WD	WINDOW AND DOOR PANEL
SF	STOREFRONT PANEL		

LEGEND ENLARGED PLAN/ELEV

FIRE RATINGS

- 1/2 HOUR FIRE RATING
- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING

XX — DRAWING NOTE

1	SWITCH	SINGLE 1A	DOUBLE 1B	QUAD 1C	CONTROL PANEL 1D
2	ELECTRICAL OUTLET	SINGLE 2A	DUPLEX 2B	QUAD 2C	
3	DATA OUTLET	2 PORT 3A	6 PORT 3B	AV 3C	
4	FIRE ALRAM STROBE	4			
5	THERMOSTAT	5			
6	WALL CLOCK	6			
7	PULL STATION	7			
8	SECURITY CAMERA	8			
9	CARD READER	9			
10	ADA PUSH BOTTON	10			
11	FLOOR BOX	11A	FLEX DUCT MOUNTED 11B	RETROFIT MOUNTED 11C	DEVICES MOUNTED 11D
12	WAP	12			

GENERAL NOTES

1. ALL DIFFUSERS, REGISTERS AND GRILLES ARE BY THE .2 HVAC CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY, UNO.
2. ALL PLUMBING FIXTURES, SPRINKLERS, FHCS, AND STANDPIPES AND RELATED EQUIPMENT ARE BY THE .4 PLUMBING CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY, UNO.
3. ALL RECEPTACLES, LIGHTS SWITCHES, TELE/DATA RECEPTACLES, TELECOM EQUIPMENT AND AV EQUIPMENT ARE BY THE .4 ELECTRICAL CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY, UNO.
4. REFERENCE GEN-G-103 FOR STANDARD MOUNTING HEIGHTS AND DETAILS
5. REFERENCE ALSO POWER, COMMUNICATIONS AND FINISH PLANS AND GEN-G-103 FOR STANDARD DEVICE MOUNTING ARRANGEMENTS, ALIGNMENTS AND DIMENSIONAL INFORMATION.
6. ALIGN WALL TILE JOINTS TO FLOOR TILE JOIN LINES.
7. CONFIRM FINIAL TILE JOINT LAYOUT WITH PROFESSIONAL PRIOR TO INSTALLATION.

DRAWING NOTES

SGN-XXX — SEE ITV-A-713, ITV-A-714, ITV-A-715 FOR SIGNAGE DETAILS

KEYNOTES

OHD-08	083300 CHAIN OPERATED UNINSULATED COILING DOOR
PFI-1B	066000 FAUX BRICK FINISH 1B
PFI-1D	066000 FAUX BRICK FINISH 1D
PT-21	099100 PAINT FINISH
PT-34	099100 PAINT FINISH
TRN-10	119030 MOCK LIGHTING FIXTURE
TW-1D	74263 FAUX BRICK FINISH- 1D

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HERSHEY, DAUPHIN COUNTY, PA

BUILDING 4 - PLANS / ELEVATIONS

SHEET No. ITV-A-603

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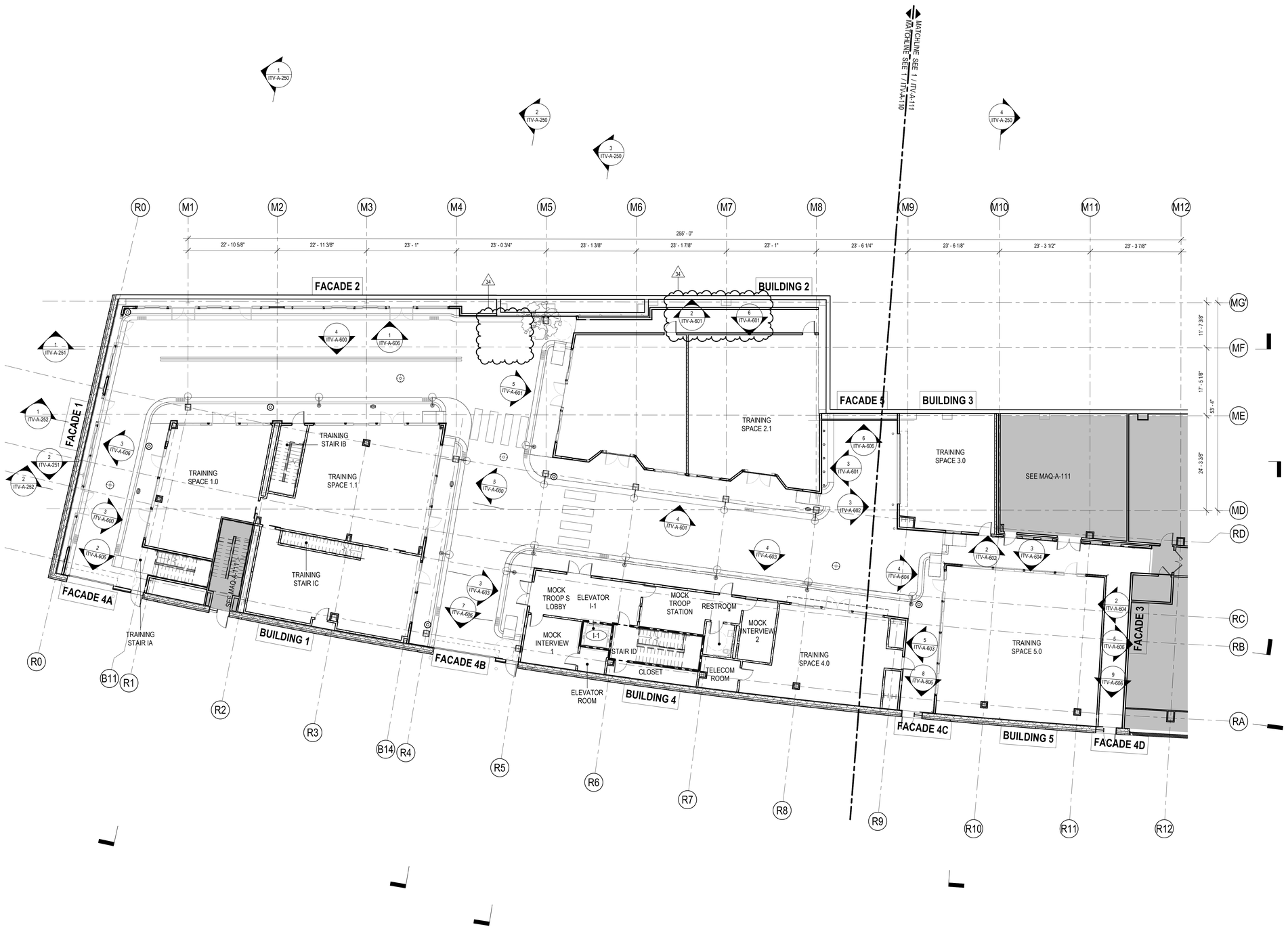

1 | OVERALL FLOOR PLAN - LEVEL 0
SCALE: 3/32" = 1'-0"

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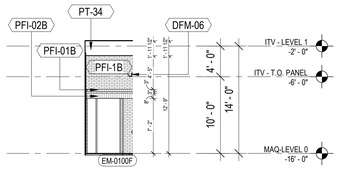
ELEVATION LOCATION PLAN

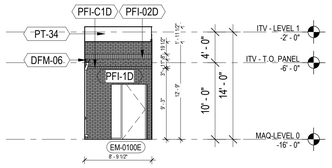
SHEET No. ITV-A-605

DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



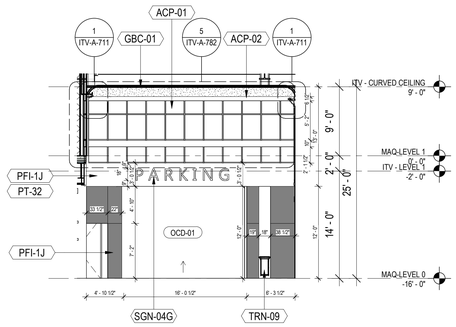
9 FACADE 4D - ELEV.

SCALE: 1/8" = 1'-0"



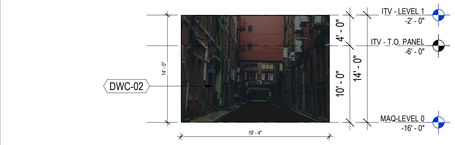
8 FACADE 4C- ELEV.

SCALE: 1/8" = 1'-0"



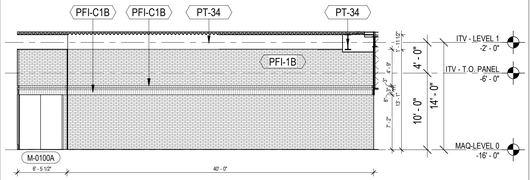
7 FACADE 4B - ELEV.

SCALE: 1/8" = 1'-0"



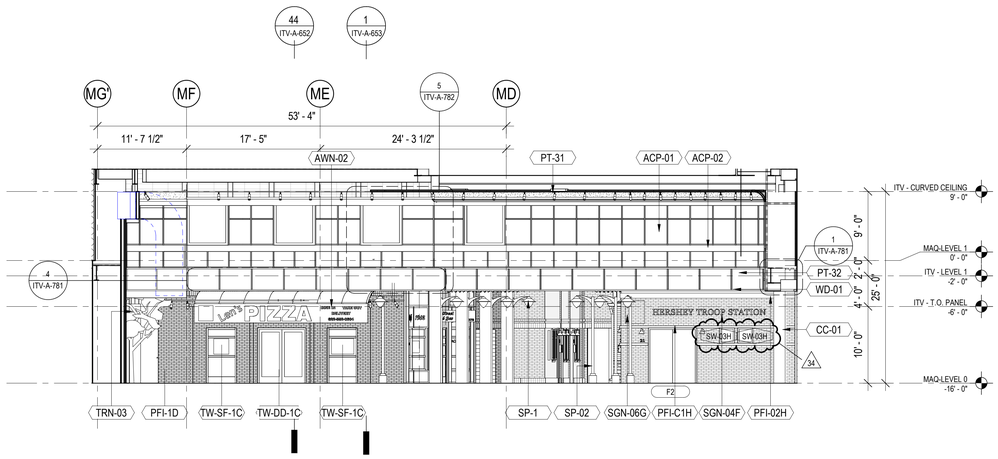
6 FACADE 5 - ELEVATION

SCALE: 1/8" = 1'-0"



5 FACADE 3 - ELEVATION

SCALE: 1/8" = 1'-0"

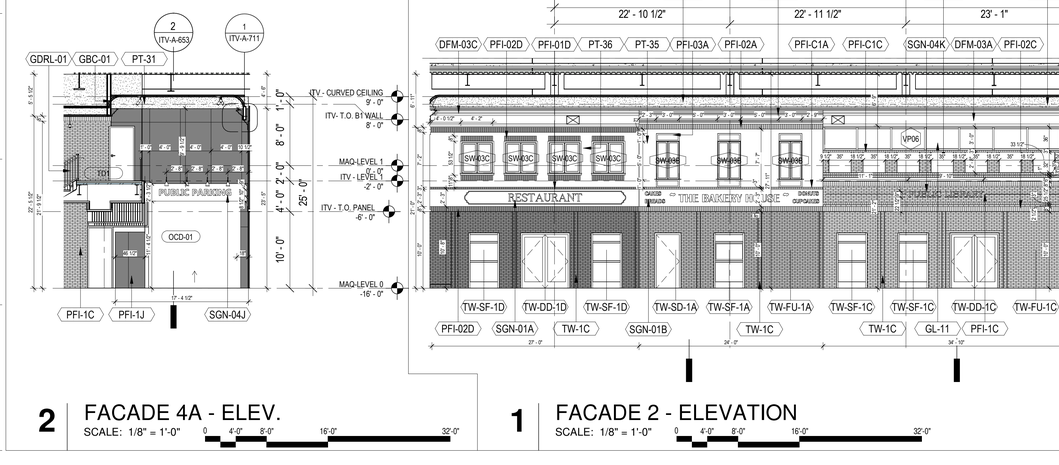


4 BRIDGE - ELEVATION

SCALE: 1/8" = 1'-0"

3 FACADE 1 - ELEVATION

SCALE: 1/8" = 1'-0"



2 FACADE 4A - ELEV.

SCALE: 1/8" = 1'-0"

1 FACADE 2 - ELEVATION

SCALE: 1/8" = 1'-0"

PANEL LEGEND

TACTICAL WALL PANEL TAG

TW-XX-XX
- PANEL FINISH
- PANEL TYPE
- MOVABLE PANEL

FINISH TYPES - (PFI)

1A	STL BRICK - WEATHERED ORANGE
1B	USED BRICK - WHITE
1C	CLEAN BRICK - HISTORIC RED
1D	CLEAN BRICK - TAN
1E	SIDDING - PAINT - SEA SERPENT
1F	STONE - TUSCANY - SLATE GREY
1J	STUCCO CLAD - PAINT - SEA SERPENT

PANEL TYPES

FU	FULL PANEL	SW	SINGLE WINDOW PANEL
DW	DOUBLE WINDOW PANEL	SD	SINGLE DOOR PANEL
DD	DOUBLE DOOR PANEL	WD	WINDOW AND DOOR PANEL
SF	STOREFRONT PANEL		

KEYNOTES

PT-36	099100 PAINT FINISH
PT-37	099100 PAINT FINISH
TRN-03	119030 SIMULATED TREE
TRN-09	119030 MOCK GARBAGE CAN
TW-1C	74263 FAUX BRICK FINISH- 1C
WD-01	064000 SOLID WOOD

LEGEND ENLARGED PLAN/ELEV

FIRE RATINGS

- 1/2 HOUR FIRE RATING
- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING

XX DRAWING NOTE

1	SWITCH	SINGLE 1A	DOUBLE 1B	QUAD 1C	CONTROL PANEL 1D
2	ELECTRICAL OUTLET	SINGLE 2A	DUPLEX 2B	QUAD 2C	
3	DATA OUTLET	2 PORT 3A	6 PORT 3B	AV 3C	
4	FIRE ALRAM STROBE	4			
5	THERMOSTAT	5			
6	WALL CLOCK	BE-3B 6			
7	PULL STATION	7			
8	SECURITY CAMERA	8			
9	CARD READER	9			
10	ADA PUSH BOTTON	10			
11	FLOOR BOX	11A	FLUSH FLOOR MOUNTED 11B	SURFACE MOUNTED 11C	SURFACE MOUNTED 11D
12	WAP	12			

GENERAL NOTES

1. ALL DIFFUSERS, REGISTERS AND GRILLES ARE BY THE .2 HVAC CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY, UNO.
2. ALL PLUMBING FIXTURES, SPRINKLERS, FHCS, AND STANDPIPES AND RELATED EQUIPMENT ARE BY THE .4 PLUMBING CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY, UNO.
3. ALL RECEPTACLES, LIGHTS SWITCHES, TELE/ DATA RECEPTACLES, TELECOM EQUIPMENT AND AV EQUIPMENT ARE BY THE .4 ELECTRICAL CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY, UNO.
4. REFERENCE GEN-G-103 FOR STANDARD MOUNTING HEIGHTS AND DETAILS
5. REFERENCE ALSO POWER, COMMUNICATIONS AND FINISH PLANS AND GEN-G-103 FOR STANDARD DEVICE MOUNTING ARRANGEMENTS, ALIGNMENTS AND DIMENSIONAL INFORMATION.
6. ALIGN WALL TILE JOINTS TO FLOOR TILE JOIN LINES.
7. CONFIRM FINIAL TILE JOINT LAYOUT WITH PROFESSIONAL PRIOR TO INSTALLATION.

DRAWING NOTES

SGN-XXX SEE ITV-A-713, ITV-A-714, ITV-A-715 FOR SIGNAGE DETAILS

KEYNOTES

ACP-01	74243 ALUMINUM COMPOSITE PANEL
AWN-02	107300 CONVEX VINYL AWNING
CC-01	057000 RECTANGULAR METAL COLUMN COVER
DFM-03A	057500 METAL CORNICE 1 PT-33
DFM-03B	057500 METAL CORNICE 1 PT-34
DFM-03C	057500 METAL CORNICE 1 PT-40
DFM-04A	057500 METAL CORNICE 2 PT-33
DFM-04B	057500 METAL CORNICE 2 PT-41
DFM-04C	057500 METAL CORNICE 2 PT-40
DFM-06	057500 FAUX METAL GUTTER PT-21
DWC-01	101470 DIGITALLY PRINTED WALL COVERING
GBC-01	092116 1/2" GYPSUM BOARD ON SUSPENDED METAL GRID
GDRL-01	055100 METAL GUARDRAIL AND HANDRAIL
GL-11	088850 IMPACT RESISTANT GLASS
PFI-1B	066000 FAUX BRICK FINISH 1B
PFI-1C	066000 FAUX BRICK FINISH 1C
PFI-1D	066000 FAUX BRICK FINISH 1D
PFI-1J	066000 FAUX STUCCO FINISH IJ
PFI-02A	066000 FAUX BRICK SOLDIER TRIM 1A
PFI-02B	066000 FAUX BRICK SOLDIER TRIM 1B
PFI-02C	066000 FAUX BRICK SOLDIER TRIM 1C
PFI-02D	066000 FAUX BRICK SOLDIER TRIM 1D
PFI-03A	066000 FAUX DECORATIVE PANEL PT-33
PFI-03B	066000 FAUX DECORATIVE PANEL PT-40
PFI-03C	066000 FAUX DECORATIVE PANEL PT-40/33
PT-31	099100 PAINT FINISH
PT-32	099100 PAINT FINISH
PT-33	099100 PAINT FINISH
PT-34	099100 PAINT FINISH
PT-35	099100 PAINT FINISH

VERIFY SCALE

BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING: 0 — 1

IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

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TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

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250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

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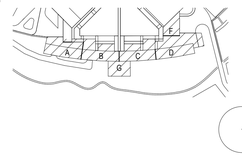
KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
34	21 JUL 2023	ADDENDUM #34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

REGISTERED ARCHITECT COMMONWEALTH OF PENNSYLVANIA — SIGNATURE — DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

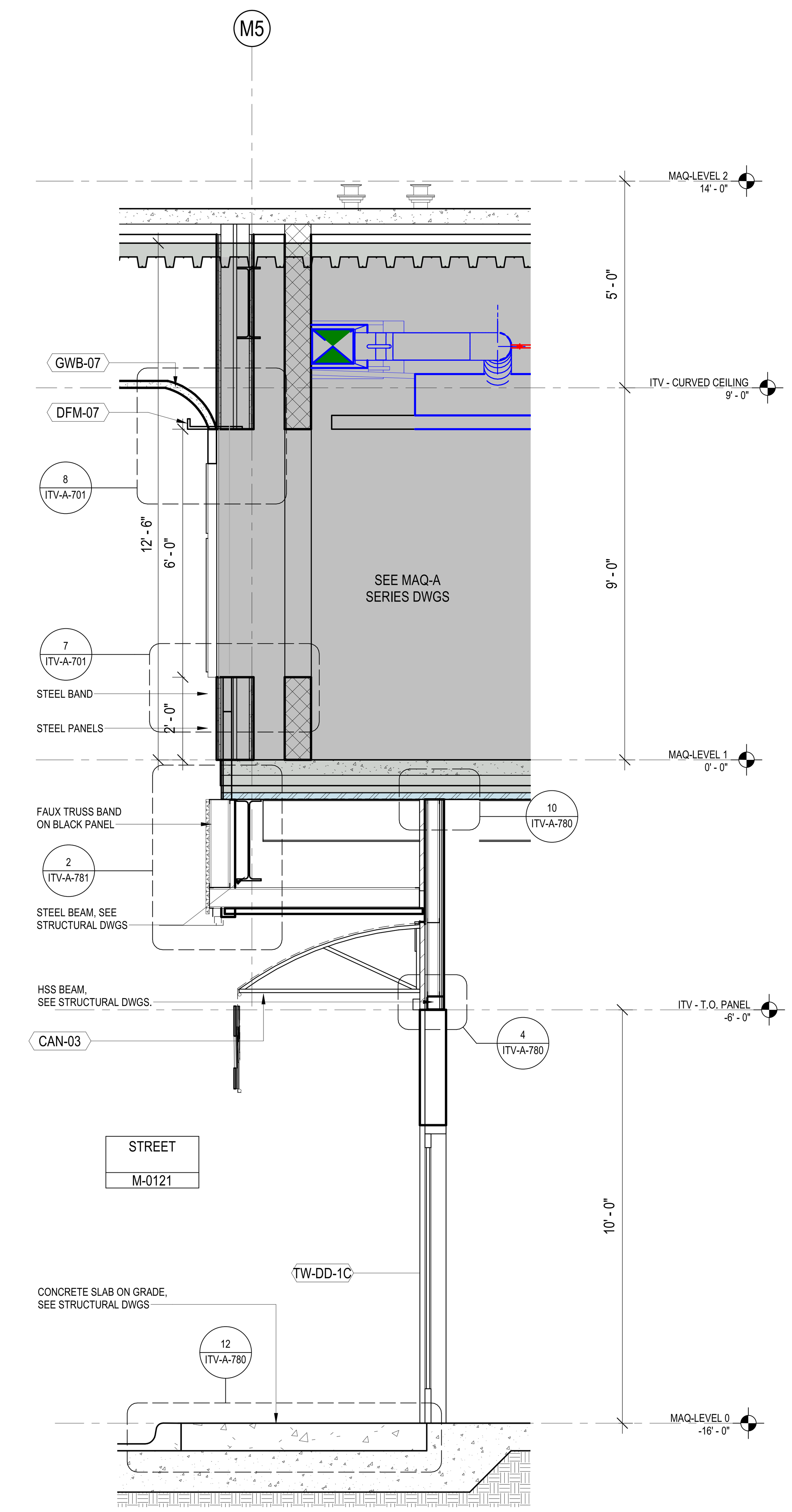
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

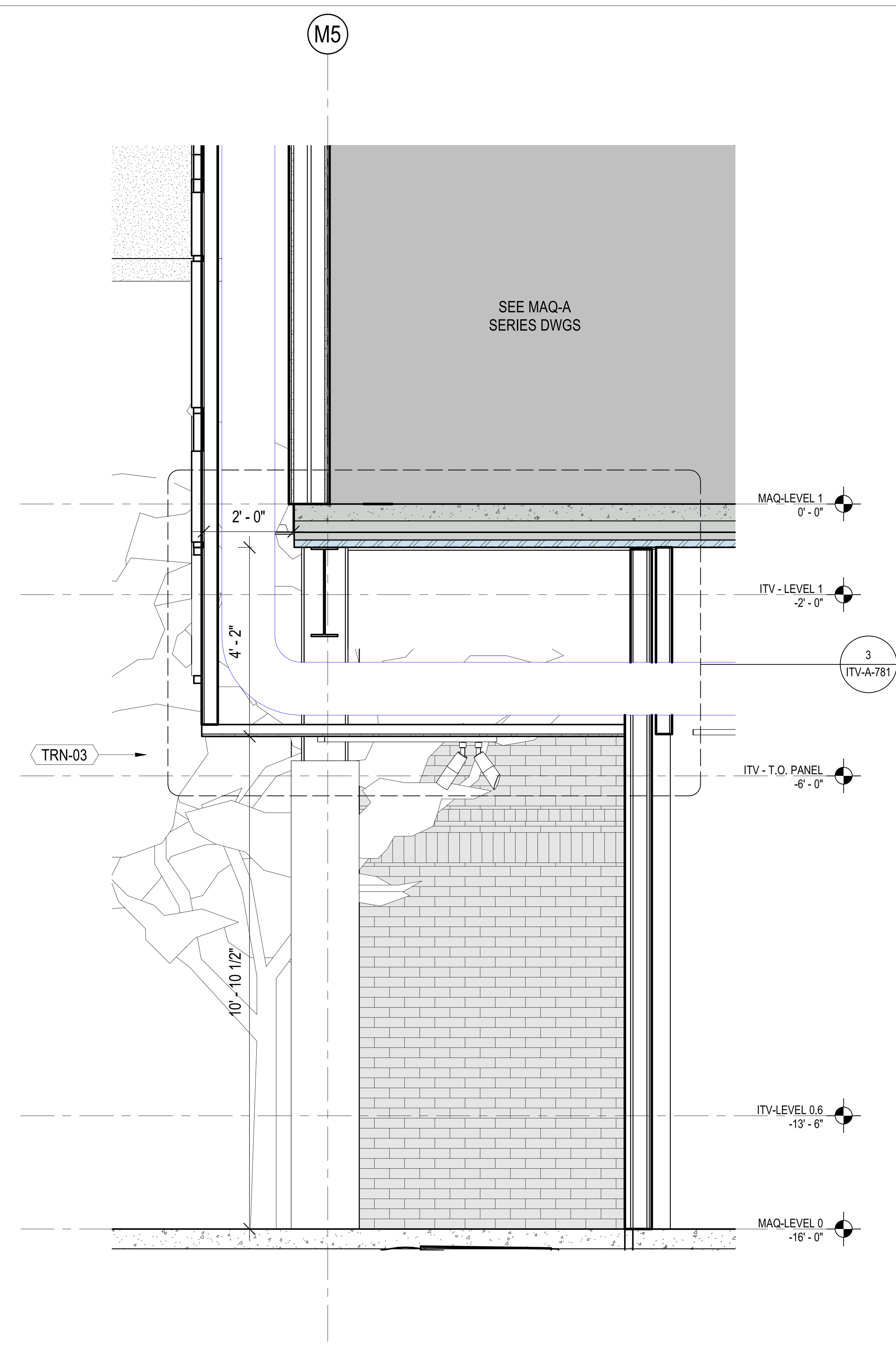
FACADES - ELEVATIONS

SHEET No. ITV-A-606

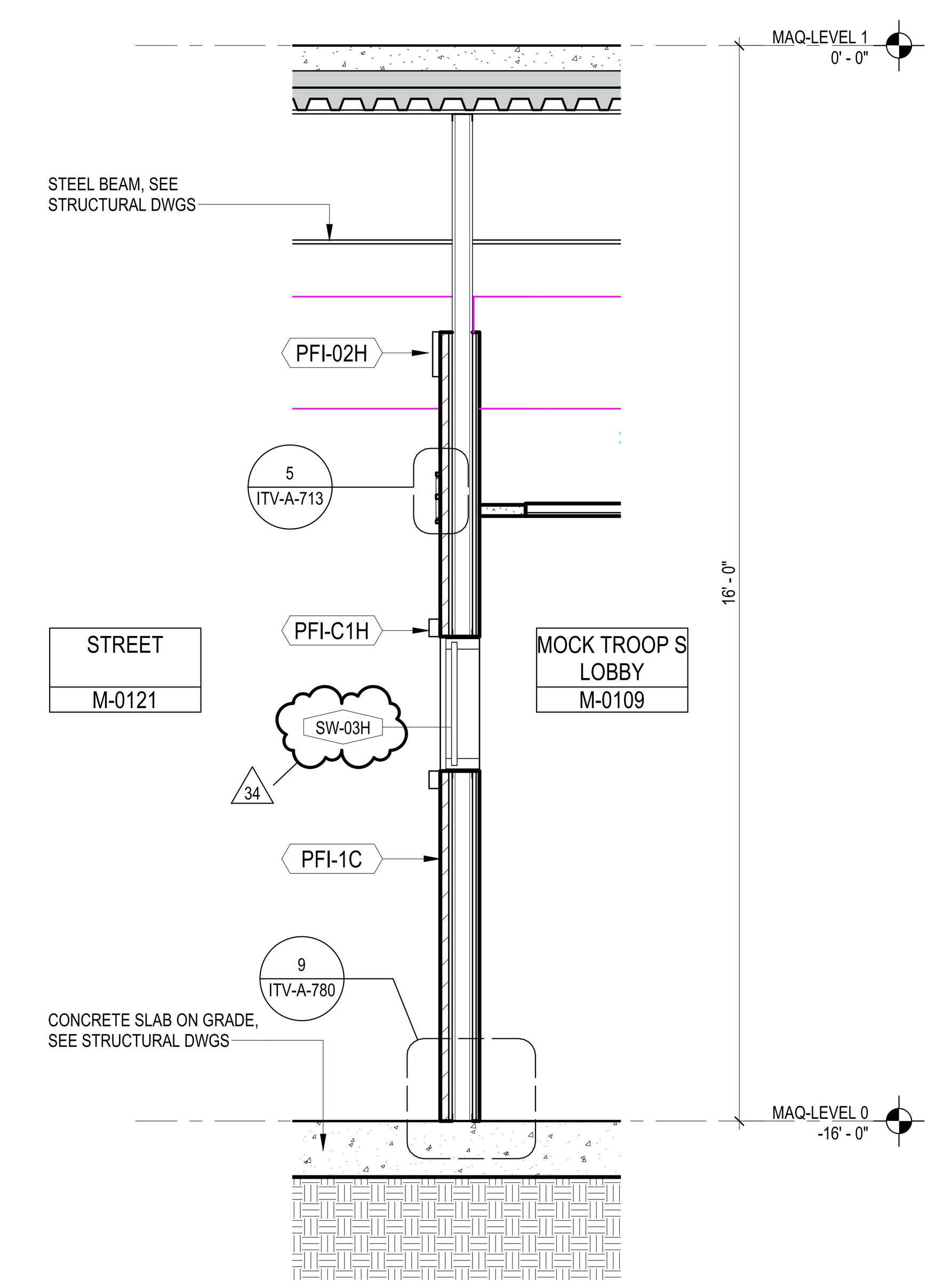
DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



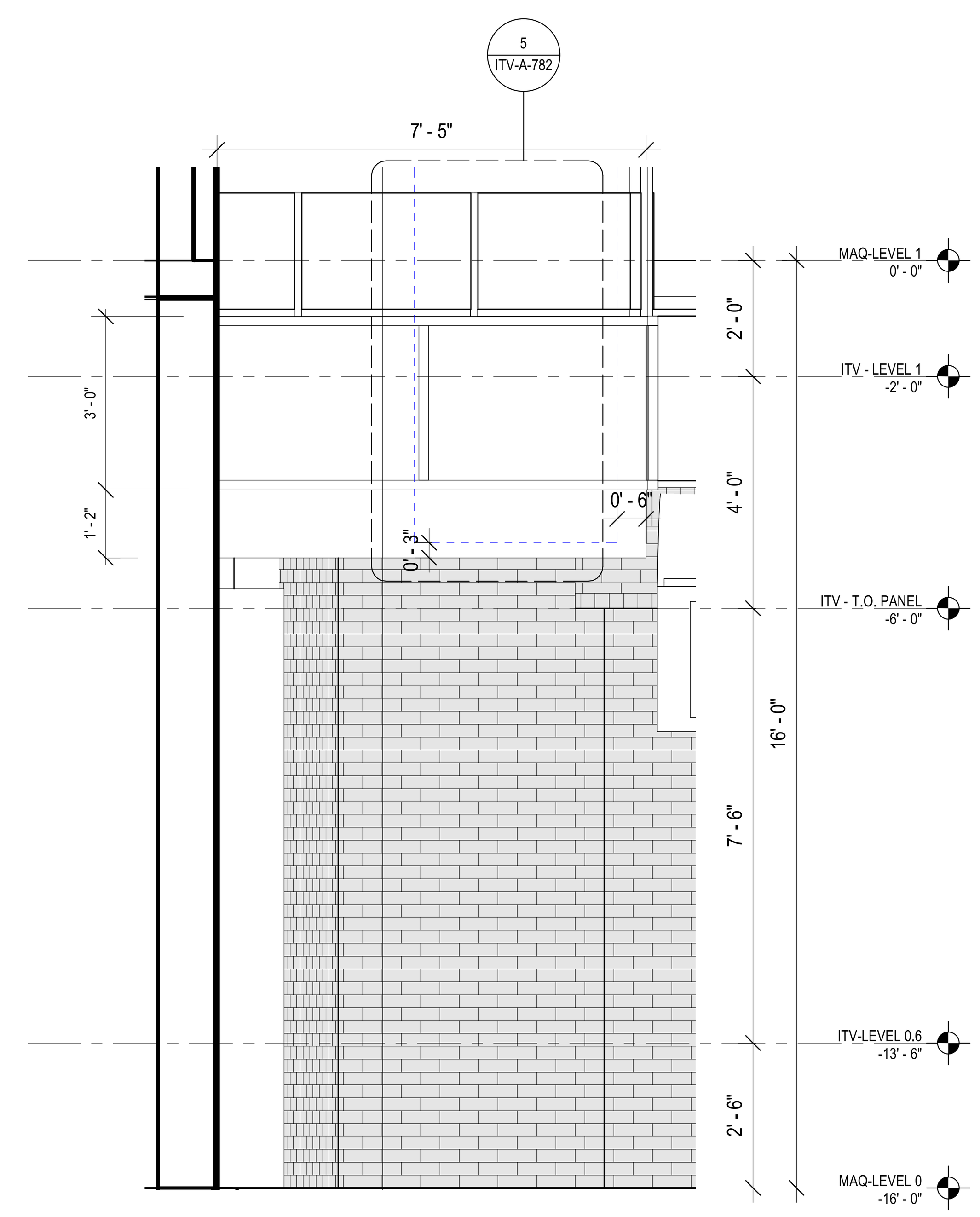
5 WALL SECTION - BUILDING 2
SCALE: 1/2" = 1'-0"



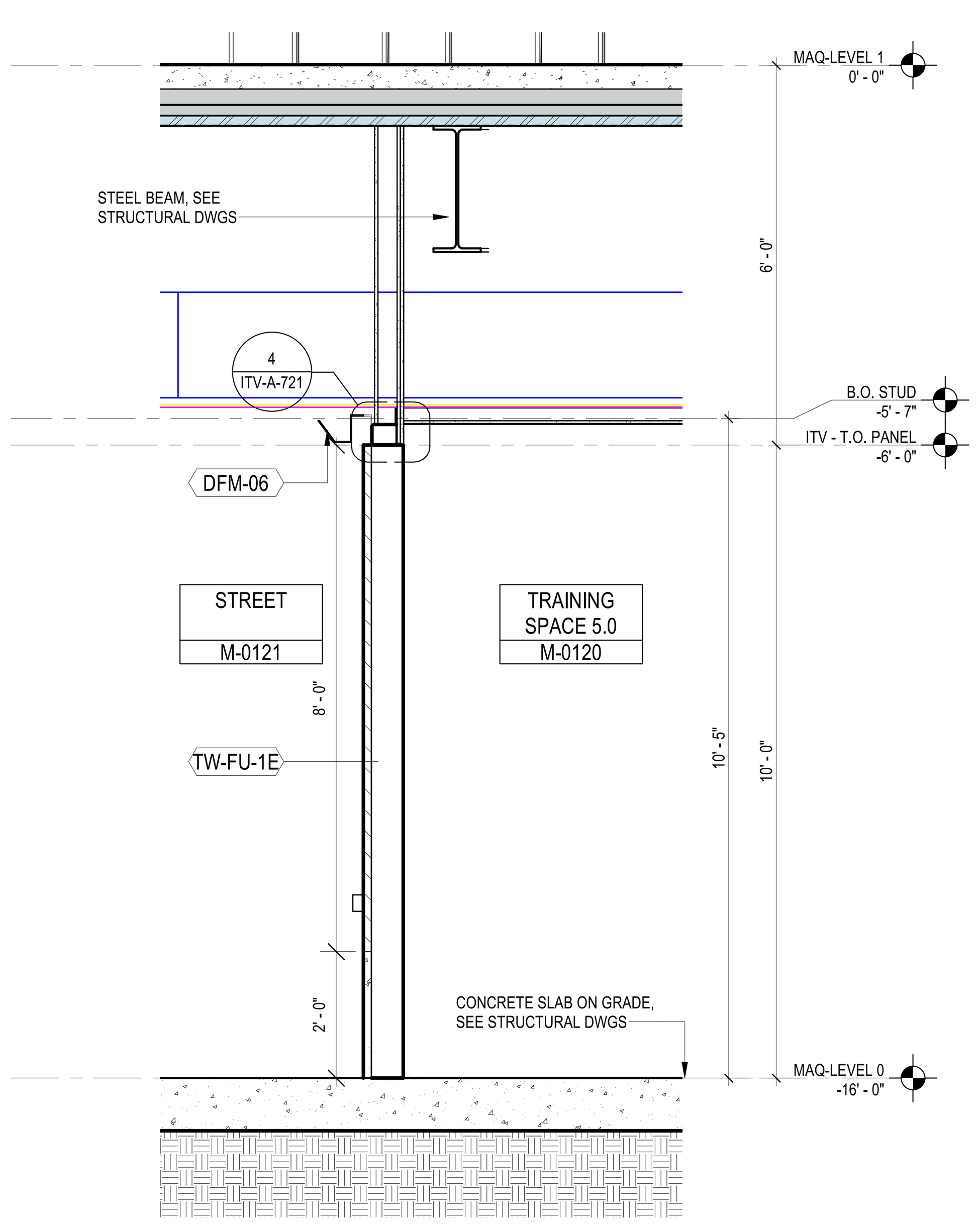
4 DUCT SOFFIT - SECTION
SCALE: 1/2" = 1'-0"



2 WALL SECTION - BUILDING 4
SCALE: 1/2" = 1'-0"



3 DUCT SOFFIT - FRONT
SCALE: 1/2" = 1'-0"



1 WALL SECTION - BUILDING 5
SCALE: 1/2" = 1'-0"

KEYNOTES

DFM-06	057500 FAUX METAL GUTTER PT-21
DFM-07	057500 COLUMN ENCLOSURE PT-39
PFI-1C	066000 FAUX BRICK FINISH 1C
TRN-03	119030 SIMULATED TREE

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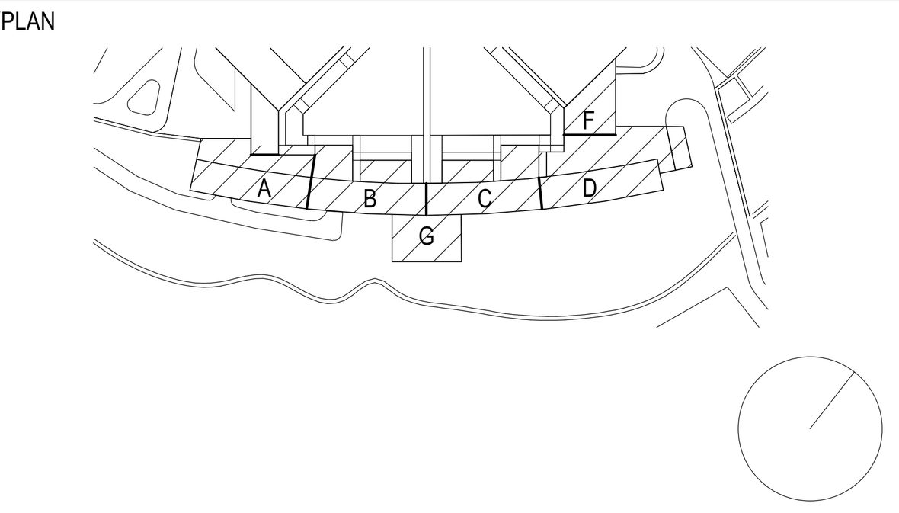
KEYPLAN



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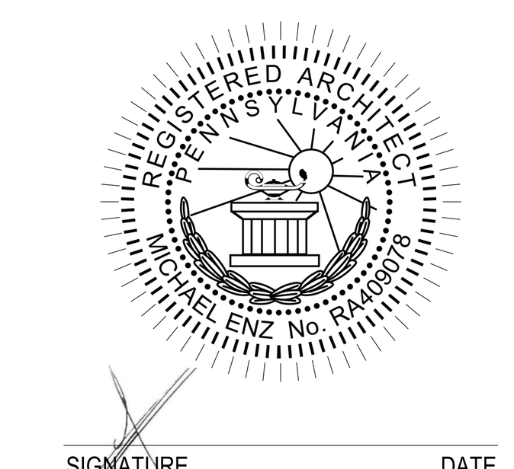

SIGNATURE DATE

ARCHITECT
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Pennsylvania State Police Academy
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HERSHEY, DAUPHIN COUNTY, PA

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0 1
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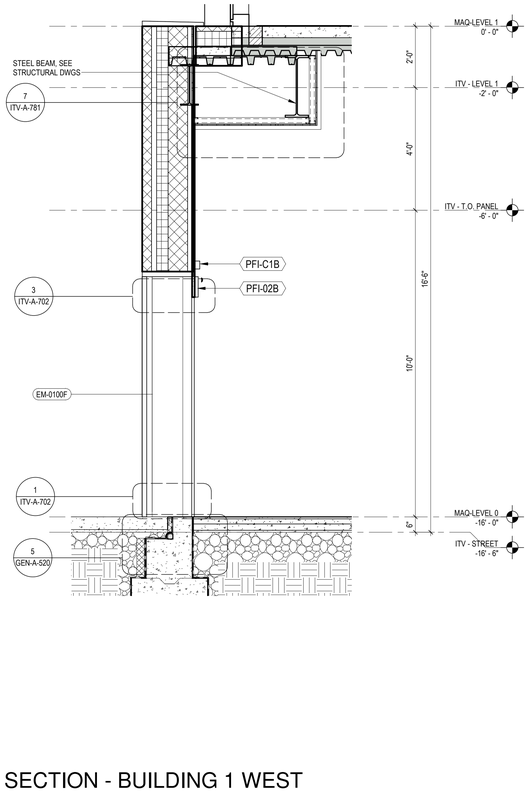
WALL SECTIONS

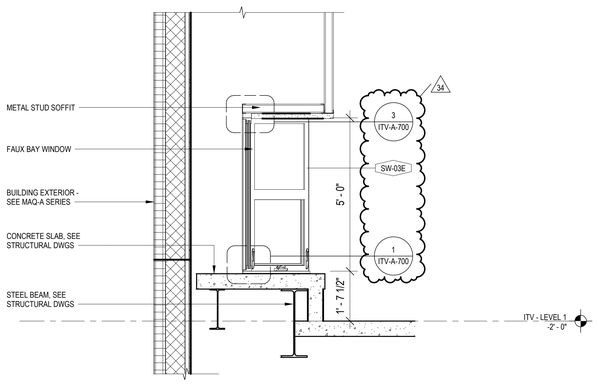
SHEET No.
ITV-A-652

DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



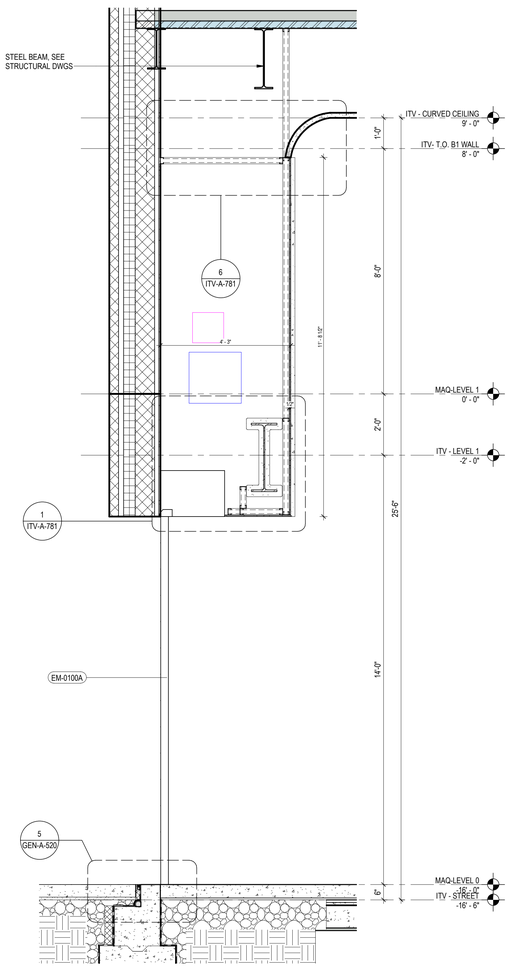
4 WALL SECTION - BUILDING 1 WEST

SCALE: 1/2" = 1'-0" 0 1'-0" 2'-0" 4'-0" 8'-0"



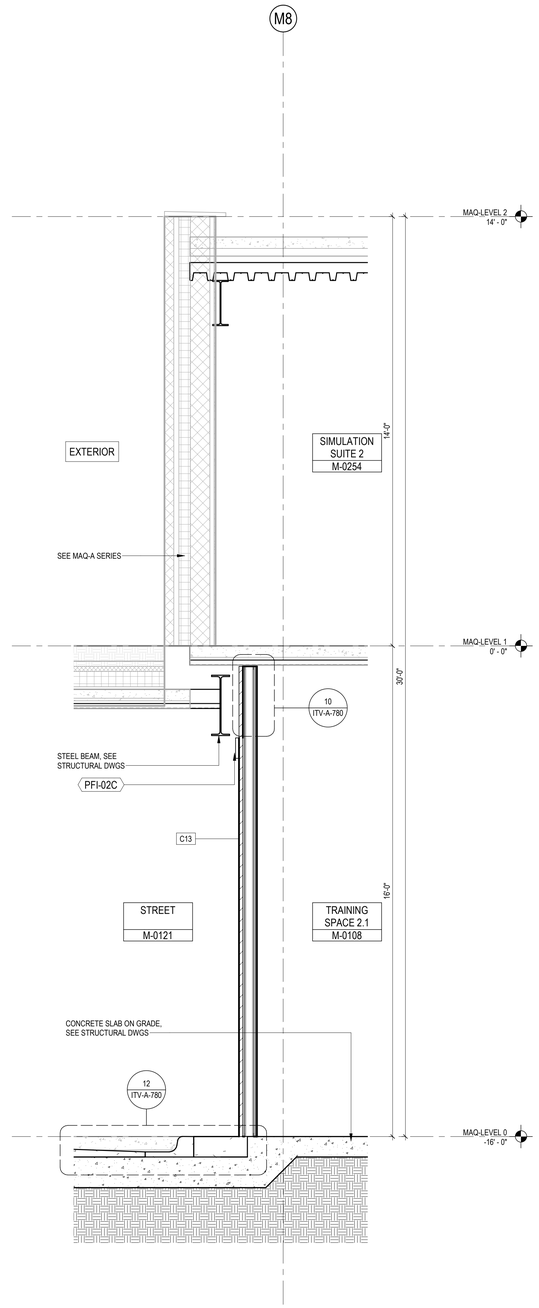
3 WALL SECTION - FAUX BAY WINDOW

SCALE: 1/2" = 1'-0" 0 1'-0" 2'-0" 4'-0" 8'-0"



2 WALL SECTION - BUILDING 1 WEST

SCALE: 1/2" = 1'-0" 0 1'-0" 2'-0" 4'-0" 8'-0"



1 WALL SECTION - BUILDING 2

SCALE: 1/2" = 1'-0" 0 1'-0" 2'-0" 4'-0" 8'-0"

KEYNOTES

PFI-02B	066000 FAUX BRICK SOLDIER TRIM 1B
PFI-02C	066000 FAUX BRICK SOLDIER TRIM 1C

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Tactical Design North, Inc.
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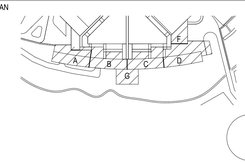
KEYPLAN



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LICENSE NO. RA-000000

SIGNATURE DATE

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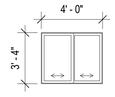
WALL SECTIONS

SHEET No. ITV-A-653

DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED

WINDOW SCHEDULE				
TYPE	DESCRIPTION	SILL HEIGHT	HEIGHT	WIDTH
SW-01	TRANSACTION WINDOW	2' - 10"	3' - 4"	4' - 0"
SW-03A	CASEMENT WINDOW	3' - 0"	4' - 0"	3' - 0"
SW-03B	CASEMENT WINDOW	VARIES, SEE ELEVATIONS	5' - 0"	3' - 0"
SW-03C	CASEMENT WINDOW	VARIES, SEE ELEVATIONS	4' - 0"	4' - 0"
SW-03E	BAY VINYL WINDOW	1' - 7 1/2"	5' - 0"	8' - 5"
SW-03H	FIXED WINDOW	5' - 2 1/2"	2' - 0"	2' - 0"

34

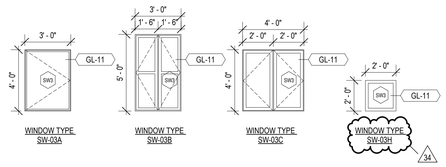


WINDOW TYPE SW-01

DETAIL	SHEET	DETAIL NO.
HEAD	ITV-A-700	7
SILL	ITV-A-700	5
JAMB	ITV-A-700	6

34

DETAIL	SHEET	DETAIL NO.
HEAD	ITV-A-701	3
SILL	ITV-A-701	1
JAMB	ITV-A-701	2



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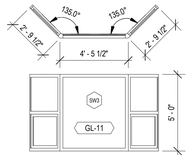
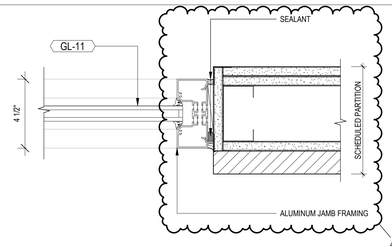


DETAIL	SHEET	DETAIL NO.
HEAD	ITV-A-700	3
SILL	ITV-A-700	1
JAMB	ITV-A-700	2

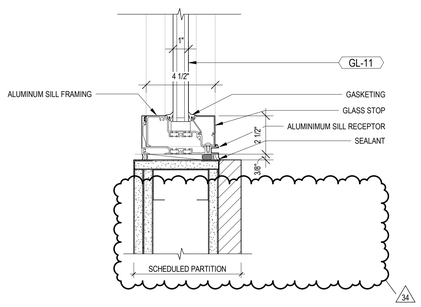
34

WINDOW TYPES
SCALE: 1/4" = 1'-0"



34

11 VP06 JAMB DETAIL
SCALE: 3" = 1'-0"



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10 VP06 SILL DETAIL
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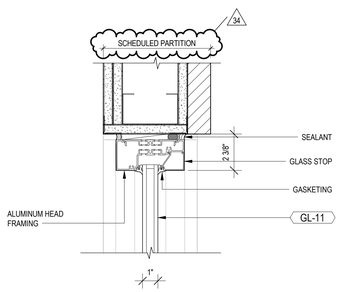

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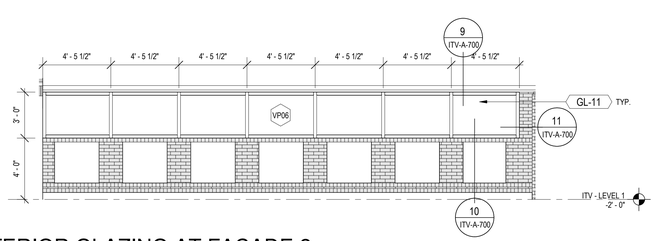
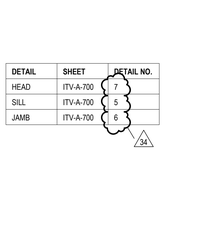
9 VP06 HEAD DETAIL
SCALE: 3" = 1'-0"

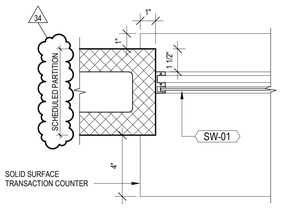


8 VP06A - INTERIOR GLAZING AT FACADE 2
SCALE: 1/4" = 1'-0"



34

7 HEAD OF SW-01 TRANS. WINDOW
SCALE: 3" = 1'-0"



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6 JAMB OF SW-01 TRANS. WINDOW
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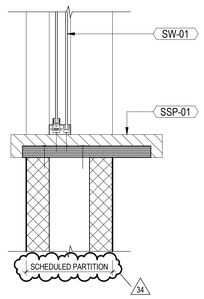

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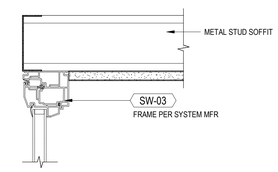

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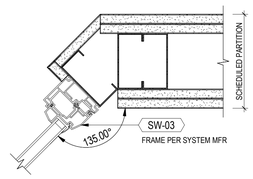
3 HEAD OF SW-03E WINDOW
SCALE: 3" = 1'-0"



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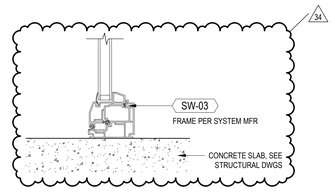
2 JAMB OF SW-03E WINDOW
SCALE: 3" = 1'-0"



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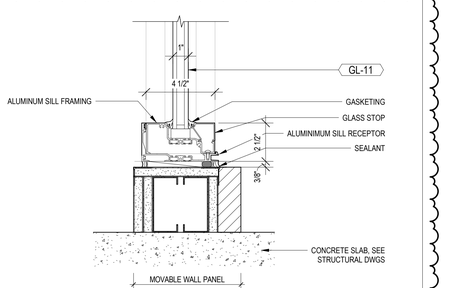
1 SILL OF SW-03E WINDOW
SCALE: 3" = 1'-0"



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4 VP06 SILL DETAIL - MOVABLE PANEL
SCALE: 3" = 1'-0"

KEYNOTES

GL-11	088856 IMPACT RESISTANT GLASS
SSP-01	064000 SOLID SURFACE - WHITE
SW-01	085600 HORIZONTAL SLIDING SERVICE WINDOW
SW-03	085602 VINYL IMPACT RESISTANT WINDOWS

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

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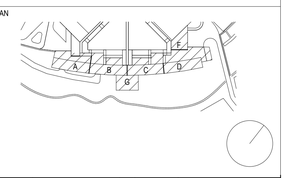
POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
34	21 JUL 2023	ADDENDUM #34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

REGISTERED ARCHITECT COMMONWEALTH OF PENNSYLVANIA
SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1

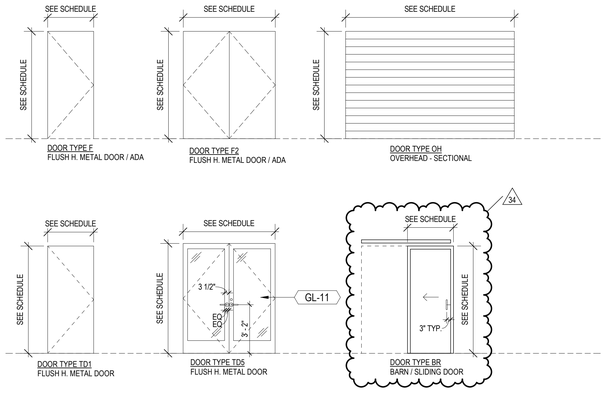
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

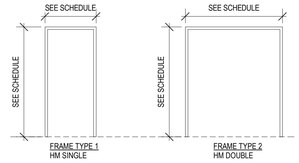
WINDOW TYPES & DETAILS

SHEET No. ITV-A-700

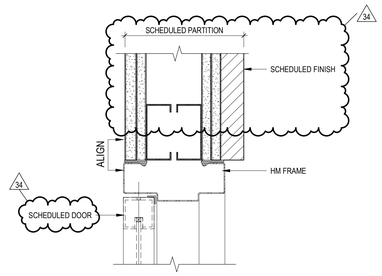
DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



DOOR TYPES
NTS



FRAME TYPES
NTS



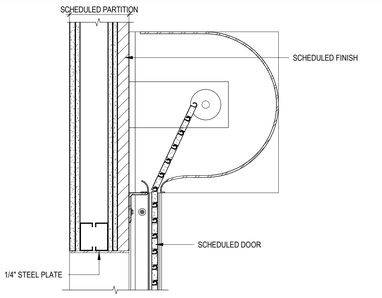
HT1 TYPICAL HM DOOR HEAD
SCALE: 3" = 1'-0"

DOOR SCHEDULE - NUMBER

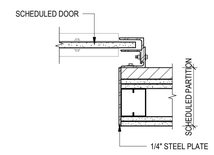
NUMBER	ROOM NAME	DOOR TYPE	DOOR WIDTH	DOOR HEIGHT	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	DETAIL JAMB	DETAIL HEAD	DETAIL SILL	FIRE RATING	ACOUSTIC	SECURITY	HARDWARE	COMMENTS
M-0102	TRAINING SPACE 1.0	BR	3' - 0"	7' - 0"	STL	PT-03	-	-	-	JT2	HT2	ST2	-			BO	
M-0103	TRAINING STAIR IB	F	3' - 0"	7' - 0"	HM	PT-03	1	HM	PT-03	JT1	HT1	ST1	90 MIN			DT-06	
M-0104A	TRAINING SPACE 1.1	BR	3' - 0"	7' - 0"	STL	PT-03	-	-	-	JT2	HT2	ST2	-			BO	
M-0104B	TRAINING SPACE 1.1	BR	3' - 0"	7' - 0"	STL	PT-03	-	-	-	JT2	HT2	ST2	-			BO	
M-0109A	MOCK TROOP S LOBBY	F2	6' - 0"	7' - 0"	HM	PT-03	2	HM	PT-03	JT1	HT1	ST1	-			01	
M-0109B	MOCK TROOP S LOBBY	F2	6' - 0"	7' - 0"	HM	PT-03	2	HM	PT-03	JT1	HT1	ST1	-			01	
M-0111	RESTROOM	F	3' - 0"	7' - 0"	HM	PT-03	1	HM	PT-03	J10/GEN-A-723	H11/GEN-A-722	S6/GEN-A-721	-			02A	
M-0114	TELECOM ROOM	F	3' - 0"	7' - 0"	HM	PT-03	1	HM	PT-03	J10/GEN-A-723	H11/GEN-A-722	S6/GEN-A-721	-			SEC 05	
M-0115	CLOSET	F	3' - 0"	7' - 0"	HM	PT-03	1	HM	PT-03	J10/GEN-A-723	H11/GEN-A-722	S6/GEN-A-721	90 MIN			05	
M-0116A	STAIR ID	F	3' - 0"	7' - 0"	HM	PT-03	1	HM	PT-03	J10/GEN-A-723	H11/GEN-A-722	S6/GEN-A-721	90 MIN			02	
M-0117	ELEVATOR ROOM	F	3' - 0"	7' - 0"	HM	PT-03	1	HM	PT-03	J10/GEN-A-723	H11/GEN-A-722	S6/GEN-A-721	-			05	
M-0127	ELEC CLOSET	F	3' - 0"	7' - 0"	HM	PT-03	1	HM	PT-03	J10/GEN-A-723	H11/GEN-A-722	S6/GEN-A-721	90 MIN			SEC 05	
M-0251	TRAINING STAIR IB	F	3' - 0"	7' - 0"	HM	PT-03	1	HM	PT-03	J10/GEN-A-723	H11/GEN-A-722	S6/GEN-A-721	90 MIN			DT-06	
M-0253	WAITING AREA	F	3' - 0"	7' - 0"	HM	PT-03	1	HM	PT-03	JT1	HT1	ST1	-			02	
M-0254	SIMULATION SUITE 2	F	3' - 0"	7' - 0"	HM	PT-03	1	HM	PT-03	JT1	HT1	ST1	-			02	
M-0255	SIMULATION SUITE 1	F	3' - 0"	7' - 0"	HM	PT-03	1	HM	PT-03	JT1	HT1	ST1	-			02	
M-0257	TRAINING SPACE 4.1	F	3' - 0"	7' - 0"	HM	PT-03	1	HM	PT-03	J10/GEN-A-723	H11/GEN-A-722	S6/GEN-A-721	90 MIN			DT-06	

DOOR SCHEDULE - TYPE

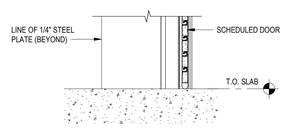
TYPE	LOCATION	DOOR TYPE	DOOR WIDTH	DOOR HEIGHT	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	DETAIL JAMB	DETAIL HEAD	DETAIL SILL	FIRE RATING	ACOUSTIC	SECURITY	HARDWARE	COMMENTS
OHD-08	BLDG 4	OH	25' - 0"	11' - 6"	ST	PT-03	-	ST	PT-03	JT3	HT3	ST3	-			BO	
OHD-09	BLDG 3	OH	18' - 0"	7' - 0"	ST	PT-03	-	ST	PT-03	JT3	HT3	ST3	-			BO	
TD1	BLDG 1, 2, 3, 4 & PANEL	TD1	3' - 0"	7' - 0"	HM	PT-03	1	HM	PT-03	JT1	HT1	ST2	-			02T	
TD5	PANEL	TD5	6' - 0"	7' - 0"	HM	PT-03	2	HM	PT-03	JT1	HT1	ST2	-			01T	



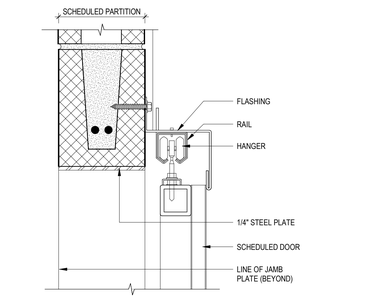
HT3 OH DOOR HEAD
SCALE: 1 1/2" = 1'-0"



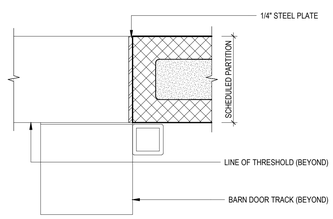
JT3 OH DOOR JAMB
SCALE: 1 1/2" = 1'-0"



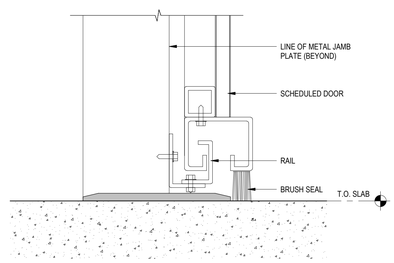
ST3 OH DOOR SILL
SCALE: 1 1/2" = 1'-0"



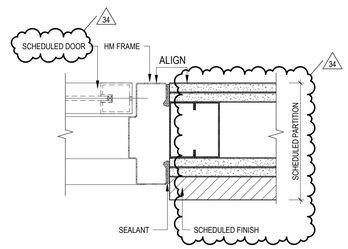
HT2 BR DOOR HEAD
SCALE: 3" = 1'-0"



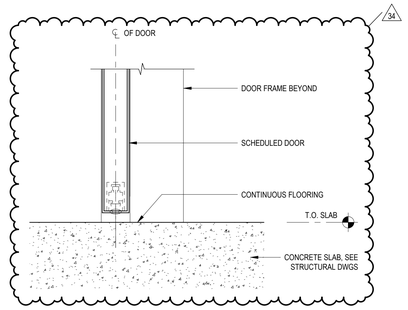
JT2 BR DOOR JAMB
SCALE: 3" = 1'-0"



ST2 BR DOOR SILL
SCALE: 3" = 1'-0"



JT1 TYPICAL HM DOOR JAMB
SCALE: 3" = 1'-0"



ST1 TYPICAL HM DOOR SILL
SCALE: 3" = 1'-0"

KEYNOTES

GL-11	088856 IMPACT RESISTANT GLASS

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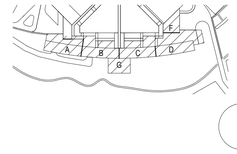
KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
34	21 JUL 2023	ADDENDUM #34			
32	14 JUL 2023	ADDENDUM #32			
1	19 MAY 2023	ISSUED FOR BID			

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REGISTERED ARCHITECT
COMMONWEALTH OF PENNSYLVANIA
ENGINEER
SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

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DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
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Core Buildings, BESO & Sitework
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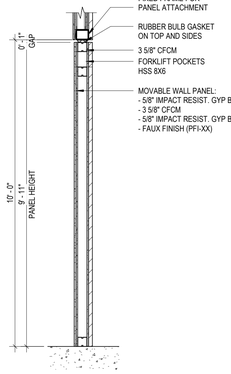
DOOR TYPES & DETAILS

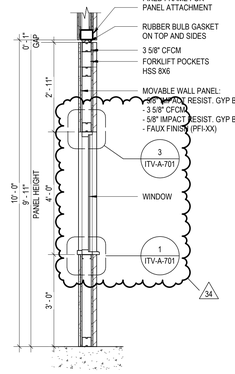
SHEET No. ITV-A-702

DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



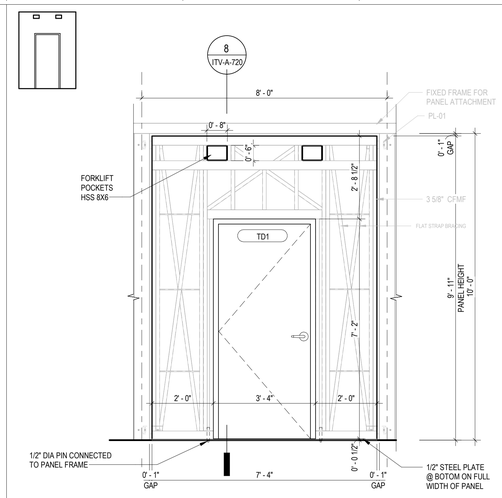
11 SECTION - FULL PANEL

SCALE: 1/2" = 1'-0"



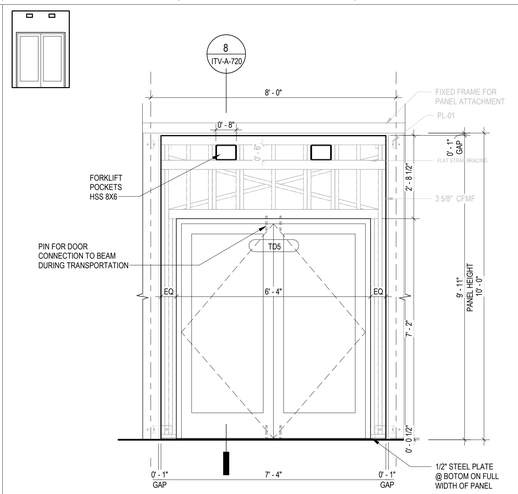
9 SECTION - WINDOW PANEL

SCALE: 1/2" = 1'-0"



6 TW-SD - SINGLE DOOR

SCALE: 1/2" = 1'-0"



3 TW-DD - DOUBLE DOOR

SCALE: 1/2" = 1'-0"

PANEL LEGEND

TACTICAL WALL PANEL TAG

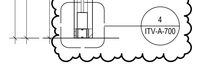
TW-XX-XX
- PANEL FINISH
- PANEL TYPE
- MOVABLE PANEL

FINISH TYPES - (PFI)

1A	STL BRICK - WEATHERED ORANGE	
1B	USED BRICK - WHITE	
1C	CLEAN BRICK - HISTORIC RED	
1D	CLEAN BRICK - TAN	
1E	SIDDING - PAINT - SEA SERPENT	
1F	STONE - TUSCANY - SLATE GREY	
1J	STUCCO CLAD - PAINT - SEA SERPENT	

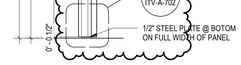
PANEL TYPES

FU	FULL PANEL	SW	SINGLE WINDOW PANEL
DW	DOUBLE WINDOW PANEL	SD	SINGLE DOOR PANEL
DD	DOUBLE DOOR PANEL	WD	WINDOW AND DOOR PANEL
SF	STOREFRONT PANEL		



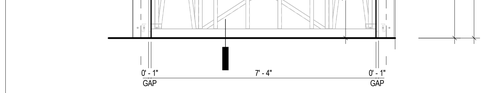
10 SECTION - STOREFRONT PANEL

SCALE: 1/2" = 1'-0"



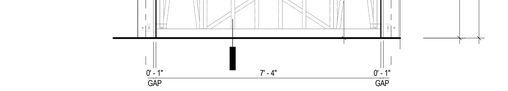
8 SECTION - DOOR PANEL

SCALE: 1/2" = 1'-0"



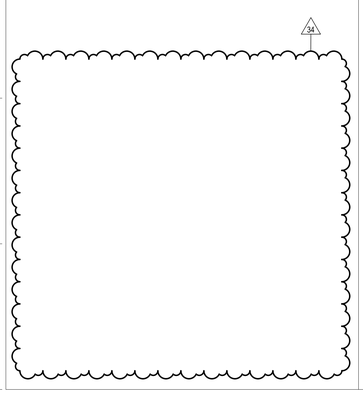
5 TW-SW - SINGLE WINDOW

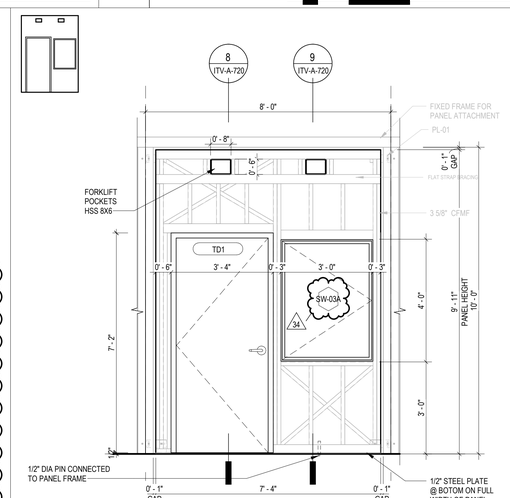
SCALE: 1/2" = 1'-0"



2 TW-DW - DOUBLE WINDOW

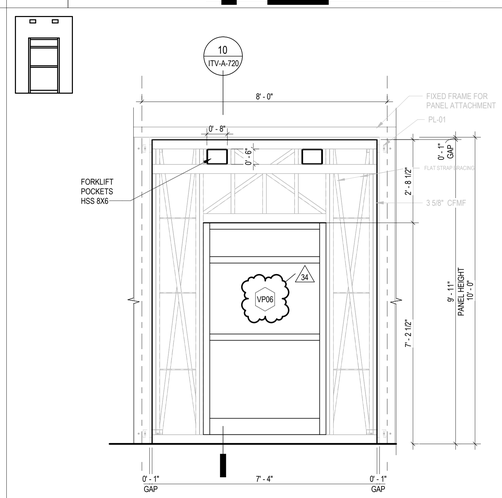
SCALE: 1/2" = 1'-0"





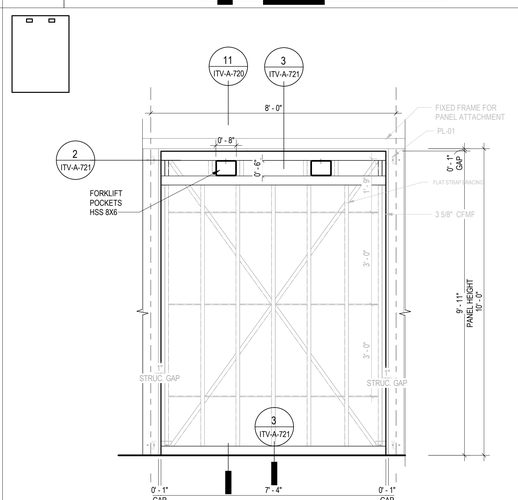
7 TW-WD - WINDOW AND DOOR

SCALE: 1/2" = 1'-0"



4 TW-SF - STOREFRONT

SCALE: 1/2" = 1'-0"



1 TW-FU - FULL PANEL

SCALE: 1/2" = 1'-0"

TACTICAL PANEL SCHEDULE

TYPE	QTY	DESCRIPTION	FINISH
1A			
TW-DD-1A	2	DOUBLE DOOR PANEL	1A
TW-FU-1A	4	FULL PANEL	1A
TW-SD-1A	2	SINGLE DOOR PANEL	1A
TW-SF-1A	4	STOREFRONT PANEL	1A
1B			
TW-DD-1B	1	DOUBLE DOOR PANEL	1B
TW-SF-1B	1	STOREFRONT PANEL	1B
1C			
TW-DD-1C	5	DOUBLE DOOR PANEL	1C
TW-DW-1C	3	DOUBLE WINDOW PANEL	1C
TW-FU-1C	1	FULL PANEL	1C
TW-SD-1C	1	SINGLE DOOR PANEL	1C
TW-SF-1C	6	STOREFRONT PANEL	1C
TW-WD-1C	1	WINDOW & DOOR PANEL	1C
1D			
TW-DD-1D	3	DOUBLE DOOR PANEL	1D
TW-DW-1D	1	DOUBLE WINDOW PANEL	1D
TW-FU-1D	2	FULL PANEL	1D
TW-SD-1D	1	SINGLE DOOR PANEL	1D
TW-SF-1D	4	STOREFRONT PANEL	1D
1E			
TW-FU-1E	2	FULL PANEL	1E
TW-SD-1E	2	SINGLE DOOR PANEL	1E
TW-SW-1E	4	SINGLE WINDOW PANEL	1E

VERIFY SCALE

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TACTICAL TRAINING DESIGN

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231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
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POOL DESIGN

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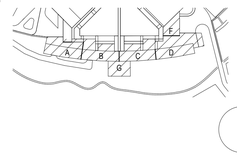
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
34	21 JUL 2023	ADDENDUM #34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

REGISTERED ARCHITECT — COMMONWEALTH OF PENNSYLVANIA — ENCL. No.

SIGNATURE DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

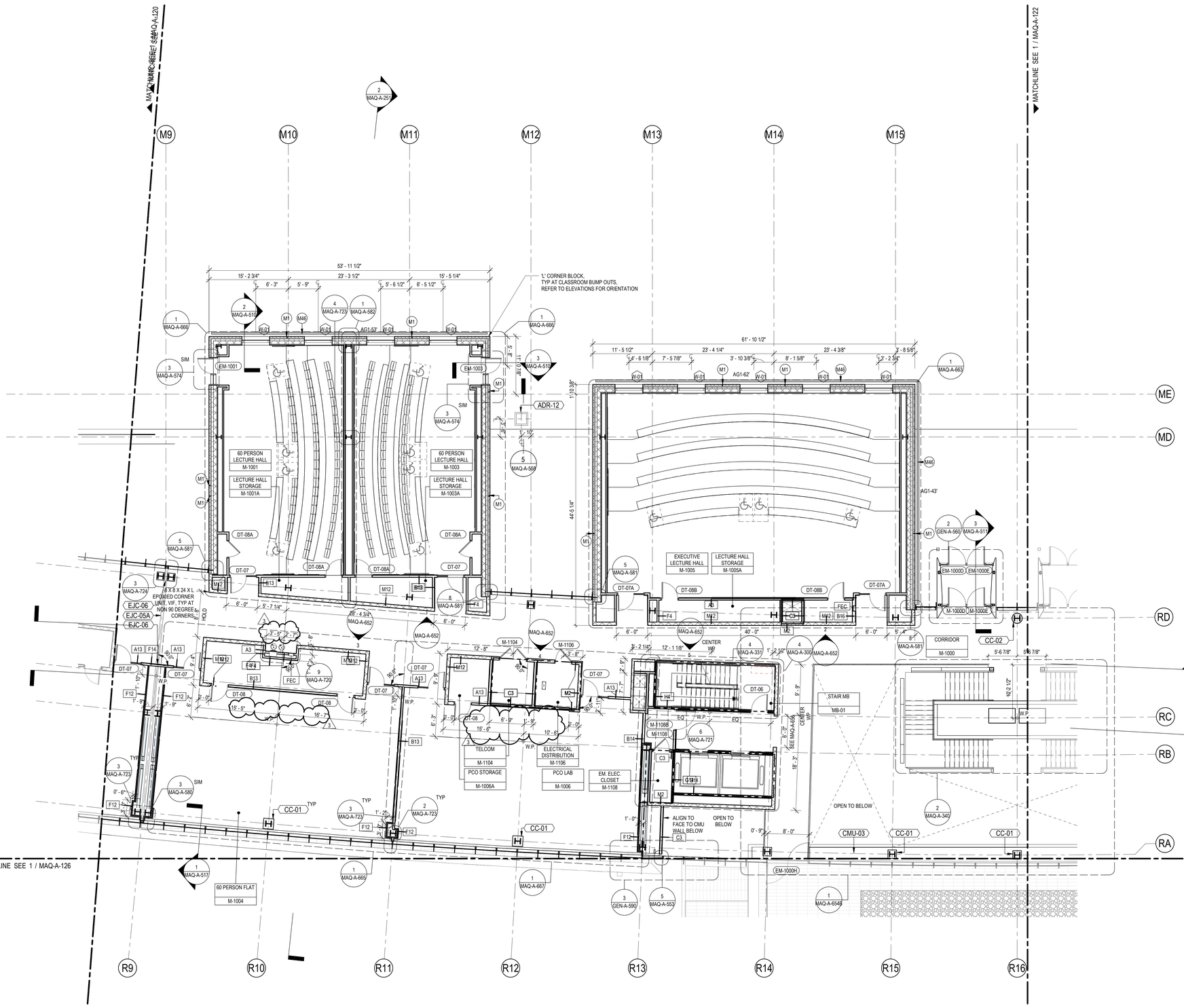
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

EXTERIOR MOVEABLE WALL TYPES

SHEET No. ITV-A-720

DRAWN BY	CHECKED BY	DATE	SCALE
TDN	TDN	MAY 2023	AS NOTED



1 FLOOR PART PLAN - LEVEL 1B

SCALE: 1/8" = 1'-0"

LEGEND

FIRE RATINGS

- 1/2 HOUR FIRE RATING
- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING
- SCOPE REFERENCE HATCH
- MILLWORK
- B.P. BUILDING BASE POINT
- W.P. WORK POINT
- XX DRAWING NOTE
- XX PARTITION TYPE
- INDICATES COLD-FORMED METAL FRAMING

GENERAL NOTES

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20. INTERIOR LAYOUT DIMENSIONS ARE SHOWN TO FINISHED FACE OF GWB U.O.N
21. PROVIDE SUPPLEMENTAL FRAMING, BLOCKING AND BRACING WHERE REQUIRED FOR WALL MOUNTED FIXTURES AND EQUIPMENT AT GWB WALL.

HATCHES

- PAVERS
- RIVER ROCK

DRAWING NOTES

M1	3/8" CMU CONTROL JOINT
M46	EXTERIOR IN GROUND LIGHTING, SEE E SERIES

KEYNOTES

ADR-12	083100 EXTERIOR FLOOR ACCESS DOOR
CC-01	057000 RECTANGULAR METAL COLUMN COVER
CC-02	057000 CIRCULAR METAL COLUMN COVER
CMU-03	042000 CONCRETE MASONRY UNIT, 8" X 24" X 4" GROUND FACE
EJC-05A	079513 EXPANSION JOINT COVER FLOOR INTERIOR - 2 HOUR RATED
EJC-06	079513 EXPANSION JOINT COVER WALL INTERIOR

VERIFY SCALE

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0 — 1

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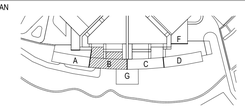
KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
3	21 JULY 2023	ADDENDUM 34			
2	19 MAY 2023	ISSUED FOR BID			
1	18 FEB 2022	ISSUED TO L&I			

RECORD REVISIONS

SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

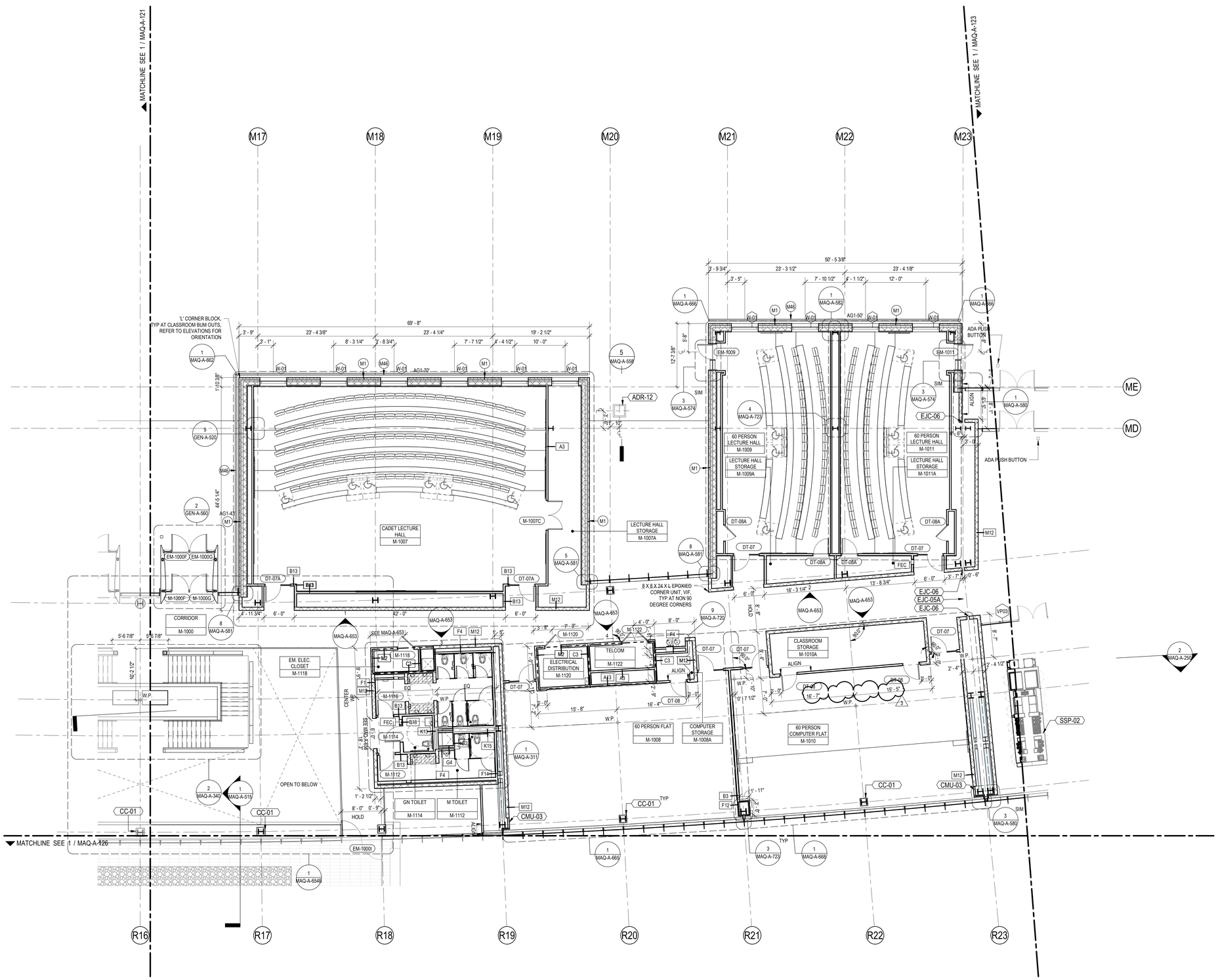
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

FLOOR PART PLAN B - LEVEL 1

SHEET No.
MAQ-A-121

DRAWN BY	CHECKED BY	DATE	SCALE
LS	TNB	SEPT 2022	AS NOTED



1 FLOOR PART PLAN - LEVEL 1C

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

LEGEND

FIRE RATINGS

- 1/2 HOUR FIRE RATING
- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING

SCOPE REFERENCE HATCH

MILLWORK

B.P. BUILDING BASE POINT

W.P. WORK POINT

XX DRAWING NOTE

XX PARTITION TYPE

XX INDICATES COLD-FORMED METAL FRAMING

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HATCHES

- PAVERS
- RIVER ROCK

DRAWING NOTES

M1	3/8" CMU CONTROL JOINT
M46	EXTERIOR IN GROUND LIGHTING, SEE E SERIES

KEYNOTES

ADR-12	083100 EXTERIOR FLOOR ACCESS DOOR
CC-01	057000 RECTANGULAR METAL COLUMN COVER
CMU-03	042000 CONCRETE MASONRY UNIT, 8" X 24" X 4" GROUND FACE
EJC-05A	079513 EXPANSION JOINT COVER FLOOR INTERIOR - 2 HOUR RATED
EJC-06	079513 EXPANSION JOINT COVER WALL INTERIOR
SSP-02	064000 SOLID SURFACE - DARK GRAY

VERIFY SCALE

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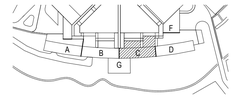
KEYPLAN



NO.	DATE	DESCRIPTION
3	21 JULY 2023	ADDENDUM 34
2	19 MAY 2023	ISSUED FOR BID
1	19 FEB 2022	ISSUED TO L&I

RECORD REVISIONS

SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

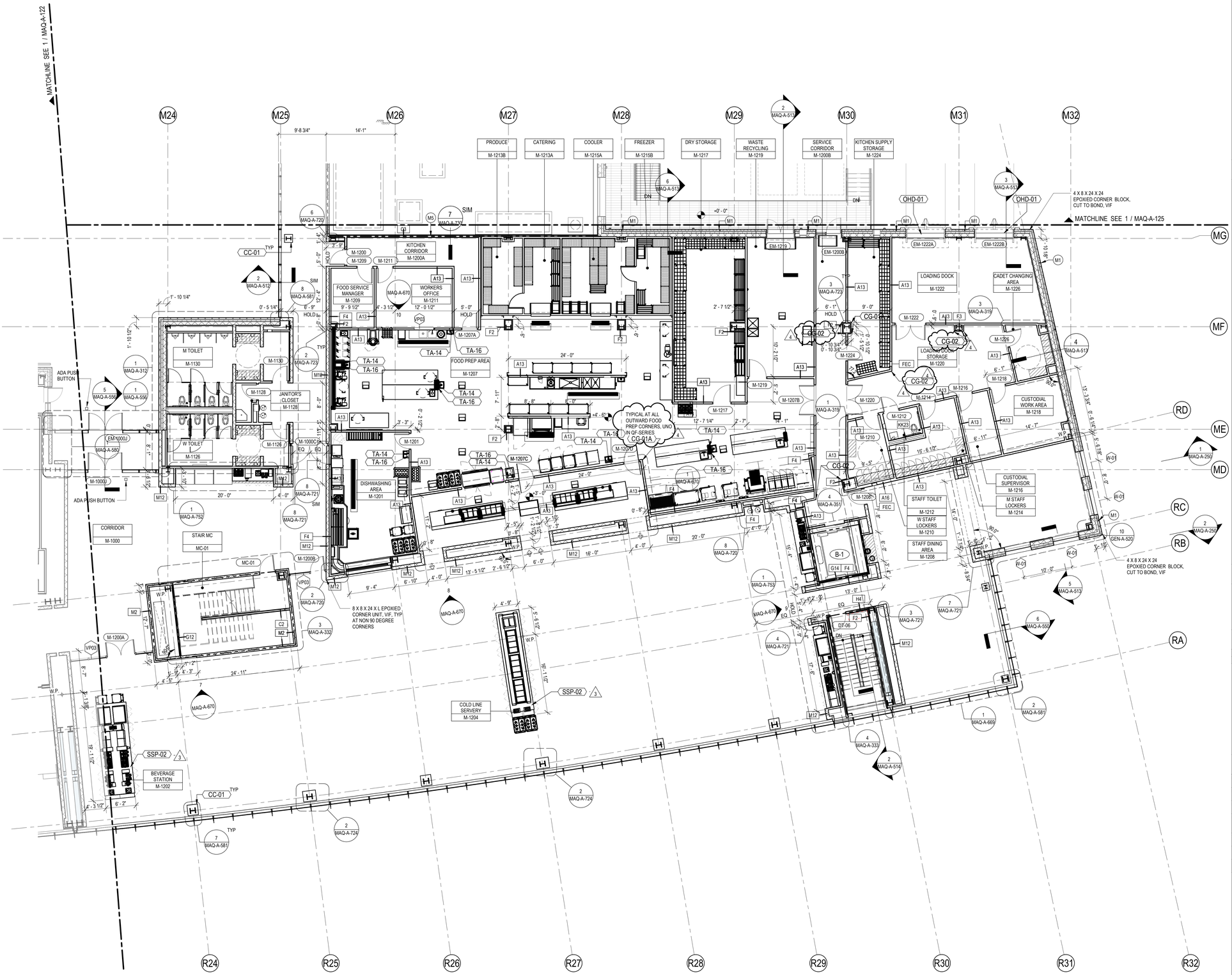
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

FLOOR PART PLAN C - LEVEL 1

SHEET No. MAQ-A-122

DRAWN BY	CHECKED BY	DATE	SCALE
LS	TNB	SEPT 2022	AS NOTED



1 FLOOR PART PLAN - LEVEL 1D

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

LEGEND

FIRE RATINGS

- 1/2 HOUR FIRE RATING
- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING

SCOPE REFERENCE HATCH

MILLWORK

B.P. BUILDING BASE POINT

W.P. WORK POINT

XX DRAWING NOTE

XX PARTITION TYPE

INDICATES COLD-FORMED METAL FRAMING

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HATCHES

- PAVERS
- RIVER ROCK

DRAWING NOTES

M1	3/8" CMU CONTROL JOINT
M5	6" CONCRETE CURB

KEYNOTES

CC-01	057000 RECTANGULAR METAL COLUMN COVER
CG-01A	102600 CORNER GUARD - SS WITH CONCEELED
CG-02	102600 CORNER GUARD - SS WITH EXPOSED
OHD-01	083300 OVERHEAD COILING LOADING DOCK DOORS
SSP-02	064000 SOLID SURFACE - DARK GRAY
TA-14	102813 WALL MOUNTED SOAP DISPENSER
TA-16	102813 PAPER TOWEL HOLDER

VERIFY SCALE

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1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER
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POOL DESIGN
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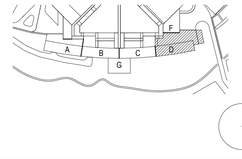
KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
4	21 JULY 2023	ADDENDUM 34			
3	23 JUNE 2023	ADDENDUM 28			
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1	18 FEB 2022	ISSUED TO L&I			

RECORD REVISIONS

SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

FLOOR PART PLAN D - LEVEL 1

SHEET No. MAQ-A-123

DRAWN BY	CHECKED BY	DATE	SCALE
LS	TNB	SEPT 2022	AS NOTED

1 REFLECTED CEILING PART PLAN C - LEVEL 0

SCALE: 1/8" = 1'-0"

DRAWING NOTES

M17	BOTTOM OF LIGHTS AT 9'-0" AFF
M22	REFERENCE LINE FOR EDGE OF LIGHTING
M45	LINEAR DIFFUSERS, SEE MECHANICAL DRAWINGS

KEYNOTES

ADR-03	083100 ACCESS DOORS
PT-01	099100 PAINT FINISH, WHITE
WTR-01	122100 WINDOW SHADE, LIGHT GRAY
WV-01	064000 WOOD VENEER

LEGEND

- SCOPE REFERENCE HATCH
- DRAWING NOTE
- CEILING MOUNTED DEVICES
- WALL MOUNTED DEVICES
- CONCEAL PENDANT SPRINKLER
- PENDANT SPRINKLER
- UPRIGHT SPRINKLER
- SIDE WALL SPRINKLER
- LINEAR DIFFUSER
- DIFFUSER
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- ACCESS PANEL
- LIGHT FIXTURE
- LIGHT FIXTURE
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- PROJECTOR SCREEN
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- SMOKE DETECTOR
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- WAP ABOVE CEILING
- WAP BELOW CEILING
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- WALL CLOCK

GENERAL NOTES

1. REFER TO SHEET GEN-G-104 FOR MATERIAL CODES LIST & SPEC SECTION REFERENCES
2. REFER TO LS SERIES CODE ANALYSIS PLANS FOR REQUIRED WALL FIRE RATINGS.
3. REFER TO 500 SERIES FOR EXTERIOR ENCLOSURE INFORMATION
4. RCPS ARE CUT 6' - 0" AFF TYP.
5. ALL CEILING HEIGHTS ARE AS INDICATED ON RCP
6. ALL DIFFUSERS, REGISTERS AND GRILLES ARE BY THE .2 HVAC CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY.
7. ALL PLUMBING FIXTURES, SPRINKLERS, FHCS, AND STANDPIPES AND RELATED EQUIPMENT ARE BY THE .3 PLUMBING CONTRACTOR AND ARE SHOWN FOR LOCATION AND COORDINATION ONLY.
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11. ALL FIXTURES LOCATED WITHIN ACT TILE TO BE CENTERED WITHIN TILE.
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14. ALL EXPOSED CEILINGS IN BOH AND MEP SPACES TO BE PAINTED ONLY.
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CEILING HATCHES

- EXPOSED CEILING U.O.N.
- GYPSUM CEILING (092116)
- ACOUSTIC CEILING TILES (095100)
- WOOD CEILING (064000)
- SPRAY ACOUSTICAL TREATMENT (092100)

VERIFY SCALE

BAR IS ONE (1) INCH LONG
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0 1
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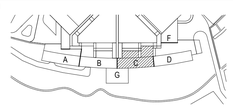

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DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

RCP PART PLAN C - LEVEL 0

SHEET No. MAQ-A-412

DRAWN BY	CHECKED BY	DATE	SCALE
JH	TNB	SEPT 2022	AS NOTED

DRAWING NOTES

M17	BOTTOM OF LIGHTS AT 9'-0" AFF
M22	REFERENCE LINE FOR EDGE OF LIGHTING
M45	LINEAR DIFFUSERS, SEE MECHANICAL DRAWINGS

KEYNOTES

ADR-03	083100 ACCESS DOORS
WTR-01	122100 WINDOW SHADE, LIGHT GRAY

LEGEND

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- XX — CEILING MOUNTED DEVICES
- XX — WALL MOUNTED DEVICES
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0 4'-0" 8'-0" 16'-0" 32'-0"

1 REFLECTED CEILING PART PLAN D - LEVEL 0
SCALE: 1/8" = 1'-0"

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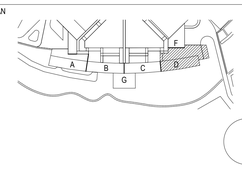

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HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

RCP PART PLAN D - LEVEL 0

SHEET No.
MAQ-A-413

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JH	TNB	SEPT 2022	AS NOTED

DRAWING NOTES

M19	BOTTOM OF LIGHTS AT 8'-0" AFF
M20	BOTTOM OF BAFFLES AT 8'-0" AFF
M21	REFERENCE LINE FOR EDGE OF BAFFLES
M44	DEVICES CENTERED BETWEEN BAFFLES, TYPICAL

KEYNOTES

ABC-01	095100 ACOUSTIC BAFFLE CEILING 2' SPACING
ABC-02	095100 ACOUSTIC BAFFLE CEILING 4' SPACING
ADR-03	083100 ACCESS DOORS
WTR-01	122100 WINDOW SHADE, LIGHT GRAY
WTR-01A	122100 MECHANICAL WINDOW SHADE, LIGHT GRAY

LEGEND

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SCALE: 1/8" = 1'-0"

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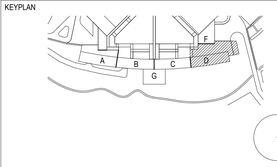

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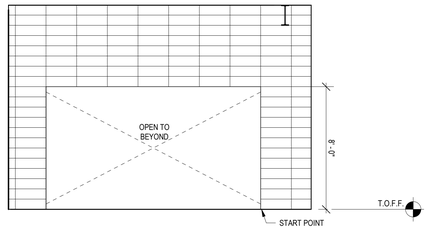
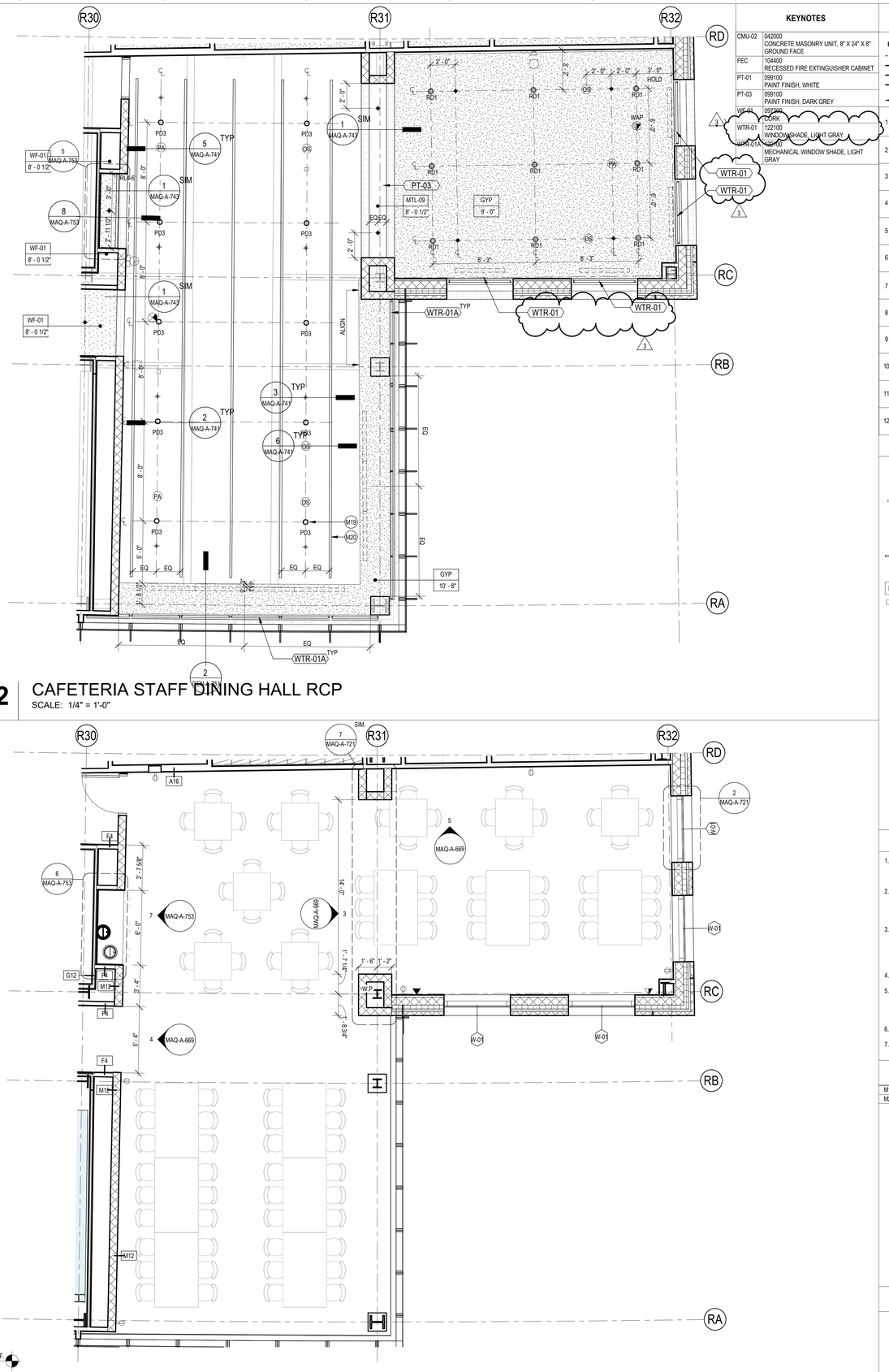
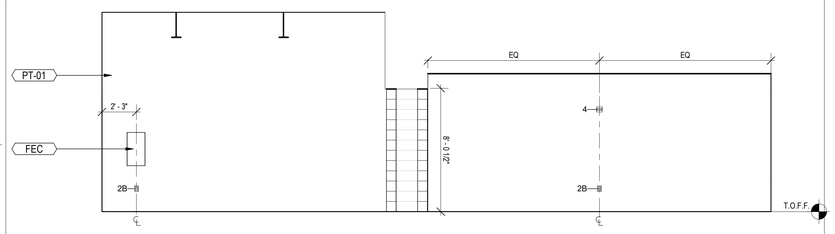


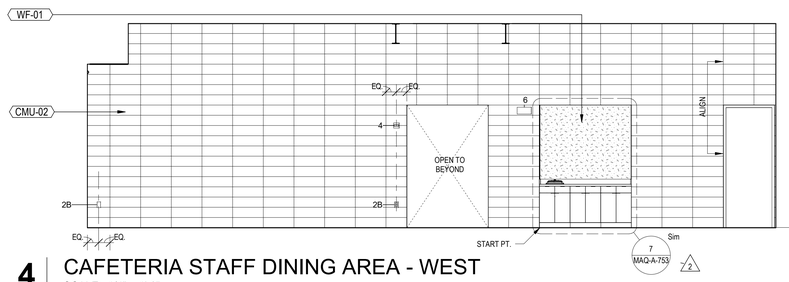
3 CAFETERIA STAFF DINING AREA - EAST
SCALE: 1/4" = 1'-0"



2 CAFETERIA STAFF DINING HALL RCP
SCALE: 1/4" = 1'-0"



5 CAFETERIA STAFF DINING AREA - NORTH
SCALE: 1/4" = 1'-0"



4 CAFETERIA STAFF DINING AREA - WEST
SCALE: 1/4" = 1'-0"

1 CAFETERIA STAFF DINING HALL
SCALE: 1/4" = 1'-0"

0 2'-0" 4'-0" 8'-0" 16'-0"

KEYNOTES

CMU-02	042000 CONCRETE MASONRY UNIT, 8" X 24" X 8" GROUND FACE
FEC	104400 RECESSED FIRE EXTINGUISHER CABINET
PT-01	099100 PAINT FINISH, WHITE
PT-03	099100 PAINT FINISH, DARK GREY
WF-01	097200 DARK
WTR-01	122100 WINDOW SHADE, LIGHT GRAY
WTR-01A	122100 MECHANICAL WINDOW SHADE, LIGHT GRAY

LEGEND

FIRE RATINGS

- 1/2 HOUR FIRE RATING
- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING
- XX DRAWING NOTE

1	SWITCH	SINGLE 1A	DOUBLE 1B	QUAD 1C	CONTROL PANEL 1D
2	ELECTRICAL OUTLET	SINGLE 2A	DUPLEX 2B	QUAD 2C	
3	DATA OUTLET	2 PORT 3A	6 PORT 3B	AV 3C	
4	FIRE ALRAM STROBE	4			
5	THERMOSTAT	5			
6	WALL CLOCK	6			
7	PULL STATION	7			
8	SECURITY CAMERA	8			
9	CARD READER	9			
10	ADA PUSH BOTTON	10			
11	FLOOR BOX	11A	FLUSH FLOOR MOUNTED 11B	DIRTYDOOR MOUNTED 11C	DATA DOOR MOUNTED 11D
12	WAP	12			

RCP LEGEND

- CONCEAL PENDANT SPRINKLER
- PENDANT SPRINKLER
- UPRIGHT SPRINKLER
- SIDE WALL SPRINKLER
- LINEAR DIFFUSER
- DIFFUSER
- EXHAUST
- ACCESS PANEL
- XX1 LIGHT FIXTURE
- XX1 LIGHT FIXTURE
- (P) PROJECTOR
- PROJECTOR SCREEN
- EXIT SIGN
- (S) SPEAKER
- (PA) PAGING SPEAKER
- (M) MICROPHONE
- (S) SMOKE DETECTOR
- FIRE ALARM SPEAKER/STROBE
- FIRE ALARM STROBE
- (OS) OCCUPANCY SENSOR
- (VS) VACANCY
- (DS) DAYLIGHT SENSOR
- (180) SECURITY CAMERA
- WAP WAP ABOVE CEILING
- WAP WAP BELOW CEILING
- WOOD BAFFLE
- WALL CLOCK

GENERAL NOTES

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5. REFERENCE ALSO POWER, COMMUNICATIONS AND FINISH PLANS AND GEN-G-103 FOR STANDARD DEVICE MOUNTING ARRANGEMENTS, ALIGNMENTS AND DIMENSIONAL INFORMATION.
6. ALIGN WALL TILE JOINTS TO FLOOR TILE JOIN LINES.
7. CONFIRM FINIAL TILE JOINT LAYOUT WITH PROFESSIONAL PRIOR TO INSTALLATION.

DRAWING NOTES

M19	BOTTOM OF LIGHTS AT 8'-0" AFF
M20	BOTTOM OF BAFFLES AT 8'-0" AFF

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1

IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER
Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER
Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING
CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER
Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT
Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT
Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

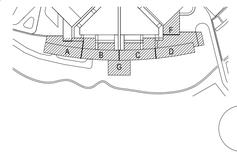
LANDSCAPE
Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING
MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
3	21 JULY 2023	ADDENDUM 34			
2	23 JUNE 2023	ADDENDUM 28			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

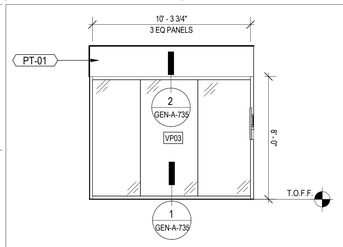
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

ENLARGED PLANS/ RCP AND ELEVATIONS - CAFETERIA

SHEET No.
MAQ-A-669

DRAWN BY	CHECKED BY	DATE	SCALE
SS	TNB	SEPT 2022	AS NOTED



22 ELEV. DIR. COF. NORTH
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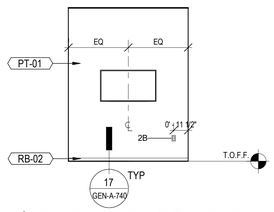

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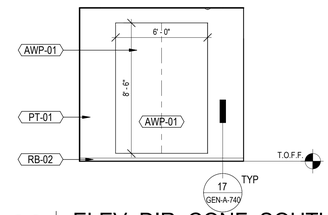

20 ELEV. DIR. CONF. SOUTH
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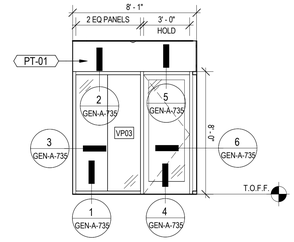

19 ELEV. DIR. CONF. WEST
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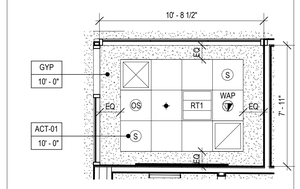
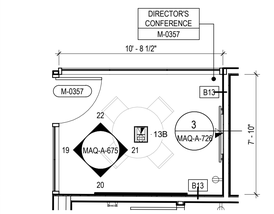


6 RCP - DIR CNF.
SCALE: 1/4" = 1'-0"



5 PLAN - DIR CNF.
SCALE: 1/4" = 1'-0"

LEGEND

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- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING
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5	THERMOSTAT	5			
6	WALL CLOCK	BR-380 6			
7	PULL STATION	7			
8	SECURITY CAMERA	8			
9	CARD READER	9			
10	ADA PUSH BOTTON	10			
11	FLOOR BOX	11A	FLUSH DOOR MOUNTED 11B	SURFACE DOOR MOUNTED 11C	SURFACE DOOR MOUNTED 11D
12	WAP	12			

RCP LEGEND

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- PENDANT SPRINKLER
- UPRIGHT SPRINKLER
- SIDE WALL SPRINKLER
- LINEAR DIFFUSER
- DIFFUSER
- EXHAUST
- ACCESS PANEL
- XX1 LIGHT FIXTURE
- XX1 LIGHT FIXTURE
- P PROJECTOR
- PROJECTOR SCREEN
- EXIT SIGN
- S SPEAKER
- PA PAGING SPEAKER
- M MICROPHONE
- S SMOKE DETECTOR
- FIRE ALARM SPEAKER/STROBE
- FIRE ALARM STROBE
- OS OCCUPANCY SENSOR
- VS VACANCY
- DS DAYLIGHT SENSOR
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DRAWING NOTES

AWP-01	097723	ACOUSTIC WALL PANEL LIGHT GRAY
CMU-01A	042000	CONCRETE MASONRY UNIT 8" X 24" X 8" SPLIT FACE
PLAM-05	064000	PLASTIC LAMINATE, DARK GRAY
PT-01	099100	PAINT FINISH, WHITE
RB-02	096500	RUBBER BASE - 2.5" - GRAY
SSP-02	064000	SOLID SURFACE - DARK GRAY
WF-01	097200	CORK
WTR-01	122100	WINDOW SHADE, LIGHT GRAY

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0 1

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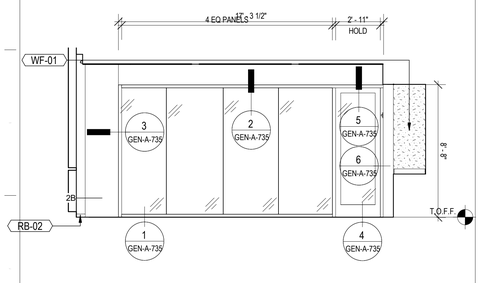
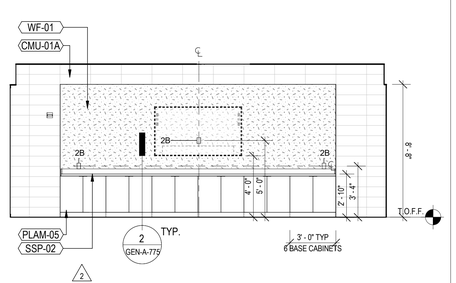
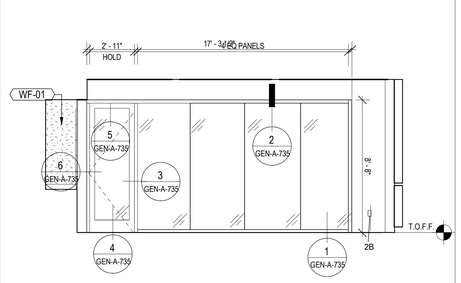
CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.



15 ELEV. LARGE CONFERENCE WEST
SCALE: 1/4" = 1'-0"



14 ELEV. LARGE CONFERENCE NORTH
SCALE: 1/4" = 1'-0"



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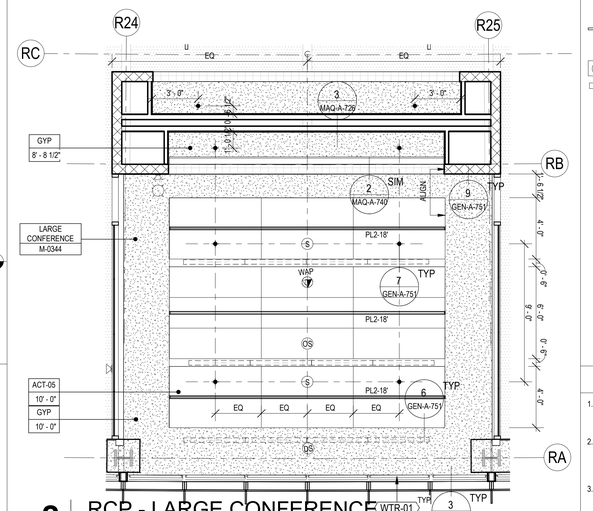
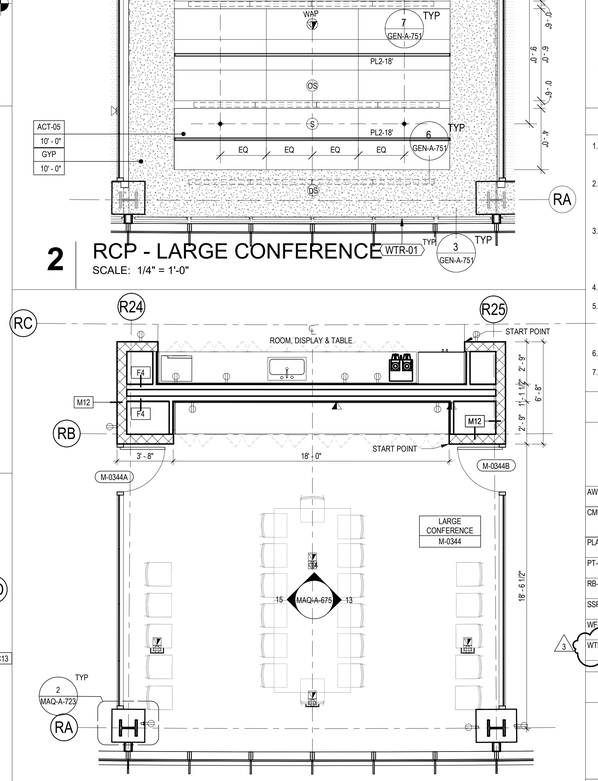
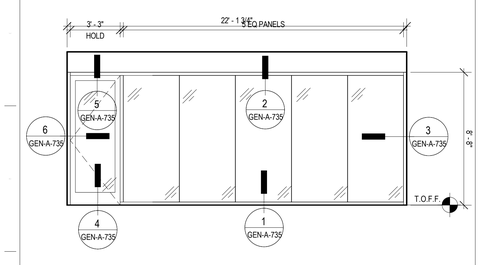


2 RCP - LARGE CONFERENCE
SCALE: 1/4" = 1'-0"

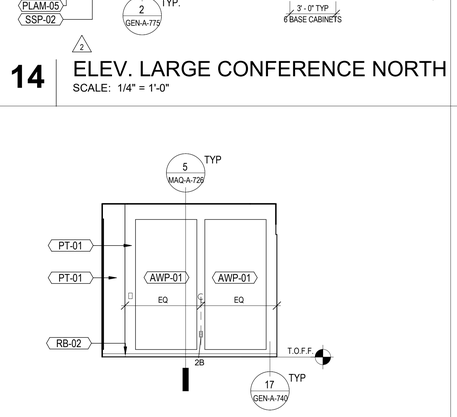


1 PLAN - LARGE CONFERENCE
SCALE: 1/4" = 1'-0"

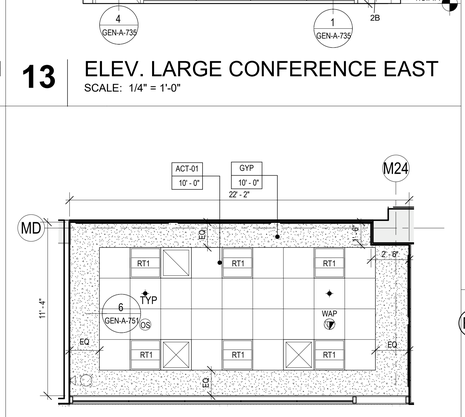
0 2'-0" 4'-0" 8'-0" 16'-0"



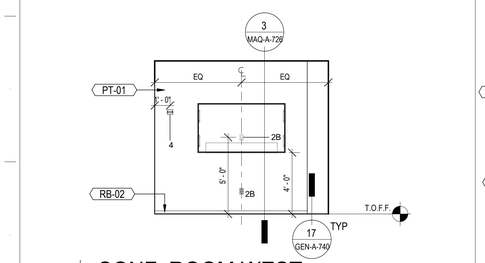
12 CONFERENCE ROOM SOUTH
SCALE: 1/4" = 1'-0"



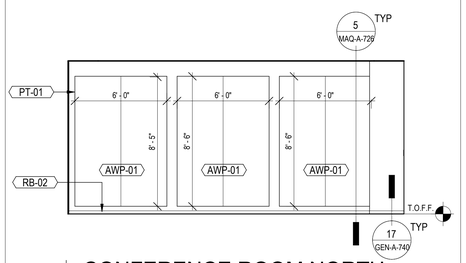
11 CONF. ROOM EAST
SCALE: 1/4" = 1'-0"



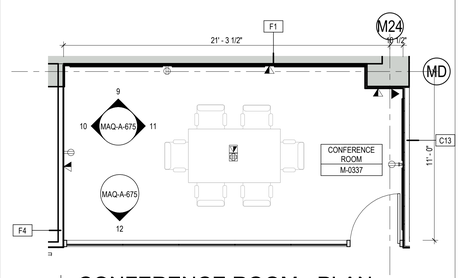
8 CONFERENCE ROOM - RCP
SCALE: 1/4" = 1'-0"



10 CONF. ROOM WEST
SCALE: 1/4" = 1'-0"

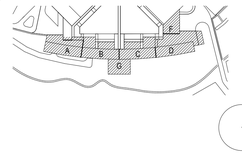


9 CONFERENCE ROOM NORTH
SCALE: 1/4" = 1'-0"



7 CONFERENCE ROOM - PLAN
SCALE: 1/4" = 1'-0"

KEYPLAN



NO.	DATE	DESCRIPTION
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2	23 JUNE 2023	ADDENDUM 28
1	19 MAY 2023	ISSUED FOR BID

RECORD REVISIONS

SIGNATURE DATE

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POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

ARCHITECT
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

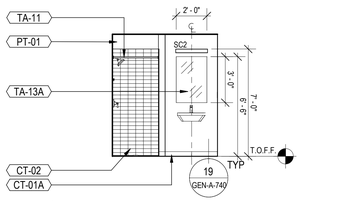
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

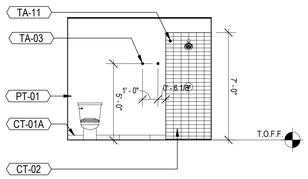
ENLARGED PLANS/RCPS AND ELEVATIONS - CONFERENCE ROOMS

SHEET No. MAQ-A-675

DRAWN BY	CHECKED BY	DATE	SCALE
KO	TNB	SEPT 2022	AS NOTED



11 ELEV - DIR. BATH NORTH
SCALE: 1/4" = 1'-0"



10 ELEV. DIR. BATH WEST
SCALE: 1/4" = 1'-0"

9 ELEV - DIR. BATH SOUTH
SCALE: 1/4" = 1'-0"

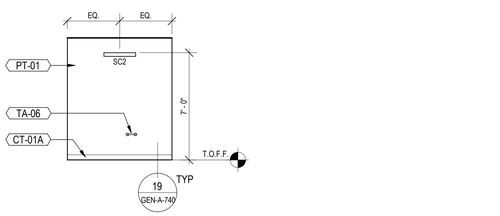
8 ELEV - DIR. BATH EAST
SCALE: 1/4" = 1'-0"

7 ELEV - DIR. BED NORTH
SCALE: 1/4" = 1'-0"

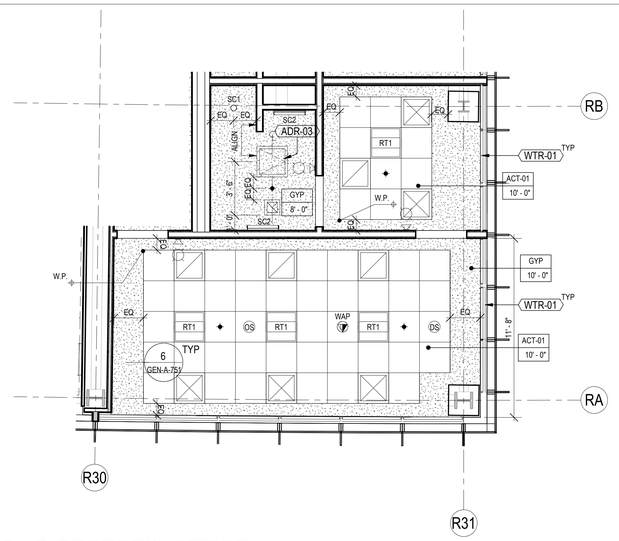
6 ELEV - DIR. BED WEST
SCALE: 1/4" = 1'-0"

5 ELEV - DIR BED SOUTH
SCALE: 1/4" = 1'-0"

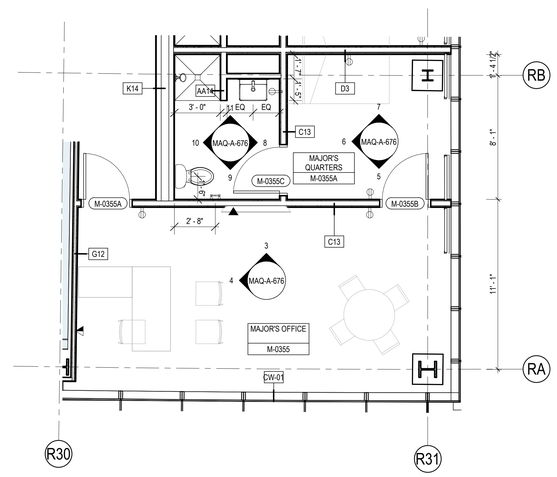
4 ELEV - DIR. OFFICE WEST
SCALE: 1/4" = 1'-0"



3 ELEV - DIR. OFFICE NORTH
SCALE: 1/4" = 1'-0"



2 RCP - DIRECTOR'S OFFICE
SCALE: 1/4" = 1'-0"



1 PLAN - DIRECTOR'S OFFICE
SCALE: 1/4" = 1'-0"

0 2'-0" 4'-0" 8'-0" 16'-0"

KEYNOTES

ADR-03	083100 ACCESS DOORS
CT-01A	093000 CERAMIC TILE BASE GRAY
CT-02	093000 3" X 6" CERAMIC TILE WHITE
PT-01	099100 PAINT FINISH, WHITE
RB-02	096500 RUBBER BASE - 2.5" - GRAY
TA-03	102813 HOOK
TA-06	102813 DOUBLE SIDED TOILET TISSUE DISPENSER
TA-11	102813 SHOWER ROD WITH CURTAIN HOOKS
TA-13A	102813 ANGLED FRAMED MIRROR
2 WTR-01	122100 WINDOW SHADE, LIGHT GRAY

LEGEND

FIRE RATINGS

- 1/2 HOUR FIRE RATING
- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING
- XX DRAWING NOTE

1	SWITCH	SINGLE 1A	DOUBLE 1B	QUAD 1C	CONTROL PANEL 1D
2	ELECTRICAL OUTLET	SINGLE 2A	DUPLEX 2B	QUAD 2C	
3	DATA OUTLET	2 PORT 3A	6 PORT 3B	AV 3C	
4	FIRE ALRAM STROBE	4			
5	THERMOSTAT	5			
6	WALL CLOCK	6			
7	PULL STATION	7			
8	SECURITY CAMERA	8			
9	CARD READER	9			
10	ADA PUSH BOTTON	10			
11	FLOOR BOX	11A	11B FLEX FLOOR MOUNTED	11C DRY FLOOR MOUNTED	11D WATER FLOOR MOUNTED
12	WAP	12			

RCP LEGEND

- CONCEAL PENDANT SPRINKLER
- PENDANT SPRINKLER
- UPRIGHT SPRINKLER
- SIDE WALL SPRINKLER
- LINEAR DIFFUSER
- DIFFUSER
- EXHAUST
- ACCESS PANEL
- XX1 LIGHT FIXTURE
- XX1 LIGHT FIXTURE
- P PROJECTOR
- PROJECTOR SCREEN
- EXIT SIGN
- S SPEAKER
- PA PAGING SPEAKER
- M MICROPHONE
- S SMOKE DETECTOR
- FIRE ALARM SPEAKER/STROBE
- FIRE ALARM STROBE
- OS OCCUPANCY SENSOR
- VS VACANCY
- DS DAYLIGHT SENSOR
- 180 SECURITY CAMERA
- WAP WAP ABOVE CEILING
- WAP WAP BELOW CEILING
- WOOD BAFFLE
- WALL CLOCK

GENERAL NOTES

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5. REFERENCE ALSO POWER, COMMUNICATIONS AND FINISH PLANS AND GEN-G-103 FOR STANDARD DEVICE MOUNTING ARRANGEMENTS, ALIGNMENTS AND DIMENSIONAL INFORMATION.
6. ALIGN WALL TILE JOINTS TO FLOOR TILE JOIN LINES.
7. CONFIRM FINIAL TILE JOINT LAYOUT WITH PROFESSIONAL PRIOR TO INSTALLATION.

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VERIFY SCALE

BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING: 0 1

IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

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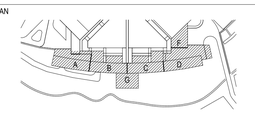
POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
2	21 JULY 2023	ADDENDUM 34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

ENLARGED PLAN/RCP AND ELEVATIONS - DIRECTOR'S OFFICE

SHEET No. MAQ-A-676

DRAWN BY	CHECKED BY	DATE	SCALE
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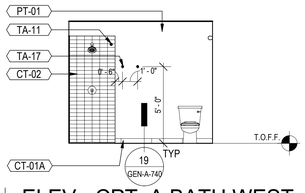
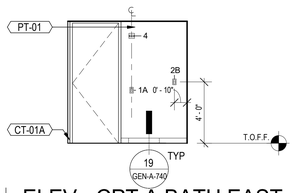


14 ELEV - CPT. A BATH WEST
SCALE: 1/4" = 1'-0"



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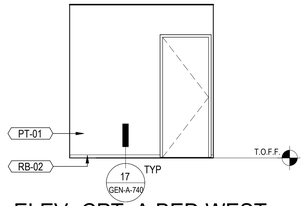

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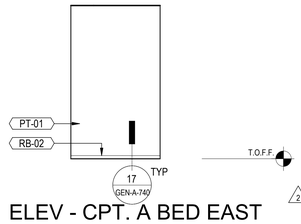

8 ELEV - CPT. A BED EAST
SCALE: 1/4" = 1'-0"

KEYNOTES	
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TA-17	102813 TOWEL HOOK
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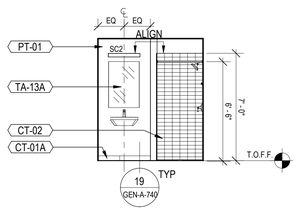
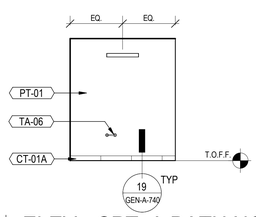


13 ELEV - CPT. A BATH SOUTH
SCALE: 1/4" = 1'-0"



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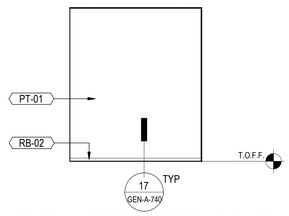

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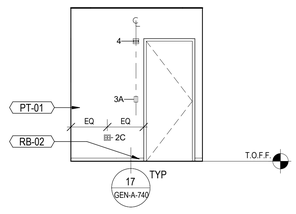
SCALE: 1/4" = 1'-0"



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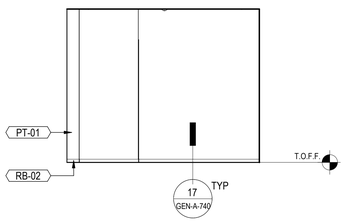
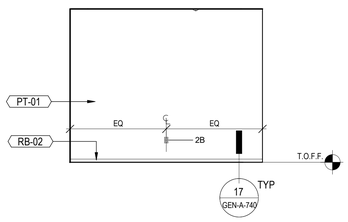


6 ELEV - CPT. A OFFICE WEST
SCALE: 1/4" = 1'-0"



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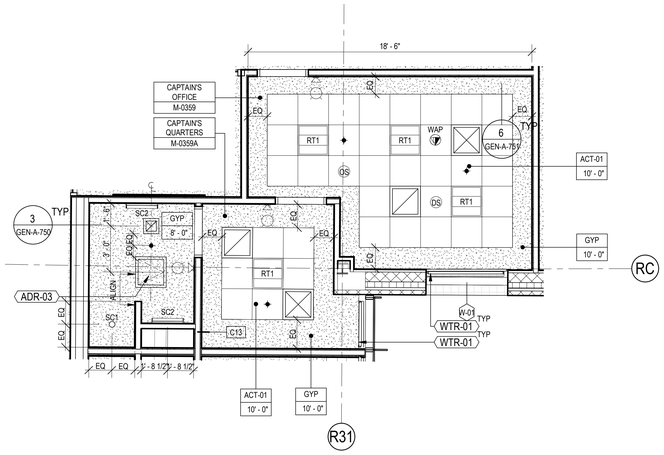
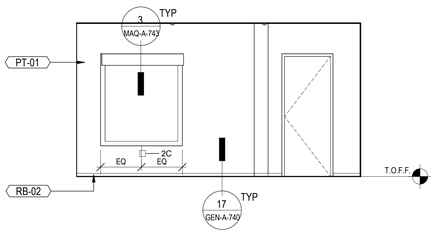
SCALE: 1/4" = 1'-0"



2 RCP - CAPTIAN'S OFFICE A
SCALE: 1/4" = 1'-0"



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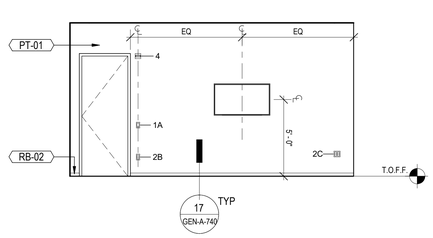
SCALE: 1/4" = 1'-0"



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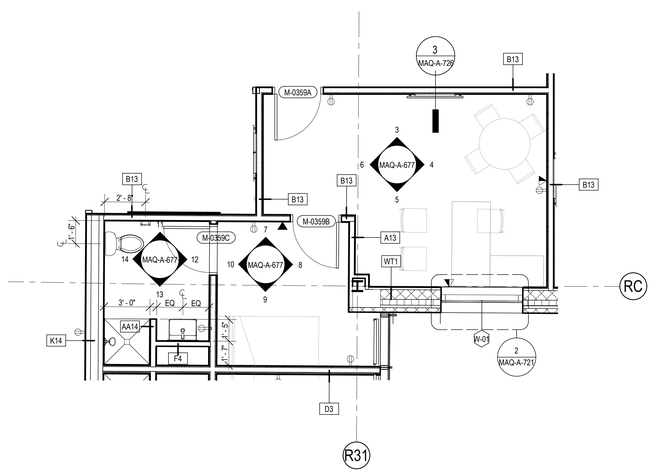
SCALE: 1/4" = 1'-0"



1 PLAN - CAPTAIN'S OFFICE A
SCALE: 1/4" = 1'-0"

0 2'-0" 4'-0" 8'-0" 16'-0"

LEGEND					
FIRE RATINGS					
	1/2 HOUR FIRE RATING				
	1 HOUR FIRE RATING				
	2 HOUR FIRE RATING				
	3 HOUR FIRE RATING				
XX	DRAWING NOTE				
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2	ELECTRICAL OUTLET	SINGLE 2A	DUPLEX 2B	QUAD 2C	
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4	FIRE ALRAM STROBE	4			
5	THERMOSTAT	5			
6	WALL CLOCK	6			
7	PULL STATION	7			
8	SECURITY CAMERA	8			
9	CARD READER	9			
10	ADA PUSH BOTTON	10			
11	FLOOR BOX	11A	FLEX FLOOR MOUNTED 11B	DBT FLOOR MOUNTED 11C	DATA FLOOR MOUNTED 11D
12	WAP	12			

RCP LEGEND	
	CONCEAL PENDANT SPRINKLER
	PENDANT SPRINKLER
	UPRIGHT SPRINKLER
	SIDE WALL SPRINKLER
	LINEAR DIFFUSER
	DIFFUSER
	EXHAUST
	ACCESS PANEL
XX1	LIGHT FIXTURE
XX1	LIGHT FIXTURE
P	PROJECTOR
	PROJECTOR SCREEN
	EXIT SIGN
S	SPEAKER
PA	PAGING SPEAKER
M	MICROPHONE
S	SMOKE DETECTOR
	FIRE ALARM SPEAKER/STROBE
	FIRE ALARM STROBE
OS	OCCUPANCY SENSOR
VS	VACANCY
DS	DAYLIGHT SENSOR
(180)	SECURITY CAMERA
WAP	WAP ABOVE CEILING
WAP	WAP BELOW CEILING
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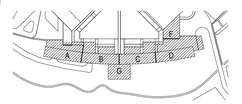
KEYPLAN



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1	19 MAY 2023	ISSUED FOR BID			

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SIGNATURE DATE

ARCHITECT
SOM
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DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

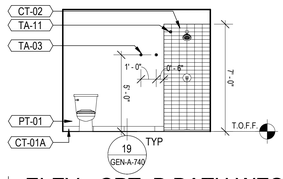
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

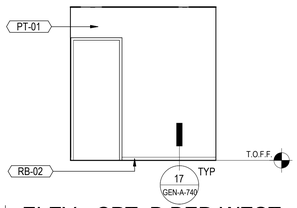
ENLARGED PLAN/RCP AND ELEVATIONS - CAPTAIN'S OFFICE A

SHEET No. MAQ-A-677

DRAWN BY	CHECKED BY	DATE	SCALE
KO	TNB	SEPT 2022	AS NOTED



14 ELEV - CPT. B BATH WEST
SCALE: 1/4" = 1'-0"



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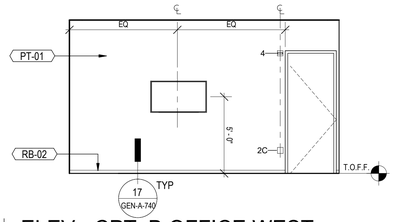

6 ELEV - CPT. B OFFICE WEST
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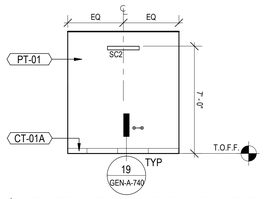

13 ELEV. CPT. B BATH SOUTH
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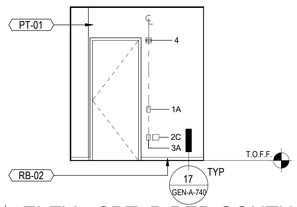
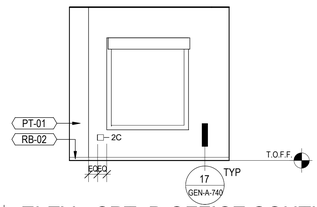


9 ELEV - CPT. B BED SOUTH
SCALE: 1/4" = 1'-0"



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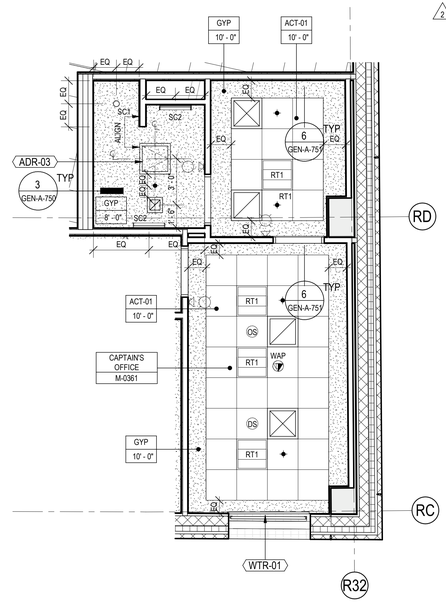
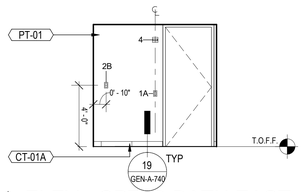


2 RCP - CAPTIAN'S OFFICE B
SCALE: 1/4" = 1'-0"



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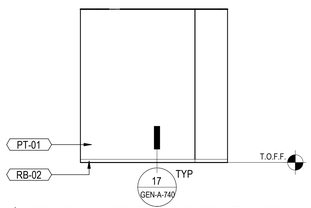

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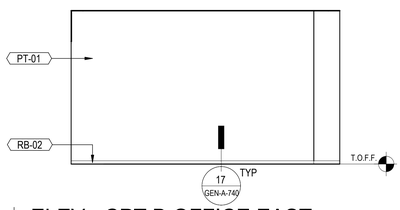
SCALE: 1/4" = 1'-0"



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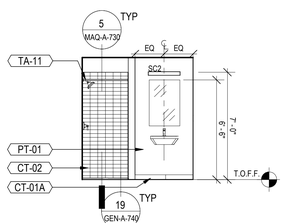
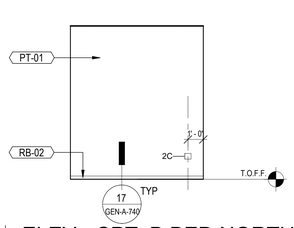
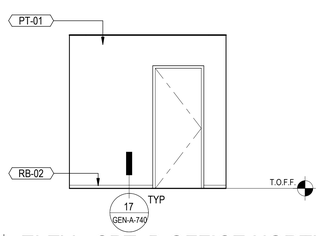
SCALE: 1/4" = 1'-0"



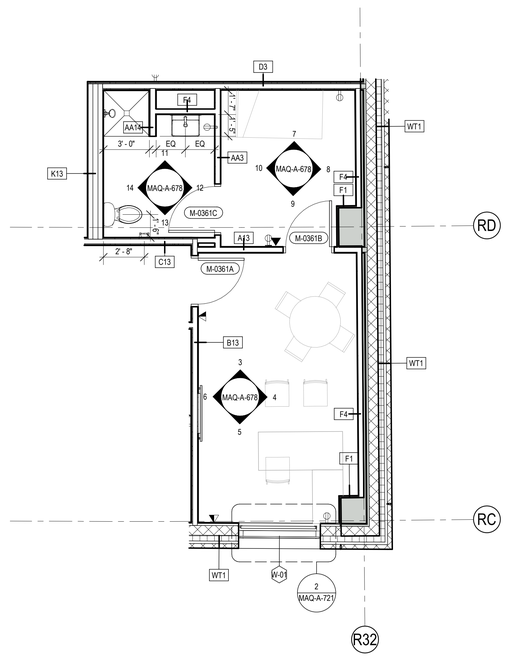
11 ELEV - CPT. B BATH NORTH
SCALE: 1/4" = 1'-0"



7 ELEV - CPT. B BED NORTH
SCALE: 1/4" = 1'-0"



3 ELEV - CPT. B OFFICE NORTH
SCALE: 1/4" = 1'-0"



1 PLAN - CAPTAIN'S OFFICE B
SCALE: 1/4" = 1'-0"

0 2'-0" 4'-0" 8'-0" 16'-0"

KEYNOTES

ADR-03	083100 ACCESS DOORS
CT-01A	093000 CERAMIC TILE BASE GRAY
CT-02	093000 3" X 6" CERAMIC TILE WHITE
PT-01	099100 PAINT FINISH, WHITE
RB-02	096500 RUBBER BASE - 2.5" - GRAY
TA-03	102813 HOOK
TA-11	102813 SHOWER ROD WITH CURTAIN HOOKS
WTR-01	122100 WINDOW SHADE, LIGHT GRAY

LEGEND

FIRE RATINGS

- 1/2 HOUR FIRE RATING
- 1 HOUR FIRE RATING
- 2 HOUR FIRE RATING
- 3 HOUR FIRE RATING
- XX DRAWING NOTE

1	SWITCH	SINGLE 1A	DOUBLE 1B	QUAD 1C	CONTROL PANEL 1D
2	ELECTRICAL OUTLET	SINGLE 2A	DUPLEX 2B	QUAD 2C	
3	DATA OUTLET	2 PORT 3A	6 PORT 3B	AV 3C	
4	FIRE ALRAM STROBE	4			
5	THERMOSTAT	5			
6	WALL CLOCK	6			
7	PULL STATION	7			
8	SECURITY CAMERA	8			
9	CARD READER	9			
10	ADA PUSH BOTTON	10			
11	FLOOR BOX	11A	FLEX FLOOR MOUNTED 11B	DBT FLOOR MOUNTED 11C	DATA FLOOR MOUNTED 11D
12	WAP	12			

RCP LEGEND

- CONCEAL PENDANT SPRINKLER
- PENDANT SPRINKLER
- UPRIGHT SPRINKLER
- SIDE WALL SPRINKLER
- LINEAR DIFFUSER
- DIFFUSER
- EXHAUST
- ACCESS PANEL
- XX1 LIGHT FIXTURE
- XX1 LIGHT FIXTURE
- P PROJECTOR
- PROJECTOR SCREEN
- EXIT SIGN
- S SPEAKER
- PA PAGING SPEAKER
- M MICROPHONE
- S SMOKE DETECTOR
- FIRE ALARM SPEAKER/STROBE
- FIRE ALARM STROBE
- OS OCCUPANCY SENSOR
- VS VACANCY
- DS DAYLIGHT SENSOR
- 180° SECURITY CAMERA
- WAP WAP ABOVE CEILING
- WAP WAP BELOW CEILING
- WOOD BAFFLE
- WALL CLOCK

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5. REFERENCE ALSO POWER, COMMUNICATIONS AND FINISH PLANS AND GEN-G-103 FOR STANDARD DEVICE MOUNTING ARRANGEMENTS, ALIGNMENTS AND DIMENSIONAL INFORMATION.
6. ALIGN WALL TILE JOINTS TO FLOOR TILE JOIN LINES.
7. CONFIRM FINIAL TILE JOINT LAYOUT WITH PROFESSIONAL PRIOR TO INSTALLATION.

DRAWING NOTES

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1

IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

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POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
2	21 JULY 2023	ADDENDUM 34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

SIGNATURE DATE

ARCHITECT
SOM
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DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

ENLARGED PLAN/RCP AND ELEVATIONS - CAPTAIN'S OFFICE B

SHEET No. MAQ-A-678

DRAWN BY	CHECKED BY	DATE	SCALE
KO	TNB	SEPT 2022	AS NOTED

KEYNOTES

ADR-03	083100 ACCESS DOORS
PLAM-01	064000 PLASTIC LAMINATE, WHITE
PT-01	099100 PAINT FINISH, WHITE
RB-02	096500 RUBBER BASE - 2.5" - GRAY
SSP-03	064000 SOLID SURFACE - LIGHT QUARTZ
WTR-01	122100 WINDOW SHADE, LIGHT GRAY

LEGEND

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- DIFFUSER
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- ACCESS PANEL
- XX1 — LIGHT FIXTURE
- XX1 — LIGHT FIXTURE
- P — PROJECTOR
- PROJECTOR SCREEN
- EXIT SIGN
- S — SPEAKER
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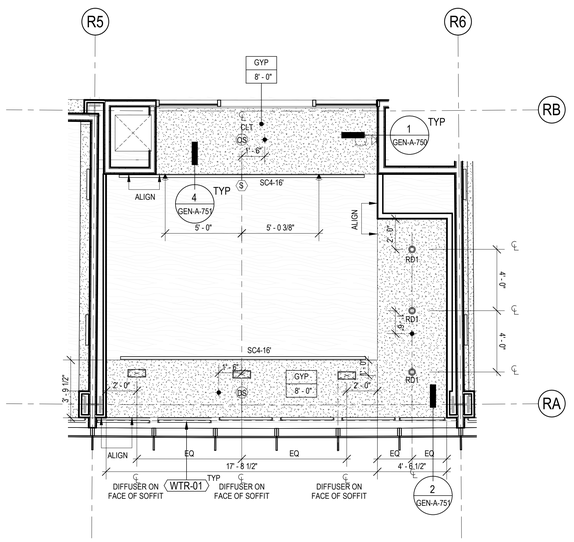
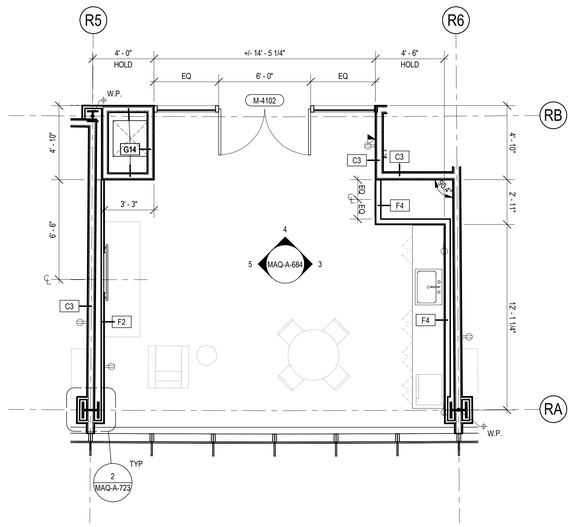


2 RCP - LEVEL 2-4 - DAY ROOM TYP.

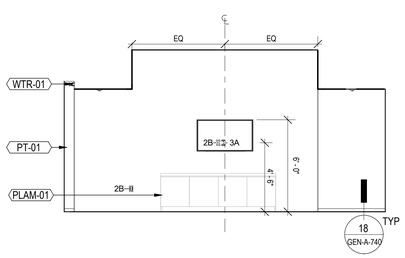
SCALE: 1/4" = 1'-0"



1 PLAN - LEVEL2-4 - DAY ROOM TYP.

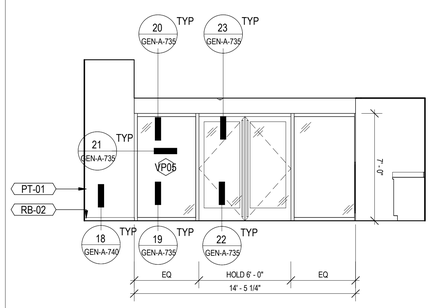
SCALE: 1/4" = 1'-0"

0 — 2'-0" — 4'-0" — 8'-0" — 16'-0"



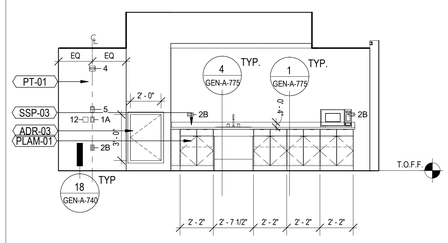
5 DAY ROOM TYP. - WEST

SCALE: 1/4" = 1'-0"



4 DAY ROOM TYP. - NORTH

SCALE: 1/4" = 1'-0"



3 DAY ROOM TYP. - EAST

SCALE: 1/4" = 1'-0"

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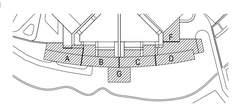
KEYPLAN



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SIGNATURE DATE

ARCHITECT

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DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

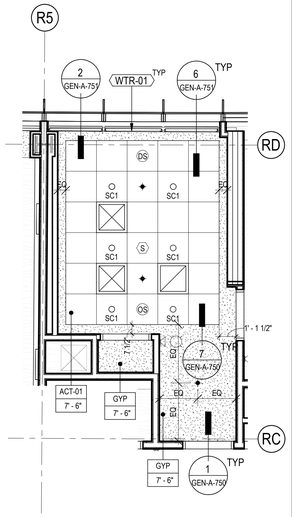
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

ENLARGED PLANS/ RCP AND ELEVATIONS - DAY ROOM TYP.

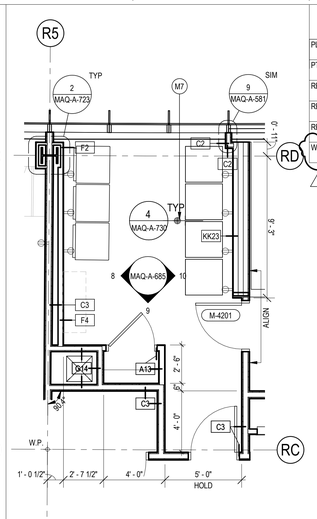
SHEET No. MAQ-A-684

DRAWN BY	CHECKED BY	DATE	SCALE
SS	TNB	SEPT 2022	AS NOTED



4 RCP - LVL 4 LAUND.

SCALE: 1/4" = 1'-0"



3 PLAN - LVL 4 LAUND.

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KEYNOTES

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RB-02	096500 RUBBER BASE - 2.5" - GRAY
REQ-01	113000 WASHER
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LEGEND

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DRAWING NOTES

M7	FLOOR DRAIN, REFER TO PLUMBING DRAWINGS

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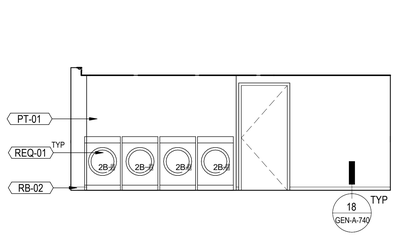
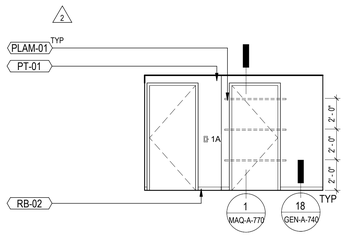


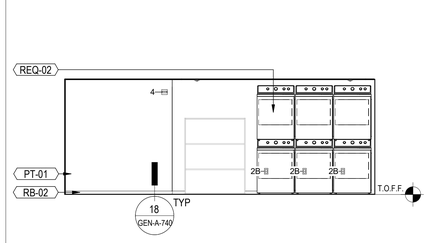
10 LAUNDRY AT LEVEL 4 - EAST

SCALE: 1/4" = 1'-0"



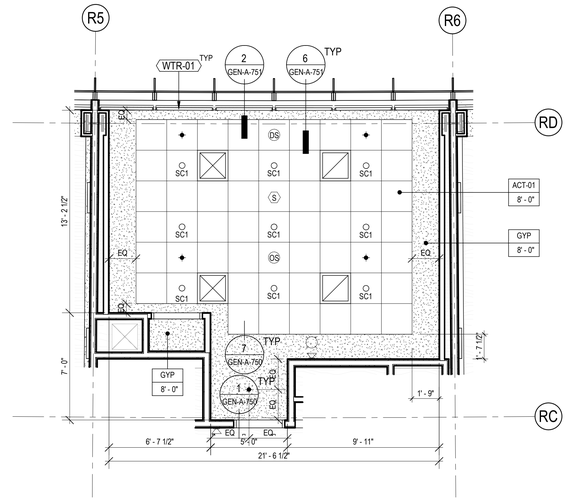
9 LAUNDRY AT LEVEL 4 - SOUTH

SCALE: 1/4" = 1'-0"



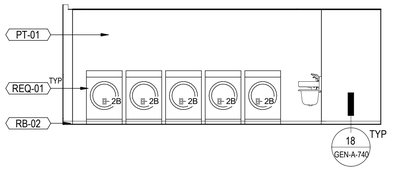
8 LAUNDRY AT LEVEL 4 - WEST

SCALE: 1/4" = 1'-0"



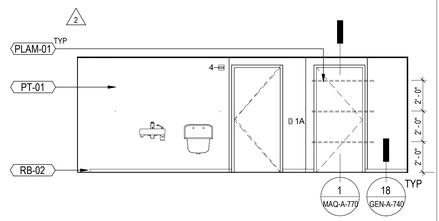
2 RCP - LEVEL 2-3 LAUNDRY TYP.

SCALE: 1/4" = 1'-0"



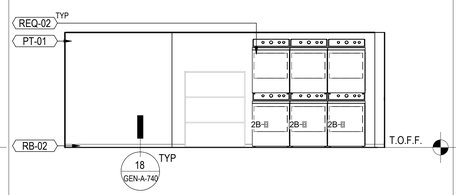
7 LAUNDRY AT LEVEL 2-3 - EAST

SCALE: 1/4" = 1'-0"



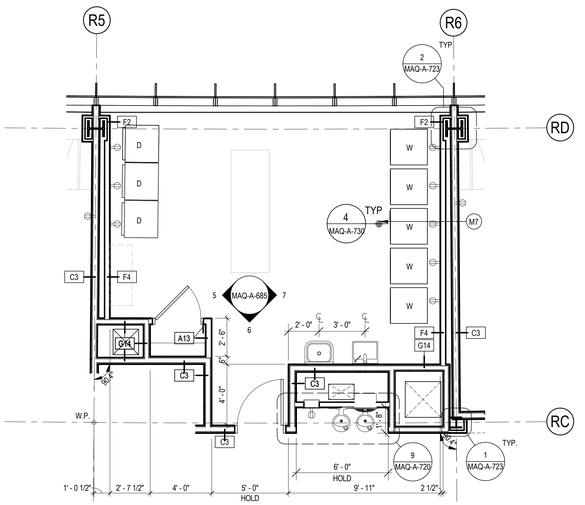
6 LAUNDRY AT LEVEL 2-3 - SOUTH

SCALE: 1/4" = 1'-0"



5 LAUNDRY AT LEVEL 2-3 - WEST

SCALE: 1/4" = 1'-0"



1 PLAN - LEVEL 2-3 LAUNDRY TYP.

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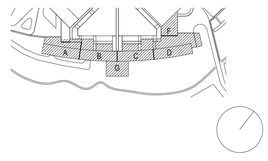
POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
3	21 JULY 2023	ADDENDUM 34			
2	14 JULY 2023	ADDENDUM 32			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

SIGNATURE DATE

ARCHITECT

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

ENLARGED PLANS/ RCP AND ELEVATIONS - LAUNDRY AT LEVEL 2-3 TYP.

SHEET No. MAQ-A-685

DRAWN BY	CHECKED BY	DATE	SCALE
SS	TNB	SEPT 2022	AS NOTED

DOOR SCHEDULE - NUMBER

WTWT	ROOM NAME	DOOR					FRAME			DETAIL			FIRE RATING	ACOUSTIC	SECURITY	HARDWARE	COMMENTS
		TYPE	WIDTH	HEIGHT	MATERIAL	FINISH	TYPE	MATERIAL	FINISH	JAMB	HEAD	SILL					
MAQ-LEVEL 0																	
EM-0100A	INDOOR TRAINING	OHD-01	12' - 0"	12' - 0"	STL	MTL-09	-	-	PT-03	3 / MAQ-A-574	6 / MAQ-A-574	1 / MAQ-A-574	-			BO	INSULATED COILING DOOR (MOTOR DRIVEN)
EM-0100B	INDOOR TRAINING	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	3 / MAQ-A-574	6 / GEN-A-520	5 / GEN-A-520	-		CARD READER	SEC 01-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EM-0100C	INDOOR TRAINING	OHD-01	16' - 0"	12' - 0"	STL	MTL-09	-	-	PT-03	3 / MAQ-A-574	2 / MAQ-A-574	1 / MAQ-A-574	-			BO	INSULATED COILING DOOR (MOTOR DRIVEN)
EM-0100D	INDOOR TRAINING	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	3 / MAQ-A-574	6 / GEN-A-520	5 / GEN-A-520	90 MIN		CARD READER	SEC 01-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EM-0100E	INDOOR TRAINING	F	3' - 0"	7' - 10"	HM	PT-03	3	HM	PT-03	3 / MAQ-A-574	6 / GEN-A-520	5 / GEN-A-520	-		CARD READER	SEC 01-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EM-0100F	INDOOR TRAINING	F	3' - 0"	7' - 10"	HM	PT-03	3	HM	PT-03	3 / MAQ-A-574	6 / GEN-A-520	5 / GEN-A-520	-		CARD READER	SEC 01-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EM-0100G	CORRIDOR	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	3 / MAQ-A-574	6 / GEN-A-520	5 / GEN-A-520	-		CARD READER	SEC 01-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EM-0220A	AUDITORIUM A	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	2 / MAQ-A-725	6 / GEN-A-520	5 / GEN-A-520	-			EXT 01-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EM-0220B	AUDITORIUM B	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	2 / MAQ-A-725	6 / GEN-A-520	5 / GEN-A-520	-			EXT 01-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EM-0220C	UNENCLOSED STORAGE	F	3' - 0"	6' - 10"	HM	PT-03	1	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-			EXT 02-BL	INSULATED HM EXTERIOR DOOR
EM-0300A	CORRIDOR	FG	3' - 10 7/8"	8' - 0"	ALUM/GL	MTL-01/GL-01	-	ALUM	MTL-01	6 / MAQ-A-553	4 / MAQ-A-552	3 / MAQ-A-552	-		CARD READER	SEC 01-AL	DOOR IN CW-01 SYSTEM
EMA-00	STAIR MA	F	3' - 0"	7' - 10"	HM	PT-03	3	HM	PT-03	3 / MAQ-A-574	6 / GEN-A-520	5 / GEN-A-520	-		CARD READER	SEC 01-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EMD-00	STAIR MD	FG	3' - 11 5/16"	8' - 0"	ALUM/GL	MTL-01/GL-01	-	ALUM	MTL-01	6 / MAQ-A-553	4 / MAQ-A-552	3 / MAQ-A-552	-		CARD READER	SEC 01-AL	DOOR IN CW-01 SYSTEM
M-0100A	CORRIDOR	F2	5' - 6"	7' - 10"	HM	PT-01	2	HM	PT-01	J1	H1	S6	-	STC-55	CARD READER	STC 01	
M-0100B	CORRIDOR	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			02	
M-0201A	ELECTRICAL SERVICE ROOM	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN	SG		03	
M-0201B	ELECTRICAL SERVICE ROOM	F2	6' - 0"	6' - 10"	HM	PT-01	2	HM	PT-01	J1	H1	S6	90 MIN	SG		04	
M-0202	ATS ROOM	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01A	
M-0203	STORAGE	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01	
M-0204	COMBINED STORAGE	F2	6' - 0"	7' - 10"	HM	PT-01	2	HM	PT-01	J1	H1	S6	-			05	
M-0205A	MECHANICAL ROOM	F2	6' - 0"	7' - 10"	HM	PT-01	2	HM	PT-01	J1	H1	S2	90 MIN	SG		04	
M-0205B	MECHANICAL ROOM	F2	6' - 0"	7' - 10"	HM	PT-01	2	HM	PT-01	J1	H1	S2	90 MIN	STC-55		STC 01	
M-0206	EM. ELEC. CLOSET	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01B	
M-0206A	CORRIDOR	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01B	
M-0207	M TOILET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J1	H1	S2	-	SG		02-BL	HW:MTL-10
M-0208	MECHANICAL ROOM	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-	SG		01	
M-0209	ADA TOILET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J1	H1	S2	-	SG		02A-BL	HW:MTL-10
M-0210A	CORRIDOR	F2	6' - 0"	7' - 10"	HM	PT-01	2	HM	PT-01	J1	H1	S6	-	SG		04	
M-0210B	CORRIDOR	F2	6' - 0"	7' - 10"	HM	PT-01	2	HM	PT-01	J1	H1	S6	-	SG		04	
M-0210C	AUDITORIUM A ENTRY	F2	6' - 0"	7' - 10"	WD	WV-01	2	HM	PT-03	J8	H9	S1	-	SG		EXT 02-BL	WV TO MATCH WALL PANELS, HW TO MATCH MTL-10
M-0210D	AUDITORIUM B ENTRY	F2	6' - 0"	7' - 10"	WD	WV-01	2	HM	PT-03	J8	H9	S1	-	SG		EXT 02-BL	WV TO MATCH WALL PANELS, HW TO MATCH MTL-10
M-0211	W TOILET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J1	H1	S2	-	SG		02-BL	HW:MTL-10
M-0212	AUDITORIUM STORAGE	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J1	H1	S6	-			01-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
M-0214A	AUDITORIUM AV ROOM	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J8	H9	S1	-	SG		01-BL	WV TO MATCH WALL PANELS, HW TO MATCH MTL-10
M-0214B	AUDITORIUM AV ROOM	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J8	H9	S1	-	SG		01-BL	WV TO MATCH WALL PANELS, HW TO MATCH MTL-10
M-0214C	AUDITORIUM AV ROOM	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J8	H9	S1	-			01-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
M-0215A	CORRIDOR	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J8	H9	S6	-			01-BL	WV TO MATCH WALL PANELS, HW TO MATCH MTL-10
M-0215B	AUDITORIUM STORAGE	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01	
M-0216	MECHANICAL ROOM	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-	SG		01	
M-0218A	CORRIDOR	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J8	H9	S6	-			01-BL	WV TO MATCH WALL PANELS, HW TO MATCH MTL-10
M-0218B	AUDITORIUM STORAGE	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01	
M-0220A	AUDITORIUM A	F2	6' - 0"	7' - 10"	HM	PT-03	2	HM	PT-03	J8	H9	S1	-	STC-55		STC 01-BL	HW:MTL-10
M-0220B	AUDITORIUM B	F2	6' - 0"	7' - 10"	HM	PT-03	2	HM	PT-03	J8	H9	S1	-	STC-55		STC 01-BL	HW:MTL-10
M-0300A	CORRIDOR	F	3' - 0"	8' - 6"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			02	
M-0300B	SERVICE CORRIDOR	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	J10	H11	S6	-			01A-BL	HW:MTL-10
M-0300C	CORRIDOR	F	3' - 0"	8' - 6"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-	SG	CARD READER	SEC 01	
M-0300D	CORRIDOR	FG	3' - 0"	8' - 6 1/2"	ALUM/GL	MTL-12/GL-05	1	HM	PT-01	J2	H2	S6	-			AL 01	
M-0300E	STORAGE	F	3' - 0"	8' - 6"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01A	
M-0300F	STORAGE	F	3' - 0"	8' - 6"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01A	
M-0300G	CORRIDOR	F	3' - 0"	8' - 6"	HM	PT-01	1	HM	PT-01	J1	H3	S6	-	SG	CARD READER	SEC 01	
M-0301	W TOILET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J1	H3	S2	-	SG		02-BL	HW:MTL-10
M-0302A	REPROGRAPHIC CENTER	F	3' - 0"	8' - 6"	HM	PT-03	1	HM	PT-03	J13	H14	S2	-			02-BL	HW:MTL-10
M-0302B	ORDERLY & MAIL ROOM	F	3' - 0"	8' - 6"	HM	PT-03	1	HM	PT-03	J13	H14	S2	-			02-BL	HW:MTL-10
M-0303	JANITOR CLOSET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J1	H1	S2	-	SG		02-BL	HW:MTL-10
M-0304	ELECTRICAL DISTRIBUTION	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	J12	H13	S6	90 MIN			01A-BL	HW:MTL-10
M-0305	M TOILET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J1	H1	S2	-	SG		02-BL	HW:MTL-10
M-0306	EM. ELEC. CLOSET	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN			01A	
M-0307	MEDIA UNIT SUPERVISOR	FG	3' - 0"	8' - 5 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	6 / GEN-A- 735	5 / GEN-A-735	4 / GEN-A-735	-	SG		DT 05	DOOR PART OF VP-01 SYSTEM
M-0308	MAIN TELCOM ROOM	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN		CARD READER	SEC 01	
M-0309	UOF SUPERVISOR	FG	3' - 0"	8' - 5 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	6 / GEN-A- 735	5 / GEN-A-735	4 / GEN-A-735	-	SG		DT 05	DOOR PART OF VP-01 SYSTEM
M-0311	IT STORAGE	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S1	-			01	
M-0329	UOF VIDEO STORAGE	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S1	-			01	
M-0331	AUDIO ROOM	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S1	-	STC-55		STC 03	
M-0333	EDITING STUDIO	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S1	-	STC-55		STC 03	
M-0335	EDITING STUDIO	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S1	-	STC-55		STC 03	
M-0337	CONFERENCE ROOM	FG	3' - 3"	8' - 5 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	6 / GEN-A- 735	5 / GEN-A-735	4 / GEN-A-735	-	SG		AL 01	DOOR PART OF VP-01 SYSTEM
M-0339	VIDEO STUDIO	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	J1	H1	S6	-	STC-55		STC 03	
M-0339A	VIDEO STUDIO VESTIBULE	F	3' - 0"	8' - 6"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			06	
M-0341	TELECOM	F	3' - 0"	8' - 6"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-		CARD READER	SEC 01	
M-0343	M STAFF LOCKERS	F	3' - 0"	8' - 6"	HM	PT-01	1	HM	PT-01	J1	H1	S2	-	SG		08	
M-0343A	JANITOR'S CLOSET	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			06B	
M-0343B	STORAGE	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01A	
M-0344A	LARGE CONFERENCE	FG	2' - 11"	8' - 5 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	6 / GEN-A- 735	5 / GEN-A-735	4 / GEN-A-735	-	SG		AL 01	DOOR PART OF VP-01 SYSTEM
M-0344B	LARGE CONFERENCE	FG	2' - 11"	8' - 5 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	6 / GEN-A- 735	5 / GEN-A-735	4 / GEN-A-735	-	SG		AL 01	DOOR PART OF VP-01 SYSTEM
M-0345	ELECTRICAL DISTRIBUTION	F	3' - 0"	8' - 6"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01A	
M-0347A	GN STAFF LOCKERS	F	3' - 0"	8' - 6"	HM	PT-01	1	HM	PT-01	J1	H1	S2	-	SG		06	
M-0347B	GN STAFF LOCKERS	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			07	
M-0349	W STAFF LOCKERS	F	3' - 0"	8' - 6"	HM	PT-01	1	HM	PT-01	J1	H1	S2	-	SG		08	
M-0351	NURSING PARENTS ROOM	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J13	H14	S2	-	SG		03-BL	HW:MTL-10
M-0353	COMBINED FILING	F	3' - 0"	8' - 6"	HM	PT-01	1	HM	PT-01	J1	H1	S1	-			01	
M-0355B	MAJOR'S OFFICE	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-01	J1	H1	S6	-	SG		07A	
M-0355C	MAJOR'S QUARTERS	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-01	J1	H1	S4	-			07A	
M-0357	DIRECTOR'S CONFERENCE	FG	3' - 0"	7' - 9 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	6 / GEN-A- 735	5 / GEN-A-735	4 / GEN-A-735	-	SG		AL 01A	DOOR PART OF VP-01 SYSTEM
M-0359B	CAPTAIN'S OFFICE	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-01	J1	H1	S6	-	SG		07A	
M-0359C	CAPTAIN'S QUARTERS	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-01	J1	H1	S4	-			07A	
M-0361B	CAPTAIN'S OFFICE	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-01	J1	H1	S6	-	SG		07A	
M-0361C	CAPTAIN'S QUARTERS	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-01	J1	H1	S4	-			07A	
M-0378	SM CONF RM	FG	3' - 0 1/2"	8' - 5 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	6 / GEN-A- 735	5 / GEN-A-735	4 / GEN-A-735	-	SG		AL 01	DOOR PART OF VP-01 SYSTEM
MB-00	STAIR MB	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	J10	H11	S6	90 MIN			04-BL	HW:MTL-10
MD-00	STAIR MD	F	3' - 0"	8' - 6"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			DT 06A	
MAQ-LEVEL 1																	
EM-1000D	VESTIBULE	FG	3' - 4 5/8"	7' - 2"	ALUM/GL	MTL-01/GL-03	-	ALUM	MTL-01	5 / GEN-A-561	4 / GEN-A-561	3 / GEN-A-561	-			CRL 07	DOOR PART OF SF SYSTEM
EM-1000E	VESTIBULE	FG	3' - 4 5/8"	7' - 2"	ALUM/GL	MTL-01/GL-03	-	ALUM	MTL-01	5 / GEN-A-561	4 / GEN-A-561	3/ GEN-A-561	-			CRL 05	DOOR PART OF SF SYSTEM
EM-1000F	VESTIBULE	FG	3' - 4 5/8"	7' - 2"	ALUM/GL	MTL-01/GL-03	-	ALUM	MTL-01	5 / GEN-A-561	4 / GEN-A-561	3 / GEN-A-561	-			CRL 05	DOOR PART OF SF SYSTEM
EM-1000G	VESTIBULE	FG	3' - 4 5/8"	7' - 2"	ALUM/GL	MTL-01/GL-03	-	ALUM	MTL-01	5 / GEN-A-561	4 / GEN-A-561	3/ GEN-A-561	-			CRL 05	DOOR PART OF SF SYSTEM
EM-1000H	CORRIDOR	FG2	8' - 0 1/8"	7' - 8"	ALUM/GL	MTL-01/GL-01	-	ALUM	MTL-01	6 / MAQ-A-553	4 / MAQ-A-552	3 / MAQ-A-552	-			CRL 04	DOOR IN CW-01 SYSTEM
EM-1000I	CORRIDOR	FG2	7' - 11 11/16"	7' - 8"	ALUM/GL	MTL-01/GL-01	-	ALUM	MTL-01	6 / MAQ-A-553	4 / MAQ-A-552	3 / MAQ-A-552	-			CRL 04	DOOR IN CW-01 SYSTEM
EM-1000J	VESTIBULE	FG2	6' - 11"	8' - 0"	ALUM/GL	MTL-01/GL-01	-	ALUM	MTL-01	4 / MAQ-A-556	4 / MAQ-A-558	3 / MAQ-A-558	-			CRL 03	DOOR IN CW-02 SYSTEM
EM-1001	60 PERSON LECTURE HALL	F	3' - 0"	7' - 10"	HM	PT-03	3	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-			EXT 03-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EM-1003	60 PERSON LECTURE HALL	F	3' - 0"	7' - 10"	HM	PT-03	3	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-			EXT 03-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EM-1009	60 PERSON LECTURE HALL	F	3' - 0"	7' - 10"	HM	PT-03	3	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-			EXT 03-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EM-1011	60 PERSON LECTURE HALL	F	3' - 0"	7' - 10"	HM	PT-03	3	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-			EXT 03-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EM-1200B	SERVICE CORRIDOR	F	3' - 0"	7' - 10"	HM	PT-03	3	HM	PT-03	3 / MAQ-A-574	6 / GEN-A-520	5 / GEN-A-520	-		CARD READER	SEC 01-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EM-1219	WASTE RECYCLING	F2	5' - 6"	7' - 10"	HM	PT-03	2	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-			EXT 02A-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EM-1222A	LOADING DOCK	OHD-01	8' - 0"	8' - 11"	STL	MTL-09	-	-	PT-03	4 / MAQ-A-574	6 / MAQ-A-574	5 / MAQ-A-574	-			BO	INSULATED COILING DOOR (MOTOR DRIVEN)
EM-1222B	LOADING DOCK	OHD-01	8' - 0"	9' - 2 1/8"	STL	MTL-09	-	-	PT-03	4 / MAQ-A-574	6 / MAQ-A-574	5 / MAQ-A-574	-			BO	INSULATED COILING DOOR (MOTOR DRIVEN)
EM-1300	CENTRAL PLANT	F2	6' - 0"	7' - 10"	HM	PT-03	2	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-		CARD READER	EXT 04-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
EM-1302	COMBINATION FIRE/WATER	F2	6' - 0"	7' - 10"	HM	PT-03	2	HM	PT-03	7 / GEN-A-520	6 / GEN-A-520	5 / GEN-A-520	-			EXT 04-BL	INSULATED HM EXTERIOR DOOR, HW:TO MATCH MTL-10
M-1000A	LOBBY	F2	8' - 0"	7' - 10"	HM	PT-03	2	HM	PT-03	8, 9 / MAQ-A-721	H6	S6	180 MIN			EXT 05-BL	HOLD OPEN, HW TO MATCH MTL-10 (COMBINED 90° & 180° DOOR)
M-1000C	CORRIDOR	F2	7' - 2"	7' - 10"	HM	PT-03	2	HM	PT-03	8 / MAQ-A-721	H5	S6	-			09	HOLD OPEN, HW TO MATCH MTL-10
M-1000D	CORRIDOR	FG	3' - 4 5/8"	6' - 10 1/4"	ALUM/GL	MTL-01/GL-03	-	ALUM	MTL-01	5 / GEN-A-561	4 / GEN-A-561	3 / GEN-A-561	-		CARD READER	CRL 06	DOOR PART OF SF SYSTEM
M-1000E	CORRIDOR	FG	3' - 4 5/8"	6' - 10 1/4"	ALUM/GL	MTL-01/GL-03	-	ALUM	MTL-01	5 / GEN-A-561	4 / GEN-A-561	3/ GEN-A-561	-			CRL 05	DOOR PART OF SF SYSTEM
M-1000F	CORRIDOR	FG	3' - 4 5/8"	6' - 10 1/4"	ALUM/GL	MTL-01/GL-03	-	ALUM	MTL-01	5 / GEN-A-561	4 / GEN-A-561	3 / GEN-A-561	-			CRL 05	DOOR PART OF SF SYSTEM
M-1000G	CORRIDOR	FG	3' - 4 5/8"	6' - 10 1/4"	ALUM/GL	MTL-01/GL-03	-	ALUM	MTL-01	5 / GEN-A-561	4 / GEN-A-561	3/ GEN-A-561	-		CARD READER	CRL 01	DOOR PART OF SF SYSTEM
M-1000J	VESTIBULE	FG2	6' - 11"	8' - 0 1/2"	ALUM/GL	MTL-01/GL-03	-	ALUM	MTL-01	5 / GEN-A-561	4 / GEN-A-561	3 / GEN-A-561	-		CARD READER	CRL 02	DOOR PART OF VP-03 SYSTEM
M-1007C	LECTURE HALL STORAGE	F2	5' - 8"	7' - 10"	HM	PT-01	2	HM	PT-01	J1	H1	S6	-			05A-BL	
M-1101	JANITOR CLOSET	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	J12	H13	S6	-			01A-BL	HW:MTL-10
M-1102	ELECTRICAL DISTRIBUTION	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	J12	H13	S6	90 MIN			01C-BL	HW:MTL-10
M-1103A	ACADEMY STORE	F	4' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	8 / MAQ-A-721	H6	S6	180 MIN			EXT 01-BL	HOLD OPEN, HW TO MATCH MTL-10
M-1103B	STORE STORAGE	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01	
M-1103C	ACADEMY STORE	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	J12	H13	S6	-			06C	HW:MTL-10
M-1104	TELCOM	F2	5' - 0"	7' - 10"	HM	PT-03	2	HM	PT-03	J12	H13	S2	90 MIN		CARD READER	SEC 02-BL	HW:MTL-10
M-1105	W TOILET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J1	H1	S2	-	SG		02-BL	HW:MTL-10
M-1106	ELECTRICAL DISTRIBUTION	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	J12	H13	S6	90 MIN			01-BL	HW:MTL-10
M-1107	GN TOILET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J1	H1	S2	-	SG		03A-BL	HW:MTL-10
M-1108	EM. ELEC. CLOSET	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN			01A	
M-1108B	CORRIDOR	F	3' - 8"	7' - 10"	HM	WV-01	1	HM	WV-01	6 / MAQ-A-721	6 / MAQ-A-721	S6	-			01C-BL	WV TO MATCH WALL PANELS, HW TO MATCH MTL-10
M-1109	M TOILET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J1	H1	S2	-	SG		02-BL	HW:MTL-10
M-1112	M TOILET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	WV-01	J1	H1	S2	-	SG		02-BL	HW:MTL-10
M-1114	GN TOILET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	WV-01	J1	H1	S2	-	SG		03A-BL	HW:MTL-10
M-1116	W TOILET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	WV-01	J1	H1	S2	-	SG		02-BL	HW:MTL-10
M-1118	EM. ELEC. CLOSET	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	J12	H13	S2	90 MIN			01C-BL	HW:MTL-10
M-1120	ELECTRICAL DISTRIBUTION	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	J12	H13	S6	90 MIN			01C-BL	HW:MTL-10
M-1122	TELCOM	F2	5' - 0"	7' - 10"	HM	PT-03	2	HM	PT-03	J12	H13	S2	90 MIN		CARD READER	SEC 02-BL	HW:MTL-10
M-1126	W TOILET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	WV-01	J1	H1	S2	-	SG		02-BL	HW:MTL-10
M-1128	JANITOR'S CLOSET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	WV-01	J1	H1	S2	-			01A-BL	HW:MTL-10
M-1130	M TOILET	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	WV-01	J1	H1	S2	-	SG		02-BL	HW:MTL-10
M-1200	KITCHEN CORRIDOR	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	WV-01	J1	H1	S6	-			02A	HW:MTL-10
M-1200A	BEVERAGE STATION	FG2	5' - 9 1/2"	7' - 9 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	15 / GEN-A-735	14 / GEN-A-735	13 / GEN-A-735	-			AL 04	DOOR PART OF VP-03 SYSTEM
M-1200B	BEVERAGE STATION	FG	2' - 11 3/4"	7' - 9 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	15 / GEN-A-735	14 / GEN-A-735	13 / GEN-A-735	-			AL 05	DOOR PART OF VP-03 SYSTEM
M-1201	DISHWASHING AREA	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S1	-			10	
M-1207A	FOOD PREP AREA	V	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S3	-			02A	
M-1207B	FOOD PREP AREA	V2	6' - 0"	6' - 10"	HM	PT-01	2	HM	PT-01	J1	H1	S3	-			11	MECHANICAL DOOR OPERATOR
M-1207C	FOOD PREP AREA	SPECIALTY	3' - 0"	7' - 0"	SS	MTL-04	1	-	-		H15	S3	-			BO	BI-SWINGING KITCHEN DOOR WITH VISION LITE
M-1207D	FOOD PREP AREA	SPECIALTY	3' - 0"	7' - 0"	SS	MTL-04	1	-	-		H15	S3	-			BO	BI-SWINGING KITCHEN DOOR WITH VISION LITE
M-1208	SERVICE CORRIDOR	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J12	H13	S6	-			06C	

DOOR SCHEDULE - NUMBER

WTWT	ROOM NAME	DOOR					FRAME			DETAIL			FIRE RATING	ACOUSTIC	SECURITY	HARDWARE	COMMENTS
		TYPE	WIDTH	HEIGHT	MATERIAL	FINISH	TYPE	MATERIAL	FINISH	JAMB	HEAD	SILL					
M-1209	FOOD SERVICE MANAGER	V	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	-	SG		12	
M-1210	W STAFF LOCKERS	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	-	SG		06	
M-1211	WORKERS OFFICE	V	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	-	SG		12	
M-1212	STAFF TOILET	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	-	SG		07	
M-1214	M STAFF LOCKERS	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	-	SG		06	
M-1216	CUSTODIAL SUPERVISOR	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	-	SG		12	
M-1217	DRY STORAGE	F	3' - 6"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			06	
M-1218	CUSTODIAL WORK AREA	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	-	SG		12	
M-1219	FOOD WASTE STAGING	F	3' - 6"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			06	
M-1220	LOADING DOCK STORAGE	V2	6' - 0"	6' - 10"	HM	PT-01	2	HM	PT-01	J1	H1	S6	-			11	MECHANICAL DOOR OPERATOR
M-1222	LOADING DOCK	F2	6' - 0"	7' - 10"	HM	PT-01	2	HM	PT-01	J1	H1	S6	-			13	INSULATED HM DOOR
M-1224	KITCHEN SUPPLY STORAGE	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01	
M-1226	CADET CHANGING AREA	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-	SG		07A	
M-1500A	STORAGE	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	J12	H13	S6	-			01C-BL	HW:MTL-10
M-1501	SIMULATION SUITE	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J1	H1	S6	-	SG		02A-BL	HW:MTL-10
M-1502	ITV TRAINING	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	J12	H13	S6	-	STC-55		STC 02	HW:MTL-10
MC-01	STAIR MC	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	J12	H13	S6	90 MIN			04-BL	HW:MTL-10
MAQ-LEVEL 2																	
M-2101	TELCOM	F	4' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN		CARD READER	SEC 01A	
M-2102	DAY ROOM	FG2	6' - 0"	6' - 9 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	24 / GEN-A-735	23 / GEN-A-735	22 / GEN-A-735	20 MIN			AL 06	DOOR PART OF VP-05 SYSTEM
M-2103	LAUNDRY	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	20 MIN			06C	
M-2103A	LINEN CLOSET	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01A	
M-2104	ELECTRICAL DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN			01A	
M-2106	SERVICE CORRIDOR	F	3' - 0"	6' - 10"	HM	PT-03	1	HM	PT-03	J1	H1	S2	20 MIN			01	
M-2106A	ELECTRICAL DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01	
M-2106B	EM. ELEC. CLOSET	F	2' - 8"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01A	
M-2107	LUGGAGE STORAGE	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	20 MIN			01	
M-2107A	DRY GOODS STORAGE	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01A	
M-2108	SERVICE CORRIDOR	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	20 MIN			01	
M-2108A	ELECTRICAL DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01A	
M-2108B	EM. ELEC. CLOSET	F	2' - 8"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01	
M-2109	JANITOR CLOSET	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	20 MIN			06	
M-2110	DAY ROOM	FG2	6' - 0"	6' - 9 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	24 / GEN-A-735	23 / GEN-A-735	22 / GEN-A-735	20 MIN			AL 06	DOOR PART OF VP-05 SYSTEM
M-2111	TELCOM	F	4' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN		CARD READER	SEC 01B	
M-2112	ELECTRICAL DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN			01A	
M-2113	LAUNDRY	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	20 MIN			06C	
M-2113A	LINEN CLOSET	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01A	
MAQ-LEVEL 3																	
M-3101	TELCOM	F	4' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN		CARD READER	SEC 01A	
M-3102	DAY ROOM	FG2	6' - 0"	6' - 9 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	24 / GEN-A-735	23 / GEN-A-735	22 / GEN-A-735	20 MIN			AL 06	DOOR PART OF VP-05 SYSTEM
M-3103	LAUNDRY	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	20 MIN			06C	
M-3103A	LINEN CLOSET	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01A	
M-3104	ELECTRICAL DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN			01A	
M-3106	SERVICE CORRIDOR	F	3' - 0"	6' - 10"	HM	PT-03	1	HM	PT-03	J1	H1	S2	20 MIN			01	
M-3106A	ELECTRICAL DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01	
M-3106B	EM. ELEC. CLOSET	F	2' - 8"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01A	
M-3107	LUGGAGE STORAGE	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	20 MIN			01	
M-3107A	DRY GOODS STORAGE	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01A	
M-3108	SERVICE CORRIDOR	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	20 MIN			01	
M-3108A	ELECTRICAL DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01A	
M-3108B	EM. ELEC. CLOSET	F	2' - 8"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01	
M-3109	JANITOR CLOSET	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	20 MIN			06	
M-3110	DAY ROOM	FG2	6' - 0"	6' - 9 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	24 / GEN-A-735	23 / GEN-A-735	22 / GEN-A-735	20 MIN			AL 06	DOOR PART OF VP-05 SYSTEM
M-3111	TELCOM	F	4' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN		CARD READER	SEC 01B	
M-3112	ELECTRICAL DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN			01A	
M-3113	LAUNDRY	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	20 MIN			06C	
M-3113A	LINEN CLOSET	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01A	
MAQ-LEVEL 4																	
M-4101	TELCOM	F	4' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN		CARD READER	SEC 01A	
M-4102	DAY ROOM	FG2	6' - 0"	6' - 9 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	24 / GEN-A-735	23 / GEN-A-735	22 / GEN-A-735	20 MIN			AL 06	DOOR PART OF VP-05 SYSTEM
M-4103	LAUNDRY	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	20 MIN			06C	
M-4103A	LINEN CLOSET	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01A	
M-4104	ELECTRICAL DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN			01A	
M-4106	SERVICE CORRIDOR	F	3' - 0"	6' - 10"	HM	PT-03	1	HM	PT-03	J1	H1	S2	20 MIN			01	
M-4106A	ELECTRICAL DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01	
M-4106B	EM. ELEC. CLOSET	F	2' - 8"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01A	
M-4107	LUGGAGE STORAGE	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	20 MIN			01	
M-4107A	DRY GOODS STORAGE	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01A	
M-4108	SERVICE CORRIDOR	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	20 MIN			01	
M-4108A	ELECTRICAL DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01A	
M-4108B	EM. ELEC. CLOSET	F	2' - 8"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01	
M-4110	DAY ROOM	FG2	6' - 0"	6' - 9 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	24 / GEN-A-735	23 / GEN-A-735	22 / GEN-A-735	20 MIN			AL 06	DOOR PART OF VP-05 SYSTEM
M-4111	TELCOM	F	4' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN		CARD READER	SEC 01B	
M-4112	ELECTRICAL DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN			01A	
M-4113	LAUNDRY	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	20 MIN			06C	
M-4113A	LINEN CLOSET	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	-			01A	
M-4201	PLUMBING DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN			01A	
M-4202	PLUMBING DISTRIBUTION	F2	6' - 0"	6' - 10"	HM	PT-01	2	HM	PT-01	J1	H1	S2	90 MIN			05	
M-4203	PLUMBING DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN			01	
M-4204	PLUMBING DISTRIBUTION	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S2	90 MIN			01A	
MAQ-ROOF																	
EM-5000		F	3' - 0"	6' - 10"	HM	PT-02	1	HM	PT-02	J1	H1	S5	-			EXT 02	INSULATED HM EXTERIOR DOOR
M-5001		F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			01	

DOOR SCHEDULE - TYPE

TYPE	LOCATION	DOOR					FRAME			DETAIL			FIRE RATING	ACOUSTIC	SECURITY	HARDWARE	COMMENTS
		TYPE	WIDTH	HEIGHT	MATERIAL	FINISH	TYPE	MATERIAL	FINISH	JAMB	HEAD	SILL					
DT-01	DORMITORY	V4	2' - 10"	6' - 10"	WD	WV-01	1	HM	PT-01	J1	H1	S1	20 MIN	SG		DT 01	WDDRA-01 10" X 10" VISION LIT WITH COV0R
DT-02	DORM BATHROOM	F	2' - 10"	6' - 10"	WD	WV-01	1	HM	PT-01	J1	H1	S4	-			DT 02	
DT-02A	ADA DORM BATHROOM	F	3' - 0"	6' - 10"	WD	WV-01	1	HM	PT-01	J1	H1	S4	-			DT 02A	
DT-03	DORM CLOSET	F	1' - 4"	6' - 10"	WD	WV-01	1	HM	PT-01	J1	H1	S6	-			DT 03	
DT-04	OFFICE	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-01	J1	H1	S1	-	SG		DT 04	HW:MTL-10
DT-05	GLASS OFFICE	FG	3' - 0"	8' - 5 1/2"	ALUM/GL	MTL-12/GL-05	-	ALUM	MTL-12	6 / GEN-A- 735	5 / GEN-A-735	4 / GEN-A-735	-			DT05	DOOR PART OF VP-01 SYSTEM
DT-06	EGRESS STAIR	F	3' - 0"	7' - 10"	HM	PT-03	1	HM	PT-03	J1	H1	S6	90 MIN			DT 06	
DT-06A	EGRESS STAIR	F	3' - 0"	6' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S6	90 MIN			DT 06A	
DT-06B	EGRESS STAIR	F	3' - 0"	6' - 10"	HM	PT-03	1	HM	PT-03	J1	H1	S6	90 MIN			DT 06B	
DT-07	CLASSROOM	F	3' - 0"	7' - 10"	WD	WV-01	3	HM	PT-03	J1	H1	S1	-	SG		DT 07	GL-05 SIDELITE, HW:MTL-10
DT-07A	CLASSROOM	F	3' - 0"	7' - 10"	WD	WV-01	3	HM	PT-03	J1	H1	S1	-	SG		DT 07A	GL-05 SIDELITE, HW:MTL-10,WV TO MATCH WALL PANELS
DT-08	CLASSROOM STORAGE	F	3' - 0"	7' - 2"	WD	WV-01	1	HM	PT-03	J1	H1	S1	-			DT 08	HW:MTL-10
DT-08A	CLASSROOM STORAGE	F	3' - 0"	7' - 10"	HM	PT-01	1	HM	PT-01	J1	H1	S1	-			DT 08A	HW:MTL-10
DT-08B	CLASSROOM STORAGE	F	3' - 0"	7' - 10"	WD	WV-01	1	HM	PT-03	J1	H1	S1	-			DT 08B	HW:MTL-10, WV TO MATCH ADJACENT PANEL

2

SG = SOUND GASKETS

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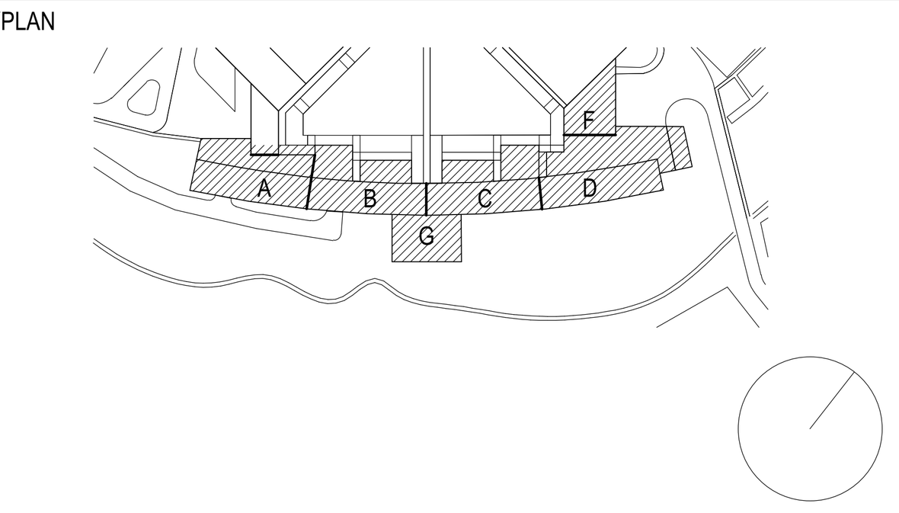
KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
2	21 JULY 2023	ADDENDUM 34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

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ARCHITECT
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING:
0 1

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DOOR SCHEDULE

SHEET No.
MAQ-A-710

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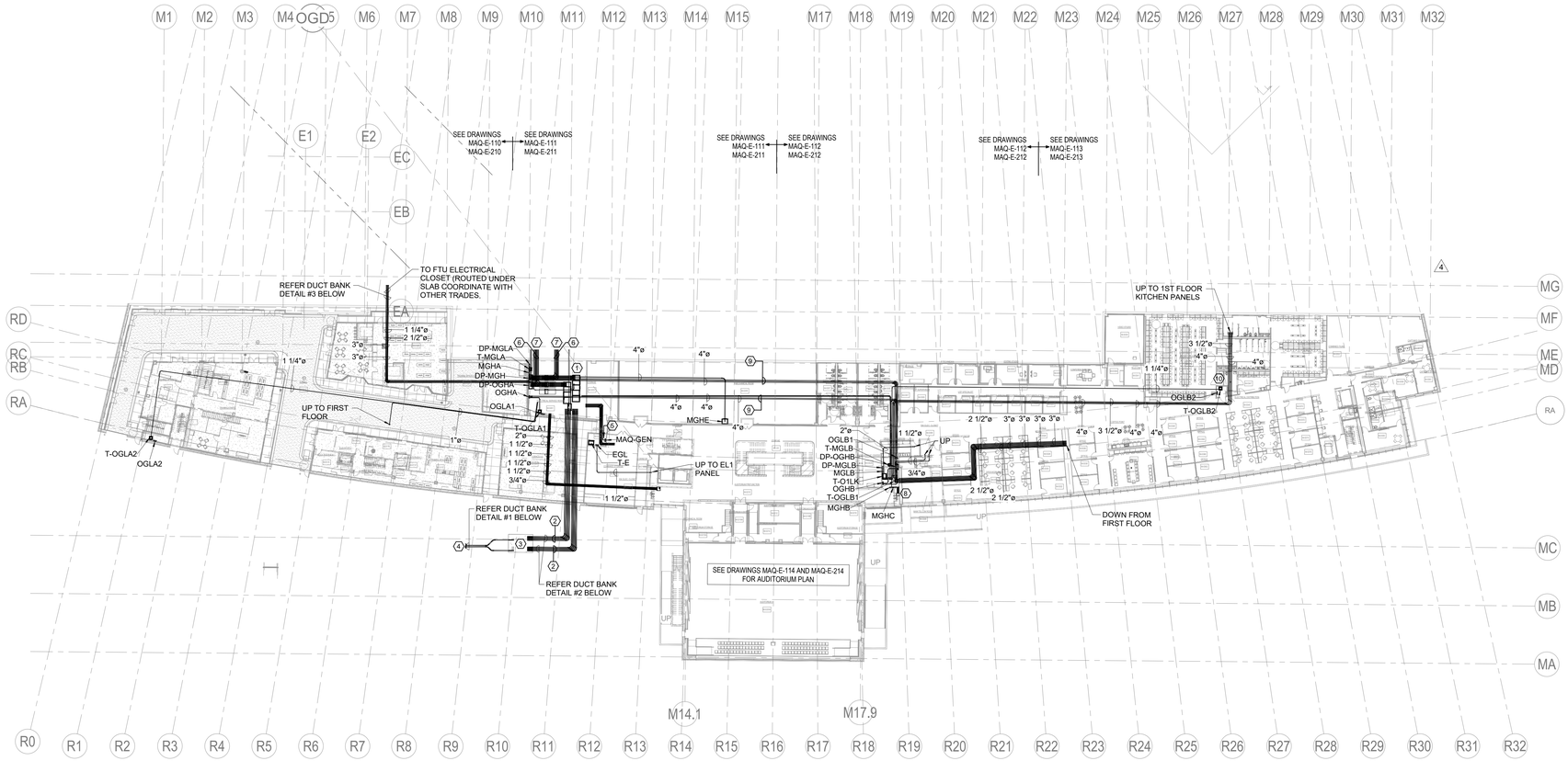
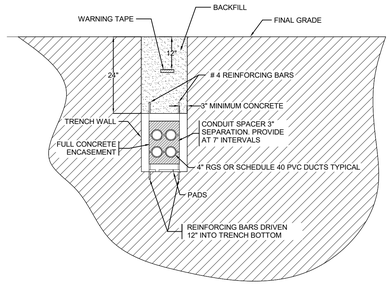
LS	TNB	SEPT 2022	AS NOTED



1 OVERALL FLOOR PLAN - LEVEL 0 - ELECTRICAL SYSTEMS

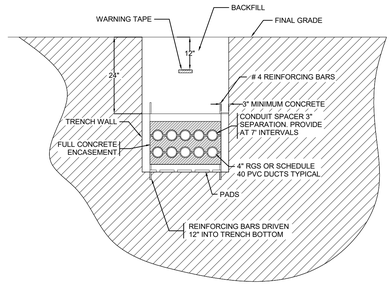
SCALE: 1/32" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"



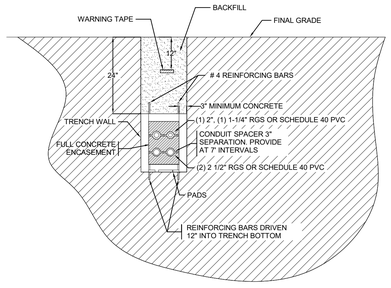
2 SERVICE DUCT BANK DETAIL #1

SCALE: N.T.S.



3 SERVICE DUCT BANK DETAIL #2

SCALE: N.T.S.



4 SERVICE DUCT BANK DETAIL #3

SCALE: N.T.S.

GENERAL NOTES

1. REFER TO GEN-E-001 FOR SYMBOLS, ABBREVIATIONS AND NOTES.
2. REFER TO MAQ-E-401 FOR ENLARGED PLANS.
3. REFER TO GEN-E-701 FOR DETAILS.
4. CONDUIT ROUTING AND TRANSFORMER PAD AND UTILITY POLE LOCATIONS ON SITE ARE FOR REFERENCE ONLY. REFER TO SITE/CIVIL PLANS FOR EXACT LOCATION AND ROUTING.

SHEET NOTES

1. TWO (2) 3 PHASE, 4 WIRE, 277/480V, 3000AMP SERVICES COMING FROM UTILITY FOR MARQUEE BUILDING.
2. UNDERGROUND ELECTRIC SERVICE FEEDERS, (16) POWER, (4) SPARE.
3. TRANSFORMERS BY UTILITY, PAD TO BE BY GENERAL CONTRACTOR, COORDINATE WITH PPL.
4. INCOMING ELECTRIC SERVICE FEEDERS FROM UTILITY - (4) 4" CONDUITS, COORDINATE WITH PPL.
5. ATS ROOM
6. UNDERGROUND EMERGENCY ELECTRIC SERVICE FEEDERS.
7. INCOMING EMERGENCY SERVICE FEEDERS FROM EMERGENCY GENERATOR
8. ELECTRICAL DISTRIBUTION ROOM FOR THE EAST SIDE OF THE BUILDING
9. UNDERGROUND ELECTRICAL DISTRIBUTION FEEDERS FROM MAIN ELECTRICAL ROOM TO ELECTRICAL DISTRIBUTION ROOM
10. ELECTRICAL CLOSETS.

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POOL DESIGN

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KEYPLAN

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
5	21 JUL 2023	ADDENDUM 34			
4	14 JUL 2023	ADDENDUM 32			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
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2023-06-16
SIGNATURE DATE

ARCHITECT

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

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OVERALL FLOOR PLAN - LEVEL 0 - ELECTRICAL SYSTEMS

SHEET No.
MAQ-E-101

DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK		AS NOTED

1 FLOOR PART PLAN D - LEVEL 0 - LIGHTING SYSTEMS

SCALE: 1/8" = 1'-0"

0 16'-0" 32'-0" 64'-0" 128'-0"

Level 0		
Color	**Room Types**	**Proposed Lighting Control Strategy**
	Auditorium	1. Lighting control touch screen near entrance 2. Multi-zone preset dimmable control 3. Vacancy sensor 4. Daylight sensor
	Offices, Individual Offices,...	1. Local dimming control 2. Occupancy sensor 3. Daylight sensor
	Lobby	1. Local switch control on/off 2. Occupancy sensor auto-dimming
	Locker Rooms	1. Local switch control on/off 2. Occupancy sensor auto-dimming
	Back of House Spaces	1. Manual on/off wall control Janitor closets and telecom closets will have occupancy sensors.
	Stairwell	1. Bi-level control with occupancy sensor override 2. Daylight sensor 3. No manual control for egress lighting 4. All emergency lighting
1. All spaces with occupancy sensors must have full auto-off within 20 minutes of all occupants leaving the space. 2. Bi-level control with occupancy sensor override - 50% brightness...		

GENERAL NOTES

1. REFER TO MAQ-E-001 FOR SYMBOLS, ABBREVIATIONS AND NOTES.
2. REFER TO MAQ-E-601 FOR PANEL SCHEDULES.
3. REFER TO GEN-E-701 FOR DETAILS.
4. NOTE THAT ALL NEW EXPOSED CABLES ABOVE THE CEILING SHALL BE PLENUM RATED.

SHEET NOTES

1. ALL EXIT SIGNS SHALL WIRE TO UNSWITCHED SIDE OF NEAREST LIGHTING CIRCUIT WITH 90 MINUTE BATTERY BACK-UP. RELAY SHALL BE PROVIDED TO GENERATOR BACK-UP.
2. EMERGENCY LIGHTING SHALL HAVE 90 MINUTE BATTERY BACK-UP. RELAY SHALL BE PROVIDED TO GENERATOR BACK-UP.
3. PROVIDE CONTROL WIRING FROM DMX JUNCTION BOX TO MAIN DMX CONTROL PANEL INDICATED IN NOTE 4. COORDINATE EXACT LOCATION OF JUNCTION BOX WITH ARCHITECT'S DRAWINGS.

VERIFY SCALE

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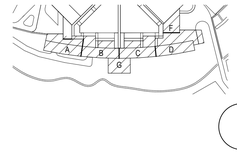
KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
5	21 JUL 2023	ADDENDUM 34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
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ENGINEER
PE031776E

SIGNATURE 2023-06-16 DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

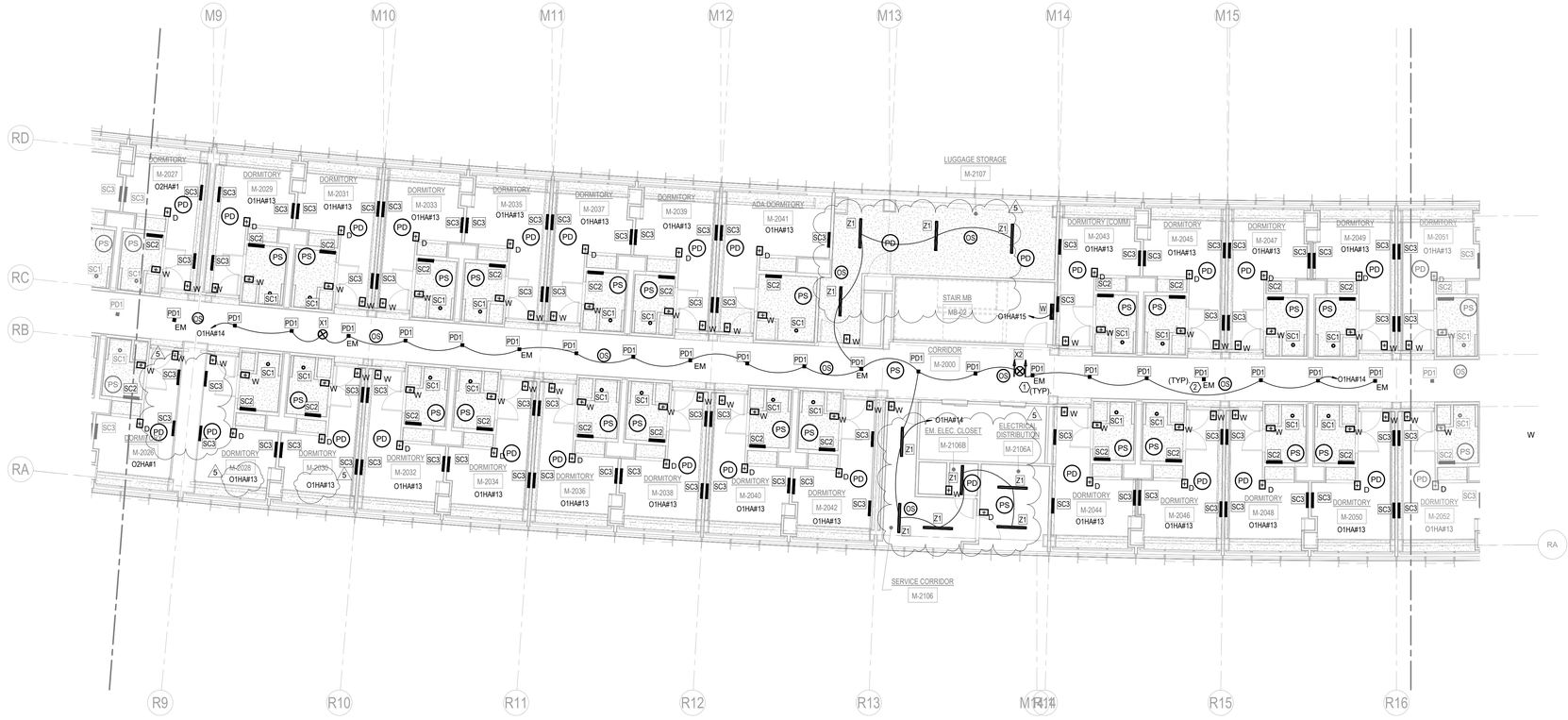
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

FLOOR PART PLAN D - LEVEL 0 - LIGHTING SYSTEMS

SHEET No. MAQ-E-213

DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK		AS NOTED



1 FLOOR PART PLAN B - LEVEL 2 - LIGHTING SYSTEMS

SCALE: 1/8" = 1'-0"

0 16'-0" 32'-0" 64'-0" 128'-0"

Level 2		
Color	Room Types	Proposed Lighting Control Strategy
	Dorm	Local on/off wall control
	Day Room	1. Manual dimmable wall control 2. Occupancy sensor 3. Daylight sensor
	Laundry	1. Local on/off wall control 2. Occupancy sensor 3. Daylight sensor
	Corridor, Elevator Lobby	1. Bi-level control with occupancy sensor override 2. Daylight sensor where applicable 3. No manual control for egress lighting
	Kitchenette	1. Local on/off wall control 2. Occupancy sensor 3. Daylight sensor
	Back of House Spaces	1. Manual on/off wall control Janitor closets and telecom closets will have occupancy sensors.
	Storage	1. Local on/off wall control 2. Occupancy sensor
	Stairwell	1. Bi-level control with occupancy sensor override 2. Daylight sensor 3. No manual control for egress lighting 4. All emergency lighting
1. All spaces with occupancy sensors must have full auto-off within 20 minutes of all occupants leaving the space. 2. Bi-level control with occupancy sensor override - 50% brightness...		

GENERAL NOTES

1. REFER TO MAQ-E-001 FOR SYMBOLS, ABBREVIATIONS AND NOTES.
2. REFER TO MAQ-E-601 FOR PANEL SCHEDULES.
3. REFER TO GEN-E-701 FOR DETAILS.
4. NOTE THAT ALL NEW EXPOSED CABLES ABOVE THE CEILING SHALL BE PLENUM RATED.

SHEET NOTES

1. ALL EXIT SIGNS SHALL WIRE TO UNSWITCHED SIDE OF NEAREST LIGHTING CIRCUIT WITH 90 MINUTE BATTERY BACK-UP. RELAY SHALL BE PROVIDED TO GENERATOR BACK-UP.
2. EMERGENCY LIGHTING SHALL HAVE 90 MINUTE BATTERY BACK-UP. RELAY SHALL BE PROVIDED TO GENERATOR BACK-UP.

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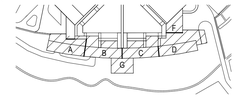

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1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
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PE053176E
PENNSYLVANIA

2023-06-16
SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
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D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

FLOOR PART PLAN B - LEVEL 2 - LIGHTING SYSTEMS

SHEET No. MAQ-E-231

DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK		AS NOTED

1 FLOOR PART PLAN C - LEVEL 2 - LIGHTING SYSTEMS

SCALE: 1/8" = 1'-0"

0 16'-0" 32'-0" 64'-0" 128'-0"

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2. EMERGENCY LIGHTING SHALL HAVE 90 MINUTE BATTERY BACK-UP. RELAY SHALL BE PROVIDED TO GENERATOR BACK-UP.

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1. All spaces with occupancy sensors must have full auto-off within 20 minutes of all occupants leaving the space.
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SIGNAGE CONSULTANT
Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

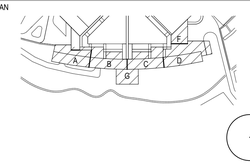
LANDSCAPE
Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING
MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
5	21 JUL 2023	ADDENDUM 34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033178E
PENNSYLVANIA

2023-06-16

SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING: 0 1

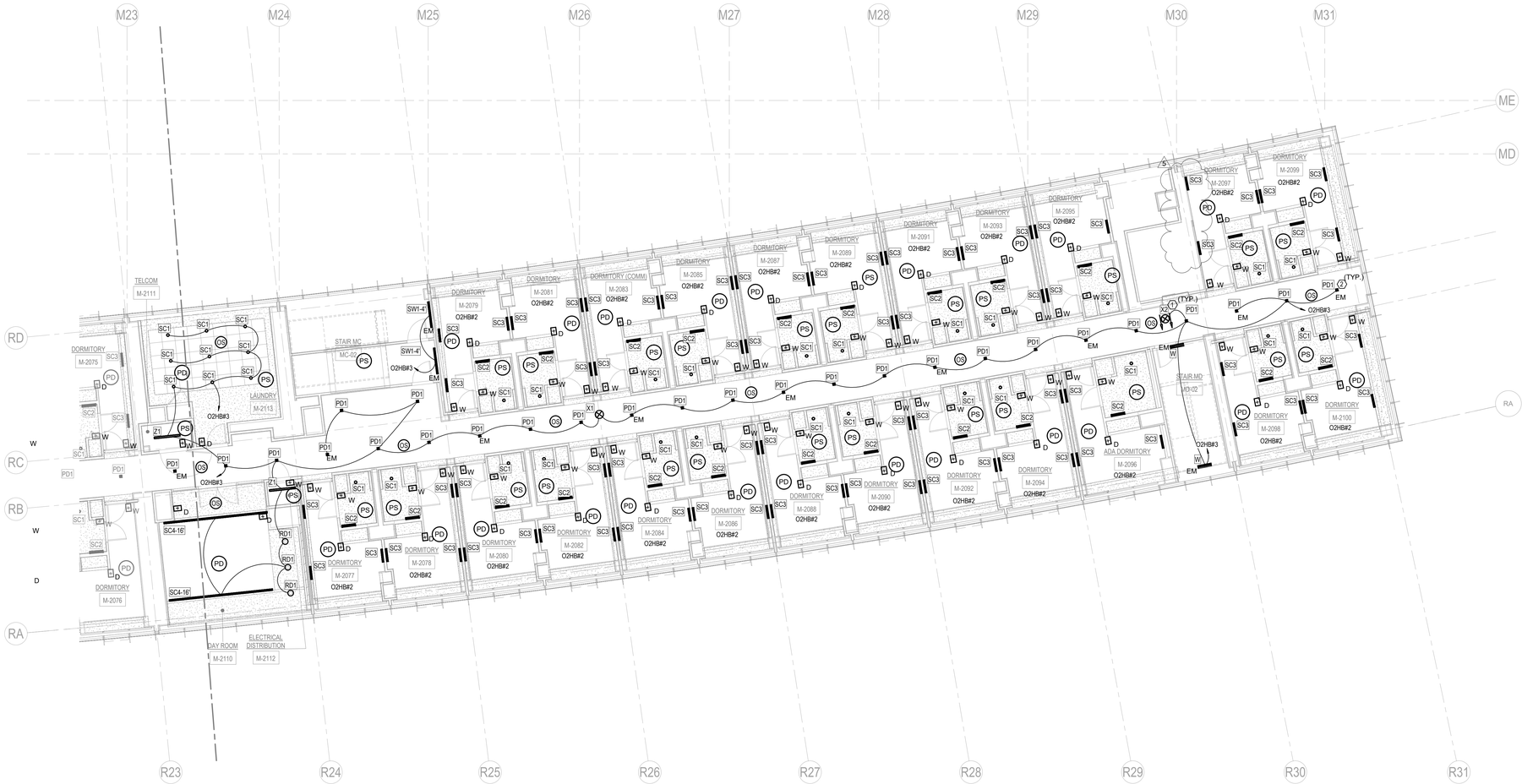
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

FLOOR PART PLAN C - LEVEL 2 - LIGHTING SYSTEMS

SHEET No. MAQ-E-232

DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK		AS NOTED



1 FLOOR PART PLAN D - LEVEL 2 - LIGHTING SYSTEMS

SCALE: 1/8" = 1'-0"

0 16'-0" 32'-0" 64'-0" 128'-0"

Level 2		
Color	**Room Types**	**Proposed Lighting Control Strategy**
	Dorm	Local on/off wall control
	Day Room	1. Manual dimmable wall control 2. Occupancy sensor 3. Daylight sensor
	Laundry	1. Local on/off wall control 2. Occupancy sensor 3. Daylight sensor
	Corridor, Elevator Lobby	1. Bi-level control with occupancy sensor override 2. Daylight sensor where applicable 3. No manual control for egress lighting
	Kitchenette	1. Local on/off wall control 2. Occupancy sensor 3. Daylight sensor
	Back of House Spaces	1. Manual on/off wall control Janitor closets and telecom closets will have occupancy sensors.
	Storage	1. Local on/off wall control 2. Occupancy sensor
	Stairwell	1. Bi-level control with occupancy sensor override 2. Daylight sensor 3. No manual control for egress lighting 4. All emergency lighting
1. All spaces with occupancy sensors must have full auto-off within 20 minutes of all occupants leaving the space. 2. Bi-level control with occupancy sensor override - 50% brightness...		

GENERAL NOTES

1. REFER TO MAQ-E-001 FOR SYMBOLS, ABBREVIATIONS AND NOTES.
2. REFER TO MAQ-E-601 FOR PANEL SCHEDULES.
3. REFER TO GEN-E-701 FOR DETAILS.
4. NOTE THAT ALL NEW EXPOSED CABLES ABOVE THE CEILING SHALL BE PLENUM RATED.

SHEET NOTES

1. ALL EXIT SIGNS SHALL WIRE TO UNSWITCHED SIDE OF NEAREST LIGHTING CIRCUIT WITH 90 MINUTE BATTERY BACK-UP. RELAY SHALL BE PROVIDED TO GENERATOR BACK-UP.
2. EMERGENCY LIGHTING SHALL HAVE 90 MINUTE BATTERY BACK-UP. RELAY SHALL BE PROVIDED TO GENERATOR BACK-UP.

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
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250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
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CCI
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KEYPLAN

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ENGINEER
PE033178E
PENNSYLVANIA

SIGNATURE 2023-06-16 DATE

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C-0211-0005 PHASE 5

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FLOOR PART PLAN D - LEVEL 2 - LIGHTING SYSTEMS

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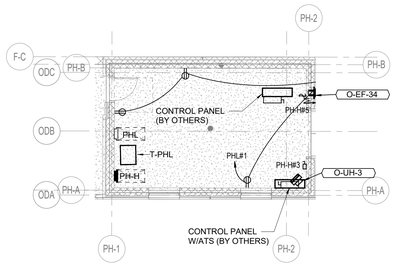
SHEET No. MAQ-E-233

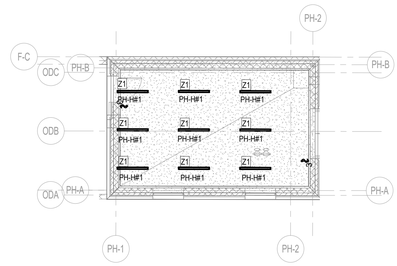
DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK		AS NOTED



1 PUMP HOUSE LEVEL - POWER PLAN

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"



2 PUMP HOUSE LEVEL - LIGHTING PLAN

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

SHEET NOTES

1. 3P-400A DISCONNECT SWITCH WITH 300A FUSES IN NEMA 3R ENCLOSURE. ENCLOSURE TO FEED THE 150HP PUMP IN THE PUMP HOUSE.
2. 3P-30A DISCONNECT SWITCH WITH 25A FUSES IN NEMA 3R ENCLOSURE.

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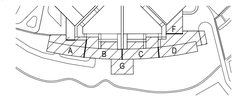

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ENGINEER
PE053174E
PENNSYLVANIA

2023-08-16

SIGNATURE DATE

ARCHITECT

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.

C-0211-0005 PHASE 5

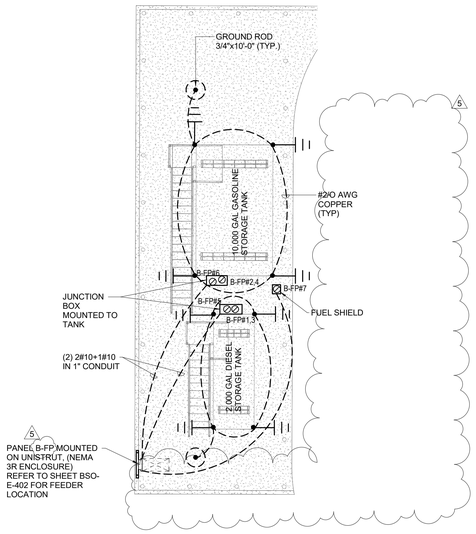
Pennsylvania State Police Academy Core buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

ENLARGED PART PLAN - PUMP HOUSE

SHEET No. MAQ-E-404

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED



1 FUEL PUMP STATION

SCALE: 1/8" = 1'-0"

0 8'-0" 16'-0" 32'-0" 64'-0"

5

PANEL NAME: B-FP

LOCATION:
FED FROM:
MOUTING STYLE: Surface
NEMA RATING: Type 1

VOLT: 120/208 Wye
PHASE: 3
WIRE: 4

A.I.C. RATING:
MCB OR MLO: MCB
BUS RATING 60 A
MCB TRIP: 60 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	2,000 GAL DIESEL STORAGE TANK	2#10+1#10G	20 A	2	1250	1250					2	20 A	2#10+1#10G	10,000 GAL GASOLINE STORA...	2
3							1250	1250							4
5	DISPENSER	2#10+1#10G	20 A	1					1440	1440	1	20 A	2#10+1#10G	DISPENSER	6
7	FUEL SHIELD	2#10+1#10G	20 A	1	1440	0					1	20 A	--	SPARE	8
9	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	10
11	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	12
		TOTAL PHASE LOAD			3,940 VA		2,500 VA		2,880 VA						
		TOTAL CONNECTED LOAD			26 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Power	9,320 VA	100.00%	9,320 VA		
				TOTAL CONN. LOAD...	9,320 VA
				TOTAL EST. DEMAND...	9,320 VA
				TOTAL CONN. AMPS:	26 A
				TOTAL DEMAND AMPS:	26 A

Notes:

5

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LOCAL ARCHITECT

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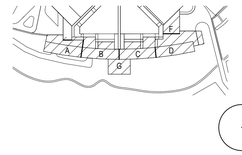

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REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E

2023-06-16

SIGNATURE DATE

ARCHITECT

SOM
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

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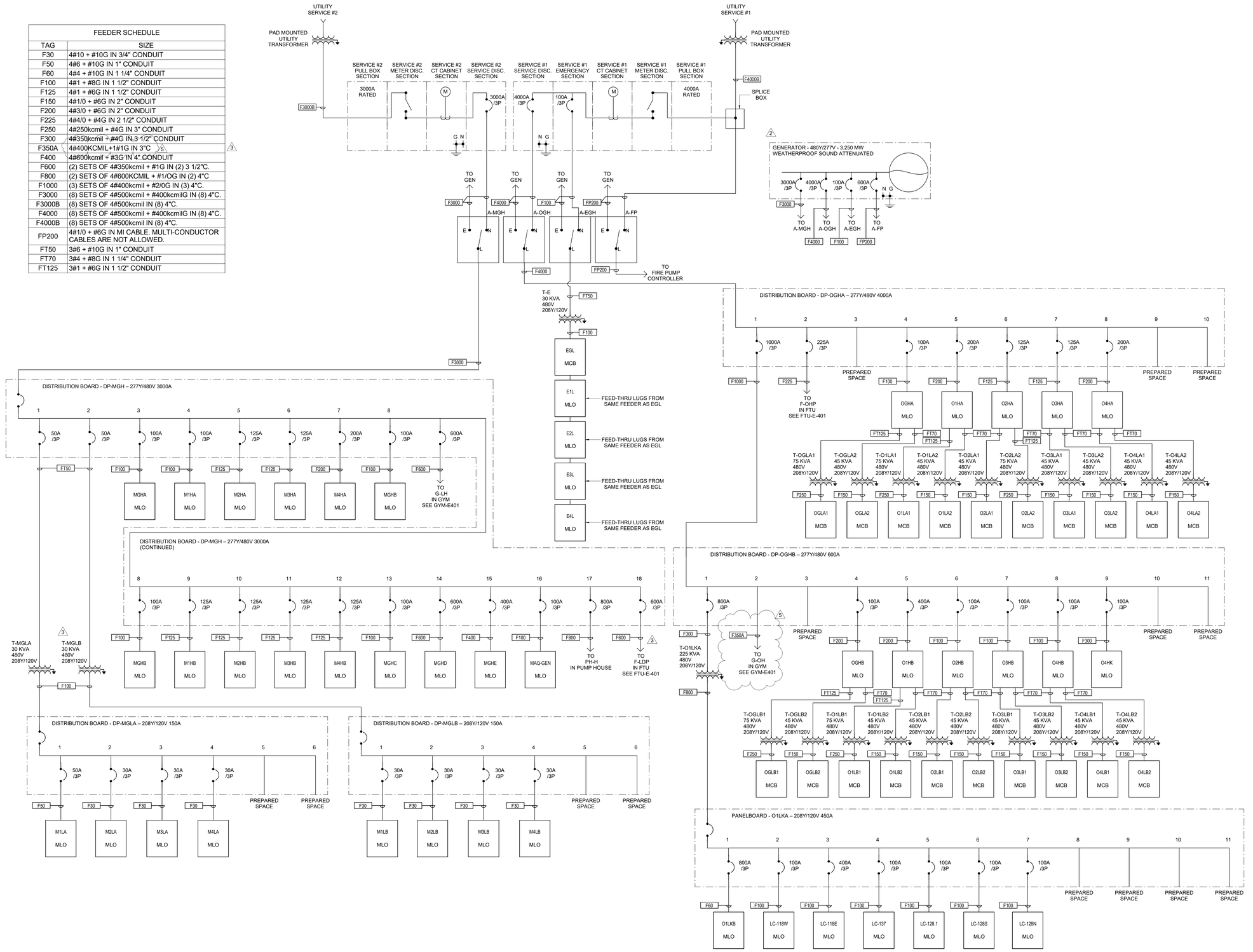
ENLARGED PLAN - FUEL PUMPING STATION

SHEET No. MAQ-E-405

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED

FEEDER SCHEDULE	
TAG	SIZE
F30	4#10 + #10G IN 3/4" CONDUIT
F50	4#6 + #10G IN 1" CONDUIT
F60	4#4 + #10G IN 1 1/4" CONDUIT
F100	4#1 + #8G IN 1 1/2" CONDUIT
F125	4#1 + #6G IN 1 1/2" CONDUIT
F150	4#1/0 + #6G IN 2" CONDUIT
F200	4#3/0 + #6G IN 2" CONDUIT
F225	4#4/0 + #4G IN 2 1/2" CONDUIT
F250	4#250kcmil + #4G IN 3" CONDUIT
F300	4#350kcmil + #4G IN 3-1/2" CONDUIT
F350A	4#400KCMIL+1#1G IN 3"C 5
F400	4#600kcmil + #3G IN 4" CONDUIT
F600	(2) SETS OF 4#350kcmil + #1G IN (2) 3 1/2"C.
F800	(2) SETS OF 4#600KCMIL + #1/0G IN (2) 4"C
F1000	(3) SETS OF 4#400kcmil + #2/0G IN (3) 4"C.
F3000	(8) SETS OF 4#500kcmil + #400kcmilG IN (8) 4"C.
F3000B	(8) SETS OF 4#500kcmil IN (8) 4"C.
F4000	(8) SETS OF 4#500kcmil + #400kcmilG IN (8) 4"C.
F4000B	(8) SETS OF 4#500kcmil IN (8) 4"C.
FP200	4#1/0 + #6G IN MI CABLE. MULTI-CONDUCTOR CABLES ARE NOT ALLOWED.
FT50	3#6 + #10G IN 1" CONDUIT
FT70	3#4 + #8G IN 1 1/4" CONDUIT
FT125	3#1 + #6G IN 1 1/2" CONDUIT



1 SINGLE LINE
SCALE: N.T.S.

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KEYPLAN

NO.	DATE	DESCRIPTION
5	21 JUL 2023	ADDENDUM 34
3	07 JUL 2023	ADDENDUM 31
2	23 JUN 2023	ADDENDUM 28
1	19 MAY 2023	ISSUED FOR BID

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2023-06-16
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No. C-0211-0005 PHASE 5
Base Bid No.

PA State Police Academy and BESO - Modernization
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

ELECTRICAL SINGLE LINE

SHEET No. MAQ-E-501

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED

MECHANICAL PANEL SCHEDULES

PANEL NAME: M1HA

LOCATION: ELECTRICAL DISTRIBUTION M-1106 **VOLT:** 480/277 Wye **A.I.C. RATING:** 42,000
FED FROM: DP-MGH **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 100A
NEMA RATING: Type 1 **MCB TRIP:** 100 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	M-EF-10	2#12+1#12G	20 A	1	700	700					1	20 A	2#12+1#12G	M-EF-11	2
3	M-FCU-1.34	2#12+1#12G	20 A	1			700	700			1	20 A	2#12+1#12G	M-FCU-1.1	4
5	M-FCU-1.3	2#12+1#12G	20 A	1					700	700	1	20 A	2#12+1#12G	M-FCU-1.53	6
7	M-FCU-1.23	2#12+1#12G	20 A	1	700	700					1	20 A	2#12+1#12G	M-FCU-1.4	8
9	M-FCU-1.5	2#12+1#12G	20 A	1			700	700			1	20 A	2#12+1#12G	M-FCU-1.7	10
11	M-FCU-1.8	2#12+1#12G	20 A	1					700	700	1	20 A	2#12+1#12G	M-FCU-1.9	12
13	M-FCU-1.47	2#12+1#12G	20 A	1	700	700					1	20 A	2#12+1#12G	M-FCU-1.10	14
15	M-FCU-1.6	2#12+1#12G	20 A	1			700	700			1	20 A	2#12+1#12G	M-FCU-1.12	16
17	M-FCU-1.13	2#12+1#12G	20 A	1					700	700	1	20 A	2#12+1#12G	M-FCU-1.14	18
19	M-FCU-1.15	2#12+1#12G	20 A	1	700	700					1	20 A	2#12+1#12G	M-FCU-1.11	20
21	M-FCU-1.16	2#12+1#12G	20 A	1			700	700			1	20 A	2#12+1#12G	M-FCU-1.46	22
23	M-FCU-1.47	2#12+1#12G	20 A	1					700	700	1	20 A	2#12+1#12G	M-FCU-1.17	24
25	M-FCU-1.2	2#12+1#12G	20 A	1	700	700					1	20 A	2#12+1#12G	M-FCU-1.24	26
27	M-FCU-1.22	2#12+1#12G	20 A	1			700	700			1	20 A	2#12+1#12G	M-FCU-1.18	28
29	M-FCU-1.19	2#12+1#12G	20 A	1					700	700	1	20 A	2#12+1#12G	M-FCU-1.20	30
31	M-TH-1	2#10+1#10G	20 A	1	1884	700					1	20 A	2#12+1#12G	M-FCU-1.21	32
33	M-TH-1	2#10+1#10G	20 A	1			1884	0			1	20 A	--	SPARE	34
35	M-TH-1	2#10+1#10G	20 A	1					1884	0	1	20 A	--	SPARE	36
37	M-TH-1	2#10+1#10G	20 A	1	1884	0					1	20 A	--	SPARE	38
39	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	40
41	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	42
	TOTAL PHASE LOAD				11,468 VA		8,884 VA		8,884 VA						
	TOTAL CONNECTED LOAD						35 A								

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Other	29,236 VA	100.00%	29,236 VA		
				TOTAL CONN. LOAD...	29,236 VA
				TOTAL EST. DEMAND...	29,236 VA
				TOTAL CONN. AMPS:	35 A
				TOTAL DEMAND AMPS:	35 A

Notes:

PANEL NAME: M1HB

LOCATION: ELECTRICAL DISTRIBUTION M-1120 **VOLT:** 480/277 Wye **A.I.C. RATING:** 22,000
FED FROM: DP-MGH **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 125 A
NEMA RATING: Type 1 **MCB TRIP:** 100 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	M-FCU-1.31	2#10+1#10G	20 A	1	139	700					1	20 A	2#10+1#10G	M-DSB-14	2
3	M-FCU-1.25	2#10+1#10G	20 A	1			700	1884			1	20 A	2#10+1#10G	M-TH-1	4
5	M-FCU-1.26	2#10+1#10G	20 A	1					700	1884	1	20 A	2#10+1#10G	M-TH-1	6
7	M-EF-13	2#10+1#10G	20 A	1	700	700					1	20 A	2#10+1#10G	M-EF-14	8
9	M-FPB-1.6	2#10+1#10G	20 A	1			693	693			1	20 A	2#10+1#10G	M-FPB-1.2	10
11	M-FPB-1.7	2#10+1#10G	20 A	1					693	693	1	20 A	2#10+1#10G	M-FPB-1.3	12
13	M-FPB-1.4	2#10+1#10G	20 A	1	693	693					1	20 A	2#10+1#10G	M-FPB-1.1	14
15	M-FCU-1.57	2#10+1#10G	20 A	1			700	700			1	20 A	2#10+1#10G	M-FCU-1.48	16
17	M-UH-1	2#10+1#10G	20 A	1					700	700	1	20 A	2#10+1#10G	M-FCU-1.49	18
19	M-FCU-1.50	2#10+1#10G	20 A	1	700	700					1	20 A	2#10+1#10G	M-FCU-1.44	20
21	M-FCU-1.37	2#10+1#10G	20 A	1			700	700			1	20 A	2#10+1#10G	M-FCU-1.34	22
23	M-FCU-1.43	2#10+1#10G	20 A	1					700	700	1	20 A	2#10+1#10G	M-FCU-1.35	24
25	M-FCU-1.36	2#10+1#10G	20 A	1	700	700					1	20 A	2#10+1#10G	M-FCU-1.33	26
27	M-FCU-1.31	2#10+1#10G	20 A	1			700	700			1	20 A	2#10+1#10G	M-FCU-1.28	28
29	M-FCU-1.32	2#10+1#10G	20 A	1					700	700	1	20 A	2#10+1#10G	M-FCU-1.29	30
31	M-FCU-1.30	2#10+1#10G	20 A	1	700	700					1	20 A	2#10+1#10G	M-FCU-1.27	32
33	M-AC-1	3#10+1#10G IN 3/4"C	15 A	3			664	664			3	15 A	3#10+1#10G IN 3/4"C	M-AC-2	34
35									664	664					36
37					664	664									38
39	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	40
41	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	42
43	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	44
45	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	46
47	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	48
49	PREPARED SPACE	--	--	1	--	--					1	--	--	PREPARED SPACE	50
51	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	52
53	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	54
	TOTAL PHASE LOAD				9,153 VA		9,498 VA		9,498 VA						
	TOTAL CONNECTED LOAD						34 A								

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Other	24,165 VA	100.00%	24,165 VA		
Power	3,984 VA	100.00%	3,984 VA	TOTAL CONN. LOAD...	28,149 VA
				TOTAL EST. DEMAND...	28,149 VA
				TOTAL CONN. AMPS:	34 A
				TOTAL DEMAND AMPS:	34 A

Notes:

PANEL NAME: M1LA

LOCATION: ELECTRICAL DISTRIBUTION M-1106 **VOLT:** 120/208 Wye **A.I.C. RATING:** 10,000
FED FROM: DP-MGLA **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 100 A
NEMA RATING: Type 1 **MCB TRIP:** 50 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	RECPT M-1104	2#12-1#12G	20 A	1	180	180					1	20 A	2#12+1#12G	RECPT M-0304	2
3	SERVER RECEPT.	2#12+1#12G	20 A	2			500	180			1	20 A	2#12+1#12G	RECPT M-0304	4
5									500	180	1	20 A	2#12+1#12G	RECPT M-0304	6
7	SERVER RECEPT.	2#12+1#12G	20 A	2	500	180					1	20 A	2#12+1#12G	RECPT M-0304	8
9							500	180			1	20 A	2#12+1#12G	RECPT M-0304	10
11	SERVER RECEPT.	2#12+1#12G	20 A	2					500	180	1	20 A	2#12+1#12G	RECPT M-0304	12
13					500	180					1	20 A	2#12+1#12G	RECPT M-0304	14
15	SERVER RECEPT.	2#12+1#12G	20 A	2			500	180			1	20 A	2#12+1#12G	RECPT M-0304	16
17									500	180	1	20 A	2#12+1#12G	RECPT M-0304	18
19	SERVER RECEPT.	2#12+1#12G	20 A	2	500	180					1	20 A	2#12+1#12G	RECPT M-1104	20
21							500	500			2	20 A	2#12+1#12G	SERVER RECEPT.	22
23	SERVER RECEPT.	2#12+1#12G	20 A	2					500	500					24
25					500	500					2	20 A	2#12+1#12G	SERVER RECEPT.	26
27	SPARE	--	20 A	1			0	500							28
29	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	30
31	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	32
33	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	34
35	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	36
37	PREPARED SPACE	--	--	1	--	--					1	--	--	PREPARED SPACE	38
39	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	40
41	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	42
	TOTAL PHASE LOAD				3,400 VA		3,540 VA		3,040 VA						
	TOTAL CONNECTED LOAD						28 A								

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Receptacle	9,980 VA	100.00%	9,980 VA		
				TOTAL CONN. LOAD...	9,980 VA
				TOTAL EST. DEMAND...	9,980 VA
				TOTAL CONN. AMPS:	28 A
				TOTAL DEMAND AMPS:	28 A

Notes:

PANEL NAME: M1LB

LOCATION: ELECTRICAL DISTRIBUTION M-1120 **VOLT:** 120/208 Wye **A.I.C. RATING:** 10,000
FED FROM: DP-MGLB **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 100 A
NEMA RATING: Type 1 **MCB TRIP:** 30 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	Receptacle	2#12+1#12G	20 A	1	180	360					1	20 A	2#12-1#12G	Receptacle	2
3	Receptacle	2#12-1#12G	20 A	1			180	360			1	20 A	2#12+1#12G	Receptacle	4
5	VAPOR TIGHT LIGHT	2#10+1#10G	20 A	1					180	360	1	20 A	2#12-1#12G	SEC PANEL 1122	6
7	ELEVATOR SUMP PUMP	3#10+1#10G	30 A	3	800	0					1	20 A	--	SPARE	8
9							800	0			1	20 A	--	SPARE	10
11									800	0	1	20 A	--	SPARE	12
13	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	14
15	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	16
17	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	18
	TOTAL PHASE LOAD				1,340 VA		1,340 VA		1,340 VA						
	TOTAL CONNECTED LOAD						11 A								

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Power	2,400 VA	100.00%	2,400 VA		
Receptacle	1,620 VA	100.00%	1,620 VA	TOTAL CONN. LOAD...	4,020 VA
				TOTAL EST. DEMAND...	4,020 VA
				TOTAL CONN. AMPS:	11 A
				TOTAL DEMAND AMPS:	11 A

Notes:

Branch Panel: M2HA

Location: ELECTRICAL DISTRIBUTION M-2106A **Volts:** 480/277 Wye **A.I.C. Rating:** 42,000
Supply From: DP-MGH **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 100A
Enclosure: Type 1 **Mains Rating:** 100 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A		B		C		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	DORM FCU-2-1...	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	DORM FCU-2-2...	2
3	DORM FCU-2-3...	2#10+1#10G	20 A	1			914	1634			1	20 A	2#10+1#10G	FCU-2-7 M-2102	4
5	FCU-2-5 M-2103A	2#10+1#10G	20 A	1					1643	1643	1	20 A	2#10+1#10G	FCU-2-6 M-2103A	6
7	FCU-2-8 M-2107	2#10+1#10G	20 A	1	1634	914					1	20 A	2#10+1#10G	DORM FCU-2-3...	8
9	FCU-2.16 M-2106B	2#10+1#10G	20 A	1			1634	914			1	20 A	2#10+1#10G	DORM FCU-2-3...	10
11	DORM FCU-2-4...	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	DORM FCU-2-3...	12
13	DORM FCU-2-3...	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	DORM FCU-2-3...	14
15	DORM FCU-2-3...	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	DORM FCU-2-3...	16
17	DORM FCU-2-3...	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	DORM FCU-2-3...	18
19	DORM FCU-2-3...	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	DORM FCU-2-3...	20
21	DORM FCU-2-3...	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	DORM FCU-2-3...	22
23	DORM FCU-2-3...	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	DORM FCU-2-3...	24
25	DORM FCU-2-3...	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	DORM FCU-2-3...	26
27	DORM FCU-2-3...	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	DORM FCU-2-3...	28
29	DORM FCU-2-3...	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	DORM FCU-2-3...	30
31	DORM FCU-2-3...	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	DORM FCU-2-3...	32
33	DORM FCU-2-3...	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	DORM FCU-2-3...	34
35	DORM FCU-2-3...	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	DORM FCU-2-3...	36
37	DORM FCU-2-3...	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	DORM FCU-2-3...	38
39	DORM FCU-2-3...	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	DORM FCU-2-3...	40
41	DORM FCU-2-3...	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	DORM FCU-2-3...	42
43	DORM FCU-2-3...	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	DORM FCU-2-3...	44
45	DORM FCU-2-3...	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	DORM FCU-2-3...	46
47	DORM FCU-2-3...	2#10+1#10G	20 A	1					914	0	1	20 A	--	SPARE	48
49	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	50
51	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	52
53	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	54
				Total Load	15,346 VA		16,066 VA		15,169 VA						
				Design Amp			56 A								

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	46,581 VA	100.00%	46,581 VA		
				Total Conn. Load:	46,581 VA
				Total Est. Demand:	46,581 VA
				Total Conn.:	56 A
				Total Est. Demand:	56 A

Notes:

Branch Panel: M2HB

Location: ELECTRICAL DISTRIBUTION M-2108A **Volts:** 480/277 Wye **A.I.C. Rating:** 22,000
Supply From: DP-MGH **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 125 A
Enclosure: Type 1 **Mains Rating:** 125 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A		B		C		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	FCU-2-3 M-2043	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-2-3 M-2044	2
3	FCU-2-3 M-2045	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-2-3 M-2046	4
5	FCU-2-3 M-2047	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-2-3 M-2048	6
7	FCU-2-3 M-2049	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-2-3 M-2050	8
9	FCU-2-3 M-2051	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-2-3 M-2052	10
11	FCU-2-3 M-2053	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-2-3 M-2054	12
13	FCU-2-3 M-2055	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-2-3 M-2056	14
15	FCU-2-3 M-2057	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-2-3 M-2058	16
17	FCU-2-3 M-2059	2#10+1#10G	20 A	1					914	750	1	20 A	2#10+1#10G	FCU-2-3 M-2060	18
19	FCU-2-3 M-2109	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-2-3 M-2062	20
21	FCU-2-3 M-2061	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-2-3 M-2064	22
23	FCU-2-3 M-2063	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-2-3 M-2066	24
25	FCU-2-3 M-2065	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-2-3 M-2068	26
27	FCU-2-3 M-2067	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-2-3 M-2070	28
29	FCU-2-3 M-2069	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-2-3 M-2072	30
31	FCU-2-3 M-2071	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-2-3 M-2074	32
33	FCU-2-3 M-2073	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-2-3 M-2075	34
35	FCU-2-3 M-2079	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-2-3 M-2081	36
37	FCU-2-3 M-2089	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-2-3 M-2083	38
39	FCU-2-3 M-2093	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-2-3 M-2085	40
41	FCU-2-3 M-2097	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-2-3 M-2087	42
43	FCU-2-3 M-2100	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-2-3 M-2091	44
45	FCU-2-3 M-2096	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-2-3 M-2095	46
47	FCU-2-3 M-2092	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-2-3 M-2099	48
49	FCU-2-3 M-2088	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-2-3 M-2098	50
51	FCU-2-3 M-2084	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-2-3 M-2094	52
53	FCU-2-3 M-2080	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-2-3 M-2090	54
55	FCU-2-3 M-2078	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-2-3 M-2086	56
57	FCU-2-3.13 M-2113	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-2-3 M-2082	58
59	FCU-2-3.12 M-2110	2#10+1#10G	20 A	1					1634	914	1	20 A	2#10+1#10G	FCU-2-3 M-2077	60
61	SPARE	--	20 A	1	0	914					1	20 A	2#10+1#10G	FCU-2-3 M-2076	62
63	SPARE	--	20 A	1			0	914			1	20 A	2#10+1#10G	FCU-2-3.11 M-2110	64
65	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	66
67	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	68
69	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	70
71	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	72
				Total Load	19,194 VA		19,194 VA		18,836 VA						
				Design Amp			69 A								

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	57,224 VA	100.00%	57,224 VA		
				Total Conn. Load:	57,224 VA
				Total Est. Demand:	57,224 VA
				Total Conn.:	69 A
				Total Est. Demand:	69 A

Notes:

Branch Panel: M3HA

Location: ELECTRICAL DISTRIBUTION M-3106A **Volts:** 480/277 Wye **A.I.C. Rating:** 42,000
Supply From: DP-MGH **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 100A
Enclosure: Type 1 **Mains Rating:** 125 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A		B		C		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	FCU-3-7 M-3102	2#10+1#10G	20 A	1	1634	1634					1	20 A	2#10+1#10G	FCU-3-6 M-3103A	2
3	FCU-3-5 M-3103A	2#10+1#10G	20 A	1			1634	1634			1	20 A	2#10+1#10G	FCU-3-8 M-3107	4
5	FCU-3.16 M-3106	2#10+1#10G	20 A	1					700	914	1	20 A	2#10+1#10G	FCU-3-3 M-3001	6
7	FCU-3-3 M-3002	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-3-3 M-3003	8
9	FCU-3-3 M-3004	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-3-3 M-3005	10
11	FCU-3-3 M-3006	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-3-3 M-3007	12
13	FCU-3-3 M-3008	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-3-3 M-3009	14
15	FCU-3-3 M-3010	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-3-3 M-3011	16
17	FCU-3-3 M-3012	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-3-3 M-3013	18
19	FCU-3-3 M-3014	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-3-3 M-3015	20
21	FCU-3-3 M-3016	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-3-3 M-3017	22
23	FCU-3-3 M-3018	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-3-3 M-3019	24
25	FCU-3-3 M-3020	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-3-3 M-3021	26
27	FCU-3-3 M-3022	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-3-3 M-3023	28
29	FCU-3-3 M-3024	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-3-3 M-3025	30
31	FCU-3-3 M-3029	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-3-3 M-3026	32
33	FCU-3-3 M-3030	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-3-3 M-3028	34
35	FCU-3-3 M-3032	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-3-3 M-3027	36
37	FCU-3-3 M-3034	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-3-3 M-3031	38
39	FCU-3-3 M-3036	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-3-3 M-3033	40
41	FCU-3-3 M-3038	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-3-3 M-3035	42
43	FCU-3-3 M-3040	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-3-3 M-3037	44
45	FCU-3-3 M-3043	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-3-3 M-3039	46
47	FCU-3-3 M-3045	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-3-3 M-3041	48
49	FCU-3-3 M-3047	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-3-3 M-3042	50
51	FCU-3-3 M-3049	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-3-3 M-3044	52
53	FCU-3-3 M-3051	2#10+1#10G	20 A	1					914	914	1	20 A	2#10+1#10G	FCU-3-3 M-3046	54
55	FCU-3-3 M-3053	2#10+1#10G	20 A	1	914	914					1	20 A	2#10+1#10G	FCU-3-3 M-3048	56
57	FCU-3-3 M-3055	2#10+1#10G	20 A	1			914	914			1	20 A	2#10+1#10G	FCU-3-3 M-3050	58
59	SPARE	--	20 A	1					0	914	1	20 A	2#10+1#10G	FCU-3-3 M-3052	60
61	SPARE	--	20 A	1	0	914					1	20 A	2#10+1#10G	FCU-3-3 M-3054	62
63	SPARE	--	20 A	1			0	914			1	20 A	2#10+1#10G	FCU-3-3 M-3056	64
65	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	66
67	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	68
69	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	70
71	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	72
				Total Load	20,634 VA		20,634 VA		17,152 VA						
				Design Amp			70 A								

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	58,420 VA	100.00%	58,420 VA		
				Total Conn. Load:	58,420 VA
				Total Est. Demand:	58,420 VA
				Total Conn.:	70 A
				Total Est. Demand:	70 A

Notes:

Branch Panel: M2LA

Location: ELECTRICAL DISTRIBUTION M-2108A **Volts:** 120/208 Wye **A.I.C. Rating:** 10,000
Supply From: DP-MGLB **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 100 A
Enclosure: Type 1 **Mains Rating:** 30 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	TELECOM M-1122	2#10+1#10G	20 A	1	180	360					1	20 A	2#10+1#10G	TELECOM M-2111	2
3	SEC PANEL M-2111	2#12+1#12G	20 A	1			360	180			1	20 A	2#10+1#10G	TELECOM M-2111	4
5	TELECOM M-1122	2#10+1#10G	20 A	1					180						6
7															8
9															10
11															12
13															14
15															16
17															18
				Total Load	540 VA		540 VA		180 VA						
				Design Amp			3 A								

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	1,260 VA	100.00%	1,260 VA		
				Total Conn. Load:	1,260 VA
				Total Est. Demand:	1,260 VA
				Total Conn.:	3 A
				Total Est. Demand:	3 A

Notes:

Branch Panel: M2LB

Location: ELECTRICAL DISTRIBUTION M-2106A **Volts:** 120/208 Wye **A.I.C. Rating:** 10,000
Supply From: DP-MGLA **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 100 A
Enclosure: Type 1 **Mains Rating:** 30 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	TELECOM M-2101	2#10+1#10G	20 A	1	180	360					1	20 A	2#10+1#10G	TELECOM M-2101	2
3	TELECOM M-2101	2#10+1#10G	20 A	1			360	0			1	20 A	--	SPARE	4
5	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	6
7	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	8
9	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	10
11	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	12
13	PREPARED SPACE	--	--	1	--	--					1	--	--	PREPARED SPACE	14
15	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	16
17	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	18
				Total Load	540 VA		360 VA		0 VA						
				Design Amp			2 A								

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	900 VA	100.00%	900 VA		
				Total Conn. Load:	900 VA
				Total Est. Demand:	900 VA
				Total Conn.:	2 A
				Total Est. Demand:	2 A

Notes:

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AV/IT ENGINEER
Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER
Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING
CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER
Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT
Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT
Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

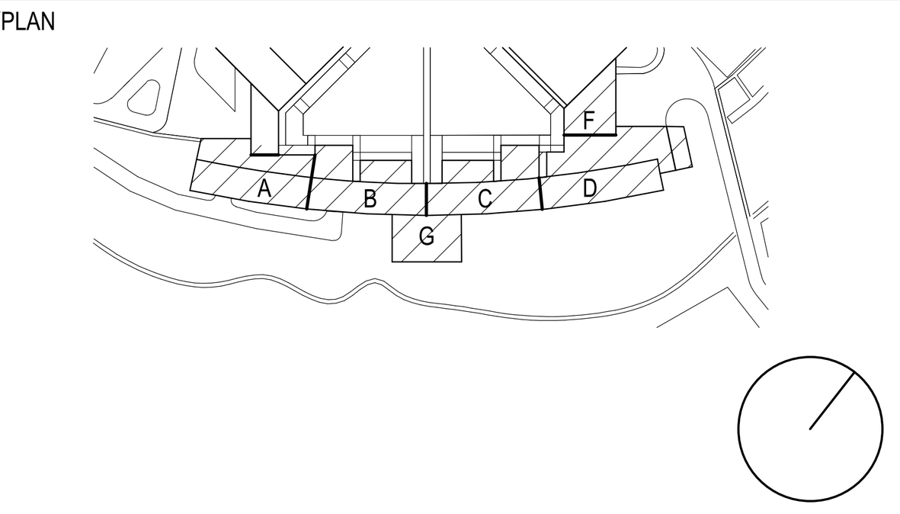
LANDSCAPE
Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING
MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
5	21 JUL 2023	ADDENDUM 34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E

2023-06-16
SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No. C-0211-0005 PHASE 5 | Base Bid No.

PA State Police Academy and BESO - Modernization
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

MECHANICAL PANEL SCHEDULES 1 OF 3

SHEET No. MAQ-E-601

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED

PANEL NAME: O1LKA

LOCATION: FOOD PREP AREA M-1207 **VOLT:** 120/208 Wye **A.I.C. RATING:** 22,000
FED FROM: T-O1LK **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 500 A
NEMA RATING: NEMA-4X **MCB TRIP:** 450 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	CENT. WATER...	2#12+1#12G	20 A	1	120	441					1	20 A	2#10+1#10G	AIR TRTMNT FLY...	2
3	DISHTABLE	2#12+1#12G	20 A	1			240	768			1	20 A	2#12+1#12G	MOBILE FRYER	4
5	EXHAUST HOOD...	2#12+1#12G	20 A	1					360	804	1	20 A	2#12+1#12G	DROP-IN SOUP WELL	6
7	GRIDDLE	2#12+1#12G	20 A	1	888	1620					1	20 A	2#12+1#12G	CONV RECPTS	8
9	MOB PASS THRU...	2#12+1#12G	20 A	1			1092	1632			1	20 A	2#12+1#12G	MOB MERCH	10
11	MOB PASS THRU...	2#12+1#12G	20 A	1					1608	1728	1	20 A	2#12+1#12G	MOB HEAT CAB	12
13	MOB HEAT CAB	2#12+1#12G	20 A	1	1728	343					2	20 A	2#12+1#12G	PREWASH DISHTABLE	14
15	COFFEE GRINDER	2#12+1#12G	20 A	1			180	343							16
17	LOAD CENTER...	3#10+1#10G	60 A	1					16066	180	1	20 A	2#12+1#12G	COFFEE HEATER	18
19	DISHTABLE	2#12+1#12G	20 A	2	396	416					2	20 A	2#10+1#10G	EXHAUST HOOD CONTROL	20
21							396	416							22
23	COFFEE BREWER	2#10+1#10G	30 A	1					180	1924	2	20 A	2#10+1#10G IN 3/4"C	ICE MAKER	24
25	EXHAUST HOOD POWER	2#10+1#10G	20 A	2	936	1924									26
27							936	1728			1	20 A	2#12+1#12G	MOB HEAT CAB	28
29	TOASTER	2#10+1#10G	20 A	2					2496	2136	3	15 A	2#10+1#10G IN 3/4"C	LOAD CENTER LC-137	30
31					2496	1968									32
33	SERVICE COUNTER LOAD CENTER	3#6+1#10G IN 3/4"C	60 A	3			2808	96							34
35									1194	900	3	60 A	3#6+1#10G IN 3/4"C	SERVICE COUNTER LOAD CENTER LC-118W	36
37					1782	732									38
39	LC-128N	4#6+1#10G	20 A	3			1478	4152							40
41									1490	2440	3	20 A	4#6+1#10G	LC-128S	42
43					1080	1438									44
45	O1LKB	SEE SINGLE LINE	60 A	3			5566	2256							46
47									4831	1608	3	20 A	3#12+1#12G IN 3/4"C	REACH-IN CHILLER	48
49					4299	1608									50
51	CAT COOL COND	3#12+1#12G IN 3/4"C	20 A	3			1080	1608							52
53									1080	1200	3	20 A	3#12+1#12G IN 3/4"C	PROD COOL COND	54
55					1080	1200									56
57	FREEZER COND	3#12+1#12G IN 3/4"C	20 A	3			1464	1200							58
59									1464	1560	3	20 A	3#12+1#12G IN 3/4"C	COOL COND	60
61					1464	1560									62
63	POWERWASH SINK	3#8+1#10G IN 3/4"C	20 A	3			3591	1560							64
65									3591	3754	2	45 A	2#6+1#10G	MOBILE COOK	66
67					3591	3754									68
69	MOBILE COOK	2#6+1#10G	45 A	2			3754	2496			2	30 A	3#10 + 1#10 IN 3/4"C	REMOTE EXHAUST HOOD.	70
71									3754	2496					72
73	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	74
75	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	76
77	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	78
79	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	80
81	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	82
83	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	84
				TOTAL PHASE LOAD	35,807 VA		40,109 VA		57,505 VA						
				TOTAL CONNECTED LOAD	370 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Other	756 VA	100.00%	756 VA		
Power	75,374 VA	100.00%	75,374 VA	TOTAL CONN. LOAD...	133,383 VA
Receptacle	57,824 VA	58.65%	33,912 VA	TOTAL EST. DEMAND...	109,631 VA
				TOTAL CONN. AMPS:	370 A
				TOTAL DEMAND AMPS:	304 A

Notes:

PANEL NAME: O2LA1

LOCATION: ELECTRICAL DISTRIBUTION M-2106A **VOLT:** 120/208 Wye **A.I.C. RATING:** 22,000
FED FROM: T-O2LA1 **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 200A
NEMA RATING: Type 1 **MCB TRIP:** 125 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	RECPTS M-2028	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECPTS M-2030	2
3	RECPTS M-2034	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECPTS M-2034	4
5	RECPTS M-2036	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECPTS M-2038	6
7	RECPTS M-2040	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECPTS M-2042	8
9	RECPTS M-2029	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECPTS M-2031	10
11	RECPTS M-2033	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECPTS M-2035	12
13	RECPTS M-2037	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECPTS M-2039	14
15	RECPTS M-2041	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECPTS M-2044	16
17	RECPTS M-2046	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECPTS M-2048	18
19	RECPTS M-2050	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECPTS M-2043	20
21	RECPTS M-2045	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECPTS M-2047	22
23	RECPTS M-2049	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	CORR RECPTS	24
25	RECEPT MONITOR	2#10+1#10G	20 A	1	180	180					1	20 A	2#10+1#10G	RECEPT MONITOR	26
27	CONDENSATE...	2#10+1#10G	20 A	1			168	540			1	20 A	2#10+1#10G	REC-M-2106B,2106A	28
29	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	30
31	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	32
33	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	34
35	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	36
37	PREPARED SPACE	--	--	1	--	--					1	--	--	PREPARED SPACE	38
39	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	40
41	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	42
				TOTAL PHASE LOAD	10,440 VA		10,788 VA		10,080 VA						
				TOTAL CONNECTED LOAD	87 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Receptacle	31,308 VA	65.97%	20,654 VA		
				TOTAL CONN. LOAD...	31,308 VA
				TOTAL EST. DEMAND...	20,654 VA
				TOTAL CONN. AMPS:	87 A
				TOTAL DEMAND AMPS:	57 A

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Notes: ALL CIRCUITS SERVING DORMITORY AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER AS PER 212.12(A)(I)

Branch Panel: O1LKB

Location: FOOD PREP AREA M-1207 **Volts:** 120/208 Wye **A.I.C. Rating:**
Supply From: O1LKA **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 125A
Enclosure: NEMA-4X **Mains Rating:** 60 A
Feeder:

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A		B		C		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	COOLER/FRZ LIGHTS	2#12+1#12G	20 A	1	900	0					2	20 A	2#12+1#12G	ROLL UP DOOR 1	2
3	UNHEATED AIR CURTAIN	2#12+1#12G	20 A	2			260	0							4
5									260	756	1	20 A	2#10+1#10G	COOL EVAP	6
7	UNHEATED AIR CURTAIN	2#12+1#12G	20 A	2	260	1644					2	20 A	2#12+1#12G	FREEZER EVAP	8
9							260	1644							10
11	ROLL UP DOOR 2	2#12+1#12G	20 A	2					0	150	1	20 A	2#12+1#12G	FOOD PROCESSOR	12
13					0	1200					1	20 A	2#12+1#12G	HUNG PROCESSOR	14
15	SLICER	2#12+1#12G	20 A	1			624	120			1	20 A	2#12+1#12G	WEST SLICER WALL	16
17	HUNG REELS WEST	2#12+1#12G	20 A	1					936	1176	1	20 A	2#12+1#12G	FOOD CUTTER	18
19	FOOD CUTTER	2#12+1#12G	20 A	1	1536	180					1	20 A	2#12+1#12G	ROLL DOWN LIGHT	20
21	ANSUL PANEL	2#12+1#12G	20 A	1			500	1650			1	20 A	2#12+1#12G	KITCHEN HOOD LGTS	22
23	FREEZER LIGHTS	2#12+1#12G	20 A	1					1200	0	1	20 A	--	SPARE	24
25	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	26
27	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	28
29	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	30
31	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	32
33	SPARE	--	20 A	1			0	--			1	--	--	PREPARED SPACE	34
35	SPARE	--	20 A	1					0	--	1	--	--	PREPARED SPACE	36
37	SPARE	--	20 A	1	0	--					1	--	--	PREPARED SPACE	38
39	SPARE	--	20 A	1			0	--			1	--	--	PREPARED SPACE	40
41	SPARE	--	20 A	1					0	--	1	--	--	PREPARED SPACE	42
43															44
45															46
47															48
49															50
51															52
53															54
				Total Load	5,566 VA		4,831 VA		4,299 VA						
				Design Amp	41 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	756 VA	100.00%	756 VA		
Power	8,318 VA	100.00%	8,318 VA	Total Conn. Load:	14,679 VA
Receptacle	5,742 VA	100.00%	5,742 VA	Total Est. Demand:	14,679 VA
				Total Conn.:	41 A
				Total Est. Demand:	41 A

Notes:

Branch Panel: O2LA2

Location: ELECTRICAL DISTRIBUTION M-2104 **Volts:** 120/208 Wye **A.I.C. Rating:** 22,000
Supply From: T-O2LA2 **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 200A
Enclosure: Type 1 **Mains Rating:** 150 A
Feeder:

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A		B		C		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	RECEPT M-2001	2#10+1#10G	20 A	1	1080	900					1	20 A	2#10+1#10G	RECEPT M-2002	2
3	RECEPT M-2003	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECEPT M-2004	4
5	RECEPT M-2005	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECEPT M-2006	6
7	RECEPT M-2007	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECEPT M-2008	8
9	RECEPT M-2009	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECEPT M-2010	10
11	RECEPT M-2011	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECEPT M-2012	12
13	RECEPT M-2013	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECEPT M-2014	14
15	RECEPT M-2015	2#10+1#10G	20 A	1			1260	1440			1	20 A	2#10+1#10G	RECEPT M-2016	16
17	RECEPT M-2017	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECEPT M-2018	18
19	RECEPT M-2019	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECEPT M-2020	20
21	RECEPT M-2021	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECEPT M-2022	22
23	RECEPT M-2023	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECEPT M-2024	24
25	RECEPT M-2025	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECEPT M-2026	26
27	RECEPT M-2027	2#10+1#10G	20 A	1			1260	360			1	20 A	2#10+1#10G	RECEPT M-2102	28
29	CORR RECPTS	2#10+1#10G	20 A	1					1440	720	1	20 A	2#10+1#10G	RECEPT M-2102	30
31	RECEPT M-2109	2#10+1#10G	20 A	1	540	2800					2	30 A	3#10+1#10G	DRYER	32
33	RECEPT M-2110	2#10+1#10G	20 A	1			1260	2800							34
35	FSD	2#12+1#12G	20 A	1					1320	168	1	20 A	2#12+1#12G	CONDENSATE...	36
37	WASHING MACHINE	2#12+1#12G	20 A	1	180	180					1	20 A	2#12+1#12G	WASHING MACHINE	38
39	DRYER	3#10+1#10G	30 A	2			2800	180			1	20 A	2#12+1#12G	WASHING MACHINE	40
41									2800	180	1	20 A	2#12+1#12G	WASHING MACHINE	42
43	DRYER	3#10+1#10G	30 A	2	2800	180					1	20 A	2#12+1#12G	WASHING MACHINE	44
45							2800	180			1	20 A	2#12+1#12G	RECEPTS M-2103	46
47	RECEPT WTR. FTN.	2#12+1#12G	20 A	1					1000	180	1	20 A	2#12+1#12G	RECEPT M-2104	48
49	LTG-SF1	2#12+1#12G	20 A	1	1173	1760					1	20 A	2#12+1#12G	LTG-SF1	50
51	LTG-SF1	2#12+1#12G	20 A	1			1760	1449			1	20 A	2#12+1#12G	LTG-SF1	52
53	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	54
				Total Load	21,673 VA		25,109 VA		17,888 VA						
				Design Amp	180 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	1,320 VA	100.00%	1,320 VA		
Lighting	6,141 VA	100.00%	6,141 VA	Total Conn. Load:	64,669 VA
Receptacle	57,208 VA	58.74%	33,604 VA	Total Est. Demand:	41,065 VA
				Total Conn.:	180 A
				Total Est. Demand:	114 A

5

Notes: ALL CIRCUITS SERVING DORMITORY AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER AS PER 212.12(A)(I)

Branch Panel: O2HA

Location: ELECTRICAL DISTRIBUTION M-2106A **Volts:** 480/277 Wye **A.I.C. Rating:** 22,000
Supply From: DP-OGHA **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 30 A
Enclosure: Type 1 **Mains Rating:** 125 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	LTS 2008-50	2#10+1#10G	20 A	1	2908	829					1	20 A	2#12+1#12G	LIGHTING WEST	2
3	T-O2LA1	SEE SINGLE LINE	50 A	3			10440	21673			3	20 A	SEE SINGLE LINE	T-O2LA2	4
5									10788	25109					6
7					10080	17888									8
9	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	10
11	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	12
13	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	14
15	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	16
17	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	18
				Total Load	31,704 VA		32,113 VA		35,897 VA						
				Design Amp	120 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	1,320 VA	100.00%	1,320 VA		
Lighting	9,872 VA	100.00%	9,872 VA	Total Conn. Load:	99,713 VA
Other	5 VA	100.00%	5 VA	Total Est. Demand:	60,455 VA
Receptacle	88,516 VA	55.65%	49,258 VA	Total Conn.:	120 A
				Total Est. Demand:	73 A

Notes:

Branch Panel: O2HB

Location: ELECTRICAL DISTRIBUTION M-2108A **Volts:** 480/277 Wye **A.I.C. Rating:** 22,000
Supply From: DP-OGHB **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 30 A
Enclosure: Type 1 **Mains Rating:** 100 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	LTS 2077-2100	2#12+1#12G	20 A	1	12	3314					1	20 A	2#12+1#12G	LIGHTING EAST	2
3	LIGHTING	2#12+1#12G	20 A	1			1149	690			1	20 A	2#12+1#12G	LTG-CORRIDOR	4
5	T-O2LB2	SEE SINGLE LINE	20 A	3					17590	12600	3	20 A	SEE SINGLE LINE	T-O2LB1	6
7					17220	11508									8
9							16220	10440							10
11	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	12
13	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	14
15	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	16
17	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	18
				Total Load	32,054 VA		28,498 VA		30,190 VA						
				Design Amp	109 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	830 VA	100.00%	830 VA		
Lighting	4,850 VA	100.00%	4,850 VA	Total Conn. Load:	90,742 VA
Other	314 VA	100.00%	314 VA	Total Est. Demand:	53,368 VA
Receptacle	84,748 VA	55.90%	47,374 VA	Total Conn.:	109 A
				Total Est. Demand:	64 A

Notes:

PANEL NAME: O2LB1

LOCATION: ELECTRICAL DISTRIBUTION M-2108A **VOLT:** 120/208 Wye **A.I.C. RATING:** 22,000
FED FROM: T-O2LB1 **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 125A
NEMA RATING: Type 1 **MCB TRIP:** 125 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	RECPTS M-2051	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECPTS M-2053	2
3	RECPTS M-2055	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECPTS M-2057	4
5	RECPTS M-2059	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECPTS M-2061	6
7	RECPTS M-2063	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECPTS M-2065	8
9	RECPTS M-2067	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECPTS M-2069	10
11	RECPTS M-2071	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECPTS M-2073	12
13	RECPTS M-2075	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECPTS M-2052	14
15	RECPTS M-2054	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECPTS M-2056	16
17	RECPTS M-2058	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECPTS M-2060	18
19	RECPTS M-2062	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECPTS M-2064	20
21	RECPTS M-2066	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECPTS M-2068	22
23	RECPTS M-2070	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECPTS M-2072	24
25	RECPTS M-2074	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECPTS M-2076	26
27	CORR RECPTS	2#10+1#10G	20 A	1			1260	168			1	20 A	2#10+1#10G	CONDENSATE...	28
29	RECEPT M-2108A & B	2#12+1#12G	20 A	1					360	0	1	20 A	--	SPARE	30
31	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	32
33	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	34
35	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	36
37	PREPARED SPACE	--	--	1	--	--					1	--	--	PREPARED SPACE	38
39	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	40
41	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	42
				TOTAL PHASE LOAD	12,600 VA		11,508 VA		10,440 VA						
				TOTAL CONNECTED LOAD	96 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Receptacle	34,548 VA	64.47%	22,274 VA		
				TOTAL CONN. LOAD...	34,548 VA
				TOTAL EST. DEMAND...	22,274 VA
				TOTAL CONN. AMPS:	96 A
				TOTAL DEMAND AMPS:	62 A

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Notes: ALL CIRCUITS SERVING DORMITORY AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER AS PER 212.12(A)(I)

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AV/IT ENGINEER
Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER
Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING
CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER
Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT
Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT
Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

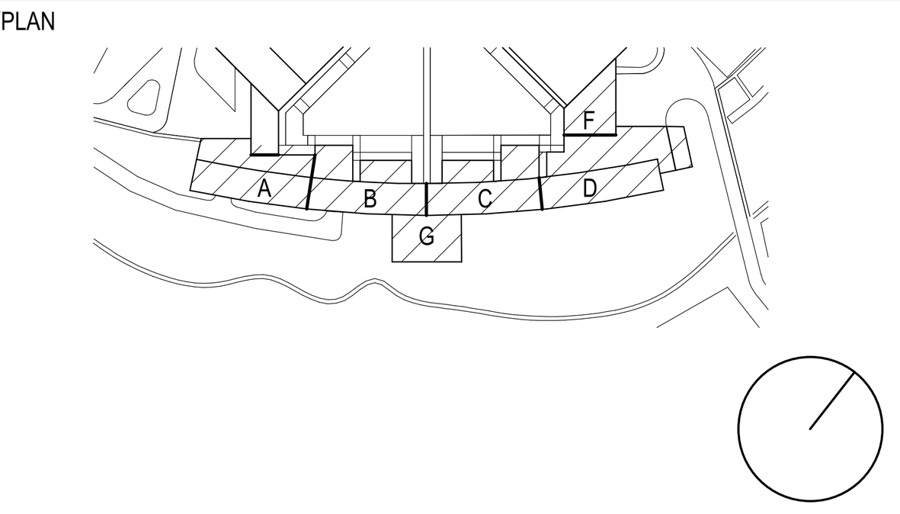
LANDSCAPE
Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING
MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
5	21 JUL 2023	ADDENDUM 34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL JITENDRA K AGARWAL ENGINEER PE033176E

2023-06-16

SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No. C-0211-0005 PHASE 5 | Base Bid No.

PA State Police Academy and BESO - Modernization
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

OPTIONAL STANDBY PANEL SCHEDULES 2 OF 5

SHEET No. MAQ-E-605

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED

OPTIONAL STANDBY PANEL SCHEDULES

PANEL NAME: O2LB2

LOCATION: ELECTRICAL DISTRIBUTION M-2112 **VOLT:** 120/208 Wye **A.I.C. RATING:** 22,000
FED FROM: T-O2LB2 **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 125A
NEMA RATING: Type 1 **MCB TRIP:** 125 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	RECPTS M-2077	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECPTS M-2078	2
3	RECPTS M-2080	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECPTS M-2082	4
5	RECPTS M-2084	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECPTS M-2086	6
7	RECPTS M-2088	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECPTS M-2090	8
9	RECPTS M-2092	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECPTS M-2094	10
11	RECPTS M-2096	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECPTS M-2098	12
13	RECPTS M-2100	2#10+1#10G	20 A	1	1080	900					1	20 A	2#10+1#10G	RECPTS M-2079	14
15	RECPTS M-2081	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECPTS M-2083	16
17	RECPTS M-2085	2#10+1#10G	20 A	1					1440	1260	1	20 A	2#10+1#10G	RECPTS M-2087	18
19	RECPTS M-2089	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECPTS M-2091	20
21	RECPTS M-2093	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECPTS M-2095	22
23	RECPTS M-2097	2#10+1#10G	20 A	1					1260	1080	1	20 A	2#10+1#10G	RECPTS M-2099	24
25	CORR RECPTS	2#10+1#10G	20 A	1	1260	180					1	20 A	2#10+1#10G	RECEPT MONITOR	26
27	DRYER	3#10+1#10G	30 A	2			2800	180			1	20 A	2#12+1#12G	WASHING MACHINE	28
29									2800	180	1	20 A	2#12+1#12G	WASHING MACHINE	30
31	FSD	3#10+1#10G	30 A	1	830	2800					2	30 A	3#10+1#10G	DRYER	32
33	WASHING MACHINE	2#12+1#12G	20 A	1			180	2800							34
35	DRYER	3#10+1#10G	30 A	2					2800	180	1	20 A	2#12+1#12G	WASHING MACHINE	36
37					2800	180					1	20 A	2#12+1#12G	WASHING MACHINE	38
39	RECEPT M-2113	2#12+1#12G	20 A	1			180	1000			1	20 A	2#12+1#12G	RECEPT M-2112	40
41	RECEPT WTR. FTN	2#12+1#12G	20 A	1					180	0	1	20 A	--	SPARE	42
				TOTAL PHASE LOAD	17,590 VA		17,220 VA		16,220 VA						
				TOTAL CONNECTED LOAD	142 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
HVAC	830 VA	100.00%	830 VA		
Receptacle	50,200 VA	59.96%	30,100 VA	TOTAL CONN. LOAD...	51,030 VA
				TOTAL EST. DEMAND...	30,930 VA
				TOTAL CONN. AMPS:	142 A
				TOTAL DEMAND AMPS:	86 A

Notes: ALL CIRCUITS SERVING DORMITORY AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER AS PER 212.12(A)(I)

PANEL NAME: O3LA1

LOCATION: ELECTRICAL DISTRIBUTION M-3106A **VOLT:** 120/208 Wye **A.I.C. RATING:** 22,000
FED FROM: T-O3LA1 **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 200A
NEMA RATING: Type 1 **MCB TRIP:** 125 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	RECEPT M-3028	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-3029	2
3	RECEPT M-3030	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-3031	4
5	RECEPT M-3032	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-3033	6
7	RECEPT M-3035	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-3034	8
9	RECEPT M-3036	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-3037	10
11	RECEPT M-3039	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-3038	12
13	RECEPT M-3040	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-3041	14
15	RECEPT M-3042	2#12+1#12G	20 A	1			1260	1440			1	20 A	2#12+1#12G	RECEPT M-3044	16
17	RECEPT M-3043	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-3045	18
19	RECEPT M-3046	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-3048	20
21	RECEPT M-3047	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-3049	22
23	RECEPT M-3050	2#12+1#12G	20 A	1					1260	1080	1	20 A	2#10+1#10G	CORR RECPTS	24
25	RECEPT MONITOR	2#10+1#10G	20 A	1	180	168					1	20 A	2#10+1#10G	CONDENSATE...	26
27	RECPT M-3106A & B	2#12+1#12G	20 A	1			360	0			1	20 A	--	SPARE	28
29	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	30
31	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	32
33	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	34
35	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	36
37	PREPARED SPACE	--	--	1	--	--					1	--	--	PREPARED SPACE	38
39	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	40
41	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	42
				TOTAL PHASE LOAD	10,428 VA		10,620 VA		9,900 VA						
				TOTAL CONNECTED LOAD	86 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Receptacle	30,948 VA	66.16%	20,474 VA		
				TOTAL CONN. LOAD...	30,948 VA
				TOTAL EST. DEMAND...	20,474 VA
				TOTAL CONN. AMPS:	86 A
				TOTAL DEMAND AMPS:	57 A

Notes: ALL CIRCUITS SERVING DORMITORY AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER AS PER 212.12(A)(I)

Branch Panel: O3LB2

Location: ELECTRICAL DISTRIBUTION M-3112 **Volts:** 120/208 Wye **A.I.C. Rating:** 22,000
Supply From: T-O3LB2 **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 225A
Enclosure: Type 1 **Mains Rating:** 125 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A		B		C		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	RECEPT M-3077	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-3078	2
3	RECPTS M-3079	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-3080	4
5	RECEPT M-3081	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-3082	6
7	RECEPT M-3083	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-3084	8
9	RECEPT M-3085	2#12+1#12G	20 A	1			1620	1260			1	20 A	2#12+1#12G	RECEPT M-3086	10
11	RECEPT M-3087	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-3088	12
13	RECEPT M-3089	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-3090	14
15	RECEPT M-3091	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-3092	16
17	RECEPT M-3093	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-3094	18
19	RECEPT M-3095	2#12+1#12G	20 A	1	1260	1440					1	20 A	2#12+1#12G	RECEPT M-3096	20
21	RECEPT M-3097	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-3098	22
23	RECEPT M-3099	2#12+1#12G	20 A	1					360	1080	1	20 A	2#12+1#12G	RECEPT M-3100	24
25	RECEPT M-3110	2#12+1#12G	20 A	1	900	2800					2	30 A	3#10+1#10G	DRYER	26
27	CORR RECPTS	2#12+1#12G	20 A	1			720	2800							28
29	GFI RECEPT M-3110	2#12+1#12G	20 A	1					540	540	1	20 A	2#12+1#12G	CORR RECPTS	30
31	DRYER	3#10+1#10G	30 A	2	2800	2800					2	30 A	3#10+1#10G	DRYER	32
33							2800	2800							34
35	RECEPT M-3113	2#12+1#12G	20 A	1					180	180	1	20 A	2#12+1#12G	WASHING MACHINE	36
37	WASHING MACHINE	2#12+1#12G	20 A	1	180	180					1	20 A	2#12+1#12G	WASHING MACHINE	38
39	WASHING MACHINE	2#12+1#12G	20 A	1			180	180			1	20 A	2#12+1#12G	WASHING MACHINE	40
41	RECEPT MONITOR	2#10+1#10G	20 A	1					180	1000	1	20 A	2#12+1#12G	RECPT. WTR. FTN.	42
43	RECEPT. M-3112	2#12+1#12G	20 A	1	180	0					1	20 A	--	SPARE	44
45	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	46
47	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	48
49	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	50
51	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	52
53	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	54
				Total Load	20,100 VA		19,920 VA		11,620 VA						
				Design Amp	143 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	51,640 VA	59.68%	30,820 VA		
				Total Conn. Load:	51,640 VA
				Total Est. Demand:	30,820 VA
				Total Conn.:	143 A
				Total Est. Demand:	86 A

Notes: ALL CIRCUITS SERVING DORMITORY AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER AS PER 212.12(A)(I)

Branch Panel: O3HA

Location: ELECTRICAL DISTRIBUTION M-3106A **Volts:** 480/277 Wye **A.I.C. Rating:** 22,000
Supply From: DP-OGHA **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 30 A
Enclosure: Type 1 **Mains Rating:** 125 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	LTS 3029-3049	2#12+1#12G	20 A	1	1948	865					1	20 A	2#12+1#12G	LIGHTING...	2
3	LTS 3001-3027	2#12+1#12G	20 A	1			2620	839			1	20 A	2#12+1#12G	LTG-3RD FL...	4
5									10428	20780					6
7	T-O3LA1	SEE SINGLE LINE	20 A	3	10620	19020					3	20 A	SEE SINGLE LINE	T-O3LA2	8
9							9900	18920							10
11	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	12
13	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	14
15	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	16
17	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	18
				Total Load	32,453 VA		32,278 VA		31,208 VA						
				Design Amp	115 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	520 VA	100.00%	520 VA		
Lighting	5,958 VA	100.00%	5,958 VA	Total Conn. Load:	95,939 VA
Other	314 VA	100.00%	314 VA	Total Est. Demand:	56,365 VA
Receptacle	89,148 VA	55.61%	49,574 VA	Total Conn.:	115 A
				Total Est. Demand:	68 A

Notes:

Branch Panel: O3LA2

Location: ELECTRICAL DISTRIBUTION M-3104 **Volts:** 120/208 Wye **A.I.C. Rating:** 10,000
Supply From: T-O3LA2 **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 225A
Enclosure: Type 1 **Mains Rating:** 150 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A		B		C		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	RECPTS M-3001	2#10+1#10G	20 A	1	1080	1260					1	20 A	2#10+1#10G	RECPTS M-3003	2
3	RECEPT M-3005	2#10+1#10G	20 A	1			1260	1080			1	20 A	2#10+1#10G	RECEPT M-3002	4
5	RECEPT M-3004	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECEPT M-3006	6
7	RECEPT M-3007	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECEPT M-3009	8
9	RECEPT M-3008	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECEPT M-3010	10
11	RECEPT M-3011	2#10+1#10G	20 A	1					1440	1260	1	20 A	2#10+1#10G	RECEPT M-3012	12
13	RECEPT M-3013	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECEPT M-3014	14
15	RECEPT M-3015	2#10+1#10G	20 A	1			1440	1260			1	20 A	2#10+1#10G	RECEPT M-3016	16
17	RECEPT M-3017	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECEPT M-3018	18
19	RECEPT M-3019	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECEPT M-3020	20
21	RECEPT M-3021	2#10+1#10G	20 A	1			1260	1260			1	20 A	2#10+1#10G	RECEPT M-3022	22
23	RECEPT M-3023	2#10+1#10G	20 A	1					1260	1260	1	20 A	2#10+1#10G	RECEPT M-3024	24
25	RECEPT M-3025	2#10+1#10G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECEPT M-3026	26
27	RECEPT M-3027	2#10+1#10G	20 A	1			1260	540			1	20 A	2#12+1#12G	RECEPT M-3102	28
29	RECEPT M-3107	2#10+1#10G	20 A	1					900	720	1	20 A	2#12+1#12G	RECEPT M-3102	30
31	RECEPT M-3109	2#10+1#10G	20 A	1	720	360					1	20 A	2#12+1#12G	CONDENSATE...	32
33	WASHING MACHINE	2#10+1#10G	20 A	1			900	2800			2	30 A	3#10+1#10G	DRYER	34
35	CORR RECPTS	2#10+1#10G	20 A	1					900	2800					36
37	CORR RECPTS	2#10+1#10G	20 A	1	1080	240					1	20 A	2#10+1#10G	FSD	38
39	FSD	2#10+1#10G	20 A	1			280	180			1	20 A	2#10+1#10G	WASHING MACHINE	40
41	DRYER	3#10+1#10G	30 A	2					2800	180	1	20 A	2#10+1#10G	WASHING MACHINE	42
43					2800	2800					2	30 A	3#10+1#10G	DRYER	44
45	FOUNTAIN-CORRD.	2#12+1#12G	20 A	1			180	2800							46
47	WASHING MACHINE	2#10+1#10G	20 A	1					180	180	1	20 A	2#10+1#10G	RECEPT M-3103	48
49	WASHING MACHINE	2#10+1#10G	20 A	1	180	180					1	20 A	2#12+1#12G	REC-ELEC. RM-3104	50
51	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	52
53	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	54
				Total Load	20,780 VA		19,020 VA		18,920 VA						
				Design Amp	163 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	520 VA	100.00%	520 VA		
Receptacle	58,200 VA	58.59%	34,100 VA	Total Conn. Load:	58,720 VA
				Total Est. Demand:	34,620 VA
				Total Conn.:	163 A
				Total Est. Demand:	96 A

Notes: ALL CIRCUITS SERVING DORMITORY AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER AS PER 212.12(A)(I)

PANEL NAME: O4HA

LOCATION: ELECTRICAL DISTRIBUTION M-4106A **VOLT:** 480/277 Wye **A.I.C. RATING:** 42,000
FED FROM: DP-OGHA **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 225A
NEMA RATING: Type 1 **MCB TRIP:** 200 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	ELEVATOR	3#6+1#8G IN 3/4"C	80 A	3	9407	526					1	20 A	2#12+1#12G	LIGHTING	2
3							9407	9407			3	80 A	3#6+1#8G IN 3/4"C	ELEVATOR	4
5									9407	9407					6
7	Lighting	2#12+1#12G	20 A	1	374	9407									8
9	UH-07	2#12+1#12G	20 A	1			373	1923			1	20 A	2#12+1#12G	LTS 4028-4049	10
11	LIGHTING-CORRID...	2#12+1#12G	20 A	1					618	12601	3	20 A	SEE SINGLE LINE	T-O4LA1	12
13	DORMITORY LIGHTS	2#12+1#12G	20 A	1	2834	11808									14
15	T-O4LA2	SEE SINGLE LINE	20 A	3			20720	10238							16
17									18429	0	1	20 A	--	SPARE	18
19					17810	0					1	20 A	--	SPARE	20
21	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	22
23	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	24
				TOTAL PHASE LOAD	52,165 VA		52,068 VA		50,460 VA						
				TOTAL CONNECTED LOAD	186 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
HVAC	240 VA	100.00%	240 VA		
Lighting	5,959 VA	100.00%	5,959 VA	TOTAL CONN. LOAD...	154,693 VA
Other	687 VA	100.00%	687 VA	TOTAL EST. DEMAND...	115,717 VA
Power	59,856 VA	100.00%	59,856 VA	TOTAL CONN. AMPS:	186 A
Receptacle	87,952 VA	55.68%	48,976 VA	TOTAL DEMAND AMPS:	139 A

Notes:

Branch Panel: O3HB

Location: ELECTRICAL DISTRIBUTION M-3108A **Volts:** 480/277 Wye **A.I.C. Rating:** 22,000
Supply From: DP-OGHB **Phase:** 3 **Mains Type:** MCB
Mounting: Surface **Wires:** 4 **Bussing:** 100A
Enclosure: Type 1 **Mains Rating:** 100 A
Feeder: SEE SINGLE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A (VA)		B (VA)		C (VA)		Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1	LTS 3051-3076	2#12+1#12G	20 A	1	2174	680					1	20 A	2#12+1#12G	LIGHTING EAST	2
3							20100	12600							4
5	T-O3LB2	SEE SINGLE LINE	20 A	3					19920	11508	3	20 A	SEE SINGLE LINE	T-O3LB1	6
7					11620	10440									8
9	LTS 3113-3099	2#12+1#12G	20 A	1			2394	759			1	20 A	2#12+1#12G	LIGHTING EAST	10
11	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	12
13	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	14
15	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	16
17	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	18
				Total Load	24,914 VA		35,852 VA		31,428 VA						
				Design Amp	111 A										

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	5,692 VA	100.00%	5,692 VA		
Other	314 VA	100.00%	314 VA	Total Conn. Load:	92,194 VA
Receptacle	86,188 VA	55.80%	48,094 VA	Total Est. Demand:	54,100 VA
				Total Conn.:	111 A
				Total Est. Demand:	65 A

Notes:

PANEL NAME: O3LB1

LOCATION: ELECTRICAL DISTRIBUTION M-3108A **VOLT:** 120/208 Wye **A.I.C. RATING:** 22,000
FED FROM: T-O3LB1 **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 125A
NEMA RATING: Type 1 **MCB TRIP:** 125 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	RECEPT M-3052	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-3054	2
3	RECEPT M-3051	2#12+1#12G	20 A	1			1260	1440			1	20 A	2#12+1#12G	RECEPT M-3053	4
5	RECEPT M-3055	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-3056	6
7	RECEPT M-3057	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#10+1#10G	RECEPT M-3058	8
9	RECEPT M-3059	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-3060	10
11	RECEPT M-3062	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-3061	12
13	RECEPT M-3063	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-3064	14
15	RECEPT M-3065	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-3066	16
17	RECEPT M-3067	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-3068	18
19	RECEPT M-3069	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-3070	20
21	RECEPT M-3072	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-3071	22
23	RECEPT M-3073	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-3074	24
25	RECEPT M-3076	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-3075	26
27	CORR RECPTS	2#12+1#12G	20 A	1			1080	168			1	20 A	2#12+1#12G	CONDENSATE...	28
29	RECEPT. M-3108A ...	2#12+1#12G	20 A	1					360	0	1	20 A	--	SPARE	30
31	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	32
33	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	34
35	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	36
37	PREPARED SPACE	--	--	1	--	--					1	--	--	PREPARED SPACE	38
39	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	40
41	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	42
				TOTAL PHASE LOAD	12,600 VA		11,508 VA		10,440 VA						
				TOTAL CONNECTED LOAD	96 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Receptacle	34,548 VA	64.47%	22,274 VA		
				TOTAL CONN. LOAD...	34,548 VA
				TOTAL EST. DEMAND...	22,274 VA
				TOTAL CONN. AMPS:	96 A
				TOTAL DEMAND AMPS:	62 A

Notes: ALL CIRCUITS SERVING DORMITORY AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER AS PER 212.12(A)(I)

PANEL NAME: O4HB

LOCATION: ELECTRICAL DISTRIBUTION M-4108A **VOLT:** 480/277 Wye **A.I.C. RATING:** 22,000
FED FROM: DP-OGHB **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 30 A
NEMA RATING: Type 1 **MCB TRIP:** 100 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	LTS 4051-4075	2#12+1#12G	20 A	1	2183	42					1	20 A	2#12+1#12G	LIGHTING EAST 1	2
3	MECH LIGHT EAST 1	2#12+1#12G	20 A	1			248	1035			1	20 A	2#12+1#12G	LIGHTING EAST 2	4
5	LTS 4112-4099	2#12+1#12G	20 A	1					2025	251	1	20 A	2#10+1#10G	4TH FLOOR EAST...	6
7	4TH FLOOR EAST...	2#10+1#10G	20 A	1	344	20764					3	20 A	SEE SINGLE LINE	T-O4LB2	8
9	T-O4LB1	SEE SINGLE LINE	20 A	3			12960	17109							10
11									11880	15220					12
13					10080	0					1	20 A	--	SPARE	14
15	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	16
17	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	18
19	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	20
21	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	22
23	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	24
				TOTAL PHASE LOAD	33,414 VA		31,351 VA		29,376 VA						
				TOTAL CONNECTED LOAD	113 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
HVAC	160 VA	100.00%	160 VA		
Lighting	5,808 VA	100.00%	5,808 VA	TOTAL CONN. LOAD...	94,140 VA
Other	319 VA	100.00%	319 VA	TOTAL EST. DEMAND...	56,048 VA
Power	1,669 VA	100.00%	1,669 VA	TOTAL CONN. AMPS:	113 A
Receptacle	86,184 VA	55.80%	48,092 VA	TOTAL DEMAND AMPS:	67 A

Notes:

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AV/IT ENGINEER
Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER
Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING
CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER
Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT
Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT
Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

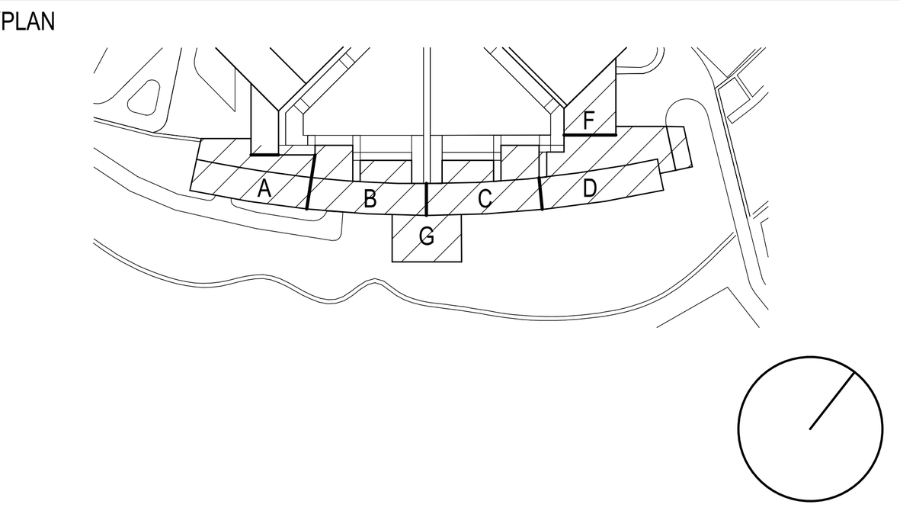
LANDSCAPE
Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING
MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
5	21 JUL 2023	ADDENDUM 34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E

J.K. Agarwal
2023-06-16
SIGNATURE DATE

ARCHITECT
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No. C-0211-0005 PHASE 5
Base Bid No.

PA State Police Academy and BESO - Modernization
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

OPTIONAL STANDBY PANEL SCHEDULES 3 OF 5

SHEET No. MAQ-E-606

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED

OPTIONAL STAND-BY PANEL SCHEDULES

PANEL NAME: O4LA1

LOCATION: ELECTRICAL DISTRIBUTION M-4106A **VOLT:** 120/208 Wye **A.I.C. RATING:** 22,000
FED FROM: T-O4LA1 **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 200A
NEMA RATING: Type 1 **MCB TRIP:** 125 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	RECEPT M-4029	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4028	2
3	RECEPT M-4031	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-4030	4
5	RECEPT M-4033	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-4032	6
7	RECEPT M-4035	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4034	8
9	RECEPT M-4037	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-4036	10
11	RECEPT M-4039	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-4038	12
13	RECEPT M-4041	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4040	14
15	RECEPT M-4042	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-4043	16
17	RECEPT M-4044	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-4045	18
19	RECEPT M-4046	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4047	20
21	RECEPT M-4048	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-4049	22
23	RECEPT M-4050	2#12+1#12G	20 A	1					1260	1080	1	20 A	2#12+1#12G	RECEPT M-4000	24
25	RECEPT M-4106	2#12+1#12G	20 A	1	900	1200					1	20 A	2#12+1#12G	ELEVATOR LTG	26
27	ELEVATOR...	2#12+1#12G	20 A	1			180	1200			1	20 A	2#12+1#12G	ELEVATOR LTG	28
29	SSDS FAN	2#12+1#12G	20 A	1					169	169	1	20 A	2#12+1#12G	SSDS FAN	30
31	CONDENSATE...	2#12+1#12G	20 A	1	252	169					1	20 A	2#12+1#12G	SSDS FAN	32
33	REC-M-3103	2#12+1#12G	20 A	1			348	0			1	20 A	--	SPARE	34
35	SPARE	--	20 A	1					0	--	1	--	--	PREPARED SPACE	36
37	PREPARED SPACE	--	--	1	--	--					1	--	--	PREPARED SPACE	38
39	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	40
41	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	42
				TOTAL PHASE LOAD	12,601 VA		11,808 VA		10,238 VA						
				TOTAL CONNECTED LOAD	96 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Power	2,907 VA	100.00%	2,907 VA		
Receptacle	31,740 VA	65.75%	20,870 VA	TOTAL CONN. LOAD...	34,647 VA
				TOTAL EST. DEMAND...	23,777 VA
				TOTAL CONN. AMPS:	96 A
				TOTAL DEMAND AMPS:	66 A

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Notes: ALL CIRCUITS SERVING DORMITORY AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER AS PER 212.12(A)(I)

PANEL NAME: O4LB2

LOCATION: ELECTRICAL DISTRIBUTION M-4112 **VOLT:** 120/208 Wye **A.I.C. RATING:** 22,000
FED FROM: T-O4LB2 **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 125A
NEMA RATING: Type 1 **MCB TRIP:** 125 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	RECEPT M-4077	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4078	2
3	RECEPT M-4079	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-4080	4
5	RECEPT M-4081	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-4082	6
7	RECEPT M-4083	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4084	8
9	RECEPT M-4085	2#12+1#12G	20 A	1			1440	1260			1	20 A	2#12+1#12G	RECEPT M-4086	10
11	RECEPT M-4087	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-4088	12
13	RECEPT M-4089	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4090	14
15	RECEPT M-4091	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-4094	16
17	RECEPT M-4093	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-4094	18
19	RECEPT M-4095	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4096	20
21	RECEPT M-4097	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-4098	22
23	RECEPT M-4099	2#12+1#12G	20 A	1					1800	1080	1	20 A	2#12+1#12G	RECEPT M-4100	24
25	FSD	2#10+1#10G	20 A	1	1660	84					1	20 A	2#12+1#12G	CONDENSATE PUMP	26
27	RECEPT M-4112	2#12+1#12G	20 A	1			180	169			1	20 A	2#12+1#12G	SSDS	28
29	CORR. RECEPT	2#12+1#12G	20 A	1					540	180	1	20 A	2#10+1#10G	RECEPT MONITOR	30
31	DRYER	3#10+1#10G	30 A	2	2800	180					1	20 A	2#10+1#10G	WASHING MACHINE	32
33							2800	720			1	20 A	2#10+1#10G	CORR RECPTS	34
35	GFI RECEPT M-4110	2#12+1#12G	20 A	1					540	540	1	20 A	2#10+1#10G	RECEPT M-4110	36
37	DRYER	3#10+1#10G	30 A	2	2800	180					1	20 A	2#10+1#10G	WASHING MACHINE	38
39							2800	180			1	20 A	2#10+1#10G	WASHING MACHINE	40
41	WASHING MACHINE	2#10+1#10G	20 A	1					180	2800	2	30 A	3#10+1#10G	DRYER	42
43	RECEPT. WTR. FTN.	2#12+1#12G	20 A	1	180	2800									44
45	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	46
47	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	48
49	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	50
51	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	52
53	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	54
				TOTAL PHASE LOAD	20,764 VA		17,109 VA		15,220 VA						
				TOTAL CONNECTED LOAD	147 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
HVAC	160 VA	100.00%	160 VA		
Power	1,669 VA	100.00%	1,669 VA	TOTAL CONN. LOAD...	53,093 VA
Receptacle	51,264 VA	59.75%	30,632 VA	TOTAL EST. DEMAND...	32,461 VA
				TOTAL CONN. AMPS:	147 A
				TOTAL DEMAND AMPS:	90 A

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Notes: ALL CIRCUITS SERVING DORMITORY AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER AS PER 212.12(A)(I)

PANEL NAME: OGHB

LOCATION: ELECTRICAL DISTRIBUTION M-0304 **VOLT:** 480/277 Wye **A.I.C. RATING:** 22,000
FED FROM: DP-OGHB **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 100A
NEMA RATING: Type 1 **MCB TRIP:** 200 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	LTG-CORRIDOR-01...	2#12+1#12G	20 A	1	334	984					1	20 A	2#10+1#10G	LIGHTING	2
3	LIGHTING	2#10+1#10G	20 A	1			1994	3097			1	20 A	2#10+1#10G	CORRIDOR-LTG	4
5	LIGHTING	2#10+1#10G	20 A	1					3707	1200	1	20 A	2#10+1#10G	SITE LIGHTING	6
7	SITE LIGHTING	2#10+1#10G	20 A	1	1200	1200					1	20 A	2#10+1#10G	SITE LIGHTING	8
9	LTG-DMX-M-0339	2#12+1#12G	20 A	1			1176	2785			1	20 A	2#12+1#12G	LTG-M-0343	10
11	T-OGLB1	SEE SINGLE LINE	20 A	3					19520	12828	3	20 A	SEE SINGLE LINE	T-OGLB2	12
13					17200	12860									14
15							16084	11896							16
17	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	18
19	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	20
21	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	22
23	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	24
				TOTAL PHASE LOAD	33,754 VA		36,892 VA		37,239 VA						
				TOTAL CONNECTED LOAD	130 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
HVAC	26,880 VA	100.00%	26,880 VA		
Lighting	12,326 VA	100.00%	12,326 VA	TOTAL CONN. LOAD...	107,879 VA
Motor	2,000 VA	106.25%	2,125 VA	TOTAL EST. DEMAND...	83,455 VA
Other	1,681 VA	100.00%	1,681 VA	TOTAL CONN. AMPS:	130 A
Power	6,000 VA	100.00%	6,000 VA	TOTAL DEMAND AMPS:	100 A
Receptacle	59,108 VA	58.46%	34,554 VA		

Notes:

PANEL NAME: O4LA2

LOCATION: ELECTRICAL DISTRIBUTION M-4104 **VOLT:** 120/208 Wye **A.I.C. RATING:** 10,000
FED FROM: T-O4LA2 **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 100 A
NEMA RATING: Type 1 **MCB TRIP:** 100 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	RECEPT M-4001	2#12+1#12G	20 A	1	1080	1260					1	20 A	2#12+1#12G	RECEPT M-4003	2
3	RECEPT M-4005	2#12+1#12G	20 A	1			1260	1080			1	20 A	2#12+1#12G	RECEPT M-4002	4
5	RECEPT M-4004	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-4007	6
7	RECEPT M-4006	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4009	8
9	RECEPT M-4008	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-4011	10
11	RECEPT M-4010	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-4013	12
13	RECEPT M-4015	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4012	14
15	RECEPT M-4014	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-4017	16
17	RECEPT M-4016	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-4019	18
19	RECEPT M-4018	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4021	20
21	RECEPT M-4020	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-4023	22
23	RECEPT M-4022	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-4025	24
25	RECEPT M-4024	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4027	26
27	RECEPT M-4026	2#12+1#12G	20 A	1			1260	240			1	20 A	2#12+1#12G	FSD	28
29	CONDENSATE...	2#12+1#12G	20 A	1					252	169	1	20 A	2#12+1#12G	SSDS FAN	30
31	RECEPT M-4104	2#12+1#12G	20 A	1	180	2800					2	30 A	3#10+1#10G	DRYER	32
33	WASHING MACHINE	2#12+1#12G	20 A	1			180	2800							34
35	WASHING MACHINE	2#12+1#12G	20 A	1					180	2800	2	20 A	3#10+1#10G	DRYER	36
37	WASHING MACHINE	2#12+1#12G	20 A	1	180	2800									38
39	WASHING MACHINE	2#12+1#12G	20 A	1			180	2800			2	20 A	3#10+1#10G	DRYER	40
41	RECEPT M-4201	2#12+1#12G	20 A	1					360	2800					42
43	CORR RECPTS	2#12+1#12G	20 A	1	1080	720					1	20 A	2#12+1#12G	DAY ROOM M-4102	44
45	SSDS FAN	2#12+1#12G	20 A	1			169	900			1	20 A	2#12+1#12G	CORR RECPTS	46
47	SSDS FAN	2#12+1#12G	20 A	1					169	1000	1	20 A	2#12+1#12G	RECEPT. WTR. FTN.	48
49	RECEPT M-4102A	2#12+1#12G	20 A	1	540	0					1	20 A	--	SPARE	50
51	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	52
53	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	54
				TOTAL PHASE LOAD	20,720 VA		18,429 VA		17,810 VA						
				TOTAL CONNECTED LOAD	158 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
HVAC	240 VA	100.00%	240 VA		
Power	507 VA	100.00%	507 VA	TOTAL CONN. LOAD...	56,959 VA
Receptacle	56,212 VA	58.89%	33,106 VA	TOTAL EST. DEMAND...	33,853 VA
				TOTAL CONN. AMPS:	158 A
				TOTAL DEMAND AMPS:	94 A

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Notes: ALL CIRCUITS SERVING DORMITORY AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER AS PER 212.12(A)(I)

PANEL NAME: OGHB

LOCATION: ELECTRICAL DISTRIBUTION M-0304 **VOLT:** 480/277 Wye **A.I.C. RATING:** 22,000
FED FROM: DP-OGHB **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 100A
NEMA RATING: Type 1 **MCB TRIP:** 200 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	LTG-CORRIDOR-01...	2#12+1#12G	20 A	1	334	984					1	20 A	2#10+1#10G	LIGHTING	2
3	LIGHTING	2#10+1#10G	20 A	1			1994	3097			1	20 A	2#10+1#10G	CORRIDOR-LTG	4
5	LIGHTING	2#10+1#10G	20 A	1					3707	1200	1	20 A	2#10+1#10G	SITE LIGHTING	6
7	SITE LIGHTING	2#10+1#10G	20 A	1	1200	1200					1	20 A	2#10+1#10G	SITE LIGHTING	8
9	LTG-DMX-M-0339	2#12+1#12G	20 A	1			1176	2785			1	20 A	2#12+1#12G	LTG-M-0343	10
11	T-OGLB1	SEE SINGLE LINE	20 A	3					19520	12828	3	20 A	SEE SINGLE LINE	T-OGLB2	12
13					17200	12860									14
15							16084	11896							16
17	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	18
19	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	20
21	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	22
23	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	24
				TOTAL PHASE LOAD	33,754 VA		36,892 VA		37,239 VA						
				TOTAL CONNECTED LOAD	130 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
HVAC	26,880 VA	100.00%	26,880 VA		
Lighting	12,326 VA	100.00%	12,326 VA	TOTAL CONN. LOAD...	107,879 VA
Motor	2,000 VA	106.25%	2,125 VA	TOTAL EST. DEMAND...	83,455 VA
Other	1,681 VA	100.00%	1,681 VA	TOTAL CONN. AMPS:	130 A
Power	6,000 VA	100.00%	6,000 VA	TOTAL DEMAND AMPS:	100 A
Receptacle	59,108 VA	58.46%	34,554 VA		

Notes:

PANEL NAME: OGLA1

LOCATION: ELECTRICAL SERVICE ROOM M-0201 **VOLT:** 120/208 Wye **A.I.C. RATING:** 22,000
FED FROM: T-OGLA1 **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 200A
NEMA RATING: Type 1 **MCB TRIP:** 125 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	ELEVATOR LIGHTING	2#10+1#10G	20 A	1	0	1260					1	20 A	2#10+1#10G	OFFICE RECPTS	2
3	RECEPTACLE	2#10+1#10G	20 A	1			1260	2700			1	20 A	2#10+1#10G	MAIL & ELEC RM	4
5	REC-M-0318	2#10+1#10G	20 A	1					720	900	1	20 A	2#10+1#10G	REC-M-0209	6
7	REC-M-0318	2#10+1#10G	20 A	1	1080	1080					1	20 A	2#10+1#10G	OFFICE RECPTS	8
9	REC-M-0318	2#10+1#10G	20 A	1			1080	2000			1	20 A	2#10+1#10G	120/24V XFMR...	10
11	REC-CORRIDOR	2#10+1#10G	20 A	1					2260	900	1	20 A	2#12+1#12G	REC-M0212	12
13	REC-M-0120	2#10+1#10G	20 A	1	180	180					1	20 A	2#12+1#12G	REC-CP M0201	14
15	RECM-0108	2#10+1#10G	20 A	1			720	720			1	20 A	2#10+1#10G	REC-0120	16
17	FUNTAIN	2#10+1#10G	20 A	1					180	720	1	20 A	2#12+1#10G	REC-M-0318	18
19	REC-M-0318	2#10+1#10G	20 A	1	720	1620					1	20 A	2#10+1#10G	REC-CORRIDOR	20
21	REC-M0110	2#10+1#10G	20 A	1			1760	1080			1	20 A	2#10+1#10G	RECEPTACLE	22
23	WP/GFI RECEPTS	2#10+1#10G	20 A	1					1800	1500	1	20 A	2#10+1#10G	MOTORIZED SHADES	24
25	REC-COMB....	2#12+1#12G	20 A	1	1260	900					1	20 A	2#12+1#12G	REC-- M0203	26
27	M-0205 - RECEPTS	2#12+1#12G	20 A	1			900	1440			1	20 A	2#12+1#12G	M-0205 RECEPTS	28
29	REC-M-0112,0111,0...	2#10+1#10G	20 A	1					1580	1400	1	20 A	2#10+1#10G	WP/GFI RECEPTS	30
31	WP/GFI RECEPTS	2#10+1#10G	20 A	1	1440	1260					1	20 A	2#10+1#10G	DROP CRDS-M-01102	32
33	CONDENSATE...	2#10+1#10G	20 A	1			420	2000			1	20 A	2#10+1#10G	DROP CORDS	34
35	DROP CORDS	2#10+1#10G	20 A	1					2000	1000	1	20 A	2#10+1#10G	DROP CRDS-M-01102	36
37	DROP CORDS	2#10+1#10G	20 A	1	2000	1000					1	20 A	2#10+1#10G	DROP CORDS	38
39	DROP CORDS	2#10+1#10G	20 A	1			360	1080			1	20 A	2#10+1#10G	REC-M-0108	40
41	DROP CORDS	2#10+1#10G	20 A	1					1000	860	1	20 A	2#10+1#10G	REC-M-0119	42
43	DROP CORDS	2#10+1#10G	20 A	1	360	360					1	20 A	2#10+1#10G	DROP CORDS	44
45	REC-QUADS-M-0121	2#10+1#10G	20 A	1			1080	720			1	20 A	2#10+1#10G	REC-QUADS-M-0221	46
47	DROP CORDS	2#10+1#10G	20 A	1					1000	1000	1	20 A	2#10+1#10G	DROP CORDS	48
49	DROP CORDS	2#10+1#10G	20 A	1	1000	1000					1	20 A	2#10+1#10G	DROP CORDS	50
51	DROP CORDS	2#10+1#10G	20 A	1			1000	1000			1	20 A	2#10+1#10G	DROP CORDS	52
53	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	54
				TOTAL PHASE LOAD	16,700 VA		21,320 VA		18,820 VA						
				TOTAL CONNECTED LOAD	158 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Equipment	1,000 VA	100.00%	1,000 VA		
HVAC	6,580 VA	100.00%	6,580 VA	TOTAL CONN. LOAD...	56,840 VA
Power	0 VA	0.00%	0 VA	TOTAL EST. DEMAND...	37,210 VA
Receptacle	49,260 VA	60.15%	29,630 VA	TOTAL CONN. AMPS:	158 A
				TOTAL DEMAND AMPS:	103 A

Notes:

PANEL NAME: O4LB1

LOCATION: ELECTRICAL DISTRIBUTION M-4108A **VOLT:** 120/208 Wye **A.I.C. RATING:** 22,000
FED FROM: T-O4LB1 **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 125A
NEMA RATING: Type 1 **MCB TRIP:** 125 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	RECEPT M-4051	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4052	2
3	RECEPT M-4053	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-4054	4
5	RECEPT M-4055	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-4057	6
7	RECEPT M-4056	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4058	8
9	RECEPT M-4059	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-4060	10
11	RECEPT M-4061	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-4062	12
13	RECEPT M-4063	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4064	14
15	RECEPT M-4065	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-4066	16
17	RECEPT M-4067	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-4068	18
19	RECEPT M-4069	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4070	20
21	RECEPT M-4072	2#12+1#12G	20 A	1			1260	1260			1	20 A	2#12+1#12G	RECEPT M-4071	22
23	RECEPT M-4074	2#12+1#12G	20 A	1					1260	1260	1	20 A	2#12+1#12G	RECEPT M-4073	24
25	RECEPT M-4076	2#12+1#12G	20 A	1	1260	1260					1	20 A	2#12+1#12G	RECEPT M-4075	26
27	RECEPT M-4000	2#12+1#12G	20 A	1			1260	540			1	20 A	2#12+1#12G	CONDENSATE...	28
29	SSDS FAN	2#12+1#12G	20 A	1					0	0	1	20 A	2#12+1#12G	SSDS FAN	30
31	RECEPT M-4108B	2#12+1#12G	20 A	1	360	0					1	20 A	--	SPARE	32
33	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	34
35	SPARE	--	20 A	1					0	--	1	--	--	PREPARED SPACE	36
37	PREPARED SPACE	--	--	1	--	--					1	--	--	PREPARED SPACE	38
39	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	40
41	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	42
				TOTAL PHASE LOAD	12,960 VA		11,880 VA		10,080 VA						
				TOTAL CONNECTED LOAD	97 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Power	0 VA	0.00%	0 VA		
Receptacle	34,920 VA	64.32%	22,460 VA	TOTAL CONN. LOAD...	34,920 VA
				TOTAL EST. DEMAND...	22,460 VA
				TOTAL CONN. AMPS:	97 A
				TOTAL DEMAND AMPS:	62 A

5

Notes: ALL CIRCUITS SERVING DORMITORY AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER AS PER 212.12(A)(I)

PANEL NAME: OGHA

LOCATION: ELECTRICAL SERVICE ROOM M-0201 **VOLT:** 480/277 Wye **A.I.C. RATING:** 22,000
FED FROM: DP-OGHA **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 125 A
NEMA RATING: Type 1 **MCB TRIP:** 100 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	LTG-CORRIDOR	2#10+1#10G	20 A	1	69	170					1	20 A	2#10+1#10G	STREET LIGHT...	2
3	LTG-DMX-M-0220B	2#12+1#12G	20 A	1			128	170			1	20 A	2#12-1#12G	LTG-DMX-AUDI	4
5	STREET LIGHT...	2#10+1#10G	20 A	1					153	289	1	20 A	2#10+1#10G	LTG-M-0326,0328,0...	6
7	LTG-OHGW#13	2#12+1#12G	20 A	1	306	836					1	20 A	2#10+1#10G	LTG-DMX-M-0100C	8
9	LTG-M-0102	2#10+1#10G	20 A	1			342	861			1	20 A	2#12+1#12G	LTG-DMX	10
11	LTG-DMX WEST	2#12+1#12G	20 A	1					673	900	1	20 A	2#10+1#10G	LTG-SITE	12
13	LIGHTING	2#12+1#12G	20 A	1	940	1013					1	20 A	2#10+1#10G	LTG-SITE, MA-00	14
15	LTG-M0104	2#12+1#12G	20 A	1			950	1094			1	20 A	2#10+1#10G	TRAINING SPACE...	16
17	LTG-M-0100C	2#10+1#10G	20 A	1					984	1200	1	20 A	2#10+1#10G	SITE LIGHTING	18
19	SITE LIGHTING	2#10+1#10G	20 A	1	1200	1648					1	20 A	2#12+1#12G	CORR M-0300 LIGHT	20
21	LTG-AUDITORIUM...	2#10+1#10G	20 A	1			1314	1783			1	20 A	2#10+1#10G	LTG-M-0300, W/M...	22
23	LTG-M-0220B	2#12+1#12G	20 A	1					1337	1946	1	20 A	2#12+1#12G	ITV OFFICES +...	24
25	M-0100 TRACK LIGHT	2#10+1#10G	20 A	1	2690	2770					1	20 A	2#10+1#10G	TRENCH HEATER	26
27	LTG-AUDITORIUM...	2#10+1#10G	20 A	1			2477	2539			1	20 A	2#12+1#12G	LTG-MECH RM...	28
29	TRENCH HEATER	2#10+1#10G	20 A	1					2770	2787	1	20 A	2#10+1#10G	M-0100 TRACK LIGHT	30
31															32
33	LTG-M-0325	2#10+1#10G	20 A	1			2592								34
35	M-0121 AND M-0100...	2#10+1#10G	20 A	1					2838	16700	3	20 A	SEE SINGLE LINE	T-OGLA1	36
37	T-OGLA1	SEE SINGLE LINE	20 A	3	9200	21320									38
39							7548	18820							40
41									7292						42
				TOTAL PHASE LOAD	42,144 VA		40,607 VA		39,845 VA						
				TOTAL CONNECTED LOAD	147 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Equipment	1,000 VA	100.00%	1,000 VA		
HVAC	8,080 VA	100.00%	8,080 VA	TOTAL CONN. LOAD...	122,597 VA
Lighting	28,671 VA	100.00%	28,671 VA	TOTAL EST. DEMAND...	91,448 VA
Other	10,154 VA	100.00%	10,154 VA	TOTAL CONN. AMPS:	147 A
Power	2,400 VA	100.00%	2,400 VA	TOTAL DEMAND AMPS:	110 A
Receptacle	72,300 VA	56.92%	41,150 VA		

Notes:

PANEL NAME: OGLA2

LOCATION: INDOOR TRAINING M-0100C **VOLT:** 120/208 Wye **A.I.C. RATING:** 22,000
FED FROM: T-OGLA2 **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 100 A
NEMA RATING: Type 1 **MCB TRIP:** 100 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A		B		C		POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	Receptacle	2#12+1#12G	20 A	1	1080	1440					1	20 A	2#10+1#10G	REC-N0202	2
3	WP/GFI RECEPTS	2#10+1#10G	20 A	1			1080	1000			1	20 A	2#10+1#10G	DROP CORDS	4
5	DROP CORDS	2#10+1#10G	20 A	1					1000	1000	1	20 A	2#10+1#10G	DROP CORDS	6
7	DROP CORDS	2#10+1#10G	20 A	1	1000	1000					1	20 A	2#10+1#10G	DROP CORDS	8
9	DROP CORDS	2#10+1#10G	20 A	1			1000	1000			1	20 A	2#10+1#10G	DROP CORDS	10
11	WP/GFI RECEPTS	2#10+1#10G	20 A	1					1080	1080	1	20 A	2#10+1#10G	WP/GFI RECEPTS	12
13	WP/GFI RECEPTS	2#10+1#10G	20 A	1	1080	1800					1	20 A	2#10+1#10G	WP/GFI RECEPTS	14
15	REC-QUADS-M-0121	2#12+1#12G	20 A	1			1080	720			1	20 A	2#12+1#10G	REC-M-0100C	16
17	REC-M-0100C	2#12+1#12G	20 A	1					1080	720	1	20 A	2#12+1#10G	REC-M-0100C	18
19	REC- TRAINIGN...	2#12+1#12G	20 A	1	1080	720					1	20 A		REC-M-0100C	20
21	Receptacle	2#12+1#12G	20 A	1			1080	588			1	20 A	2#10+1#10G	CONDENSATE PUMP	22
23	CONDENSATE...	2#12+1#12G	20 A	1					252	1080	1	20 A	2#12+1#12G	REC-M-0102	24
25	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	26
27	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	28
29	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	30
31	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	32
33	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	34
35	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	36
37	PREPARED SPACE	--	--	1	--	--					1	--	--	PREPARED SPACE	38
39	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	40
41	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	42
				TOTAL PHASE LOAD	9,200 VA		7,548 VA		7,292 VA						
				TOTAL CONNECTED LOAD	67 A										

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
HVAC	1,000 VA	100.00%	1,000 VA		
Receptacle	23,040 VA	71.70%	16,520 VA	TOTAL CONN. LOAD...	24,040 VA
				TOTAL EST. DEMAND...	17,520 VA
				TOTAL CONN. AMPS:	67 A
				TOTAL DEMAND AMPS:	49 A

Notes:

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AV/IT ENGINEER
Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER
Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING
CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER
Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT
Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT
Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

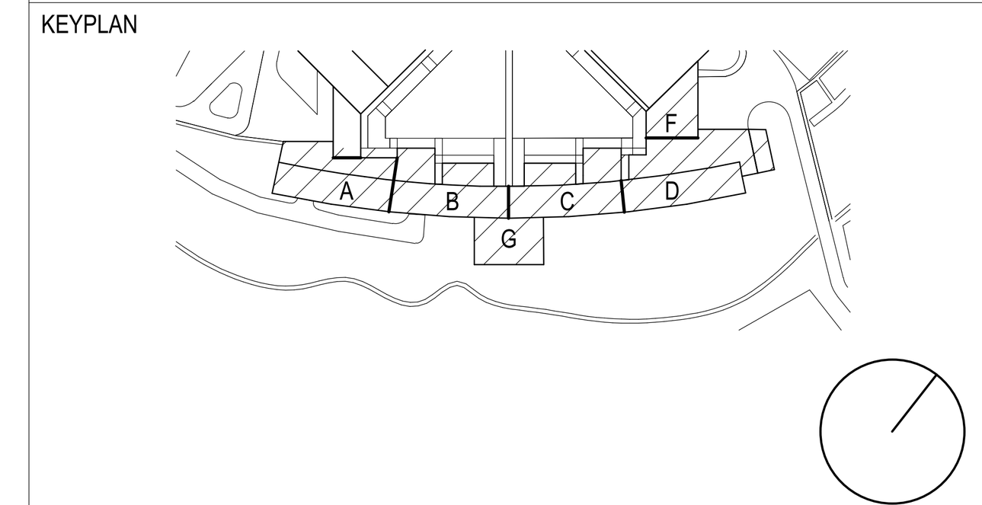
LANDSCAPE
Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING
MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
5	21 JUL 2023	ADDENDUM 34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL JITENDRA K AGARWAL ENGINEER PE033176E

2023-06-16
SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No. C-0211-0005 PHASE 5
Base Bid No.

PA State Police Academy and BESO - Modernization
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

OPTIONAL STANDBY PANEL SCHEDULES 4 OF 5

SHEET No. MAQ-E-607

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED

OPTIONAL STAND-BY PANEL SCHEDULES

SWB: DP-MGH

LOCATION: ELECTRICAL SERVIC... **VOLTA...** 480/277 Wye **A.I.C. RATING:** 42,000
FED FROM: SW-M **PHASE:** 3 **MLO/MCB:** BOLTED PRESSURE SERVICE SWITCH
MOUTNING: **WIRE:** 4 **BUS RATING:** 3,000 A
NEMA RATING:

#	LOAD DESCRIPTION	POLE #	OCP	LOAD (VA)	FEEDER
1	F-LDP	3	600 A	392,408 VA	SEE SINGLE LINE DIAGRAM
2	T-MGLA	3	50 A	18,116 VA	3#6 + 1#10g IN 1" CONDUIT
3	M4HA	3	200 A	63,897 VA	SEE SINGLE LINE DIAGRAM
4	M3HA	3	125 A	58,420 VA	SEE SINGLE LINE DIAGRAM
5	M2HA	3	125 A	46,581 VA	SEE SINGLE LINE DIAGRAM
6	M1HA	3	100 A	29,236 VA	SEE SINGLE LINE DIAGRAM
7	MGHE	3	400 A	191,264 VA	SEE SINGLE LINE DIAGRAM
8	MGHD	3	600 A	411,575 VA	SEE SINGLE LINE DIAGRAM
9	MAQ-GEN	3	100 A	17,956 VA	SEE SINGLE LINE DIAGRAM
10	PH-H	3	800 A	310,318 VA	SEE SINGLE LINE DIAGRAM
11	G-LH	3	600 A	216,688 VA	SEE SINGLE LINE DIAGRAM
12	M1HB	3	125 A	28,149 VA	SEE SINGLE LINE DIAGRAM
13	M2HB	3	125 A	57,224 VA	SEE SINGLE LINE DIAGRAM
14	M4HB	3	125 A	55,462 VA	SEE SINGLE LINE DIAGRAM
15	M3HB	3	125 A	44,150 VA	SEE SINGLE LINE DIAGRAM
16	MGHA	3	100 A	40,903 VA	SEE SINGLE LINE DIAGRAM
17	MGHB	3	100 A	34,758 VA	SEE SINGLE LINE DIAGRAM
18	MGHC	3	100 A	84,906 VA	SEE SINGLE LINE DIAGRAM
19	T-MGLB	3	50 A	18,300 VA	3#6 + 1#10 IN 1" CONDUIT
20	PREPARED SPACE	1	--	--	--
21	PREPARED SPACE	1	--	--	--
22	PREPARED SPACE	1	--	--	--
23	PREPARED SPACE	1	--	--	--
24	PREPARED SPACE	1	--	--	--
25	PREPARED SPACE	1	--	--	--
26	PREPARED SPACE	1	--	--	--
27	PREPARED SPACE	1	--	--	--
28	PREPARED SPACE	1	--	--	--
29	PREPARED SPACE	1	--	--	--
30	PREPARED SPACE	1	--	--	--
			TOTAL CONNECT LOAD	2,120,225 VA	
			TOTAL CONECTED AMPS	2,550 A	

LOAD CLASSIFICATION	CONNECTED...	Demand Factor	Estimated...	TOTALS	
Lighting	306 VA	100.00%	306 VA		
Other	448,142 VA	100.00%	448,142 VA	TOTAL CONN. LOAD:	2,120,225 VA
Power	1,645,961 VA	100.00%	1,645,961 VA	TOTAL DEMAND...	2,112,315 VA
Receptacle	25,820 VA	69.36%	17,910 VA	TOTAL CONN. AMPS:	2,550 A
				TOTAL DEMAND...	2,541 A

Notes:

SWB: DP-OGHA

LOCATION: ELECTRICAL SERVIC... **VOLTA...** 480/277 Wye **A.I.C. RATING:** 42,000
FED FROM: A-OGH **PHASE:** 3 **MLO/MCB:** BOLTED PRESSURE SERVICE SWITCH
MOUTNING: FLOOR MOUNTED **WIRE:** 4 **BUS RATING:** 4,000 A
NEMA RATING: NEMA-1

#	LOAD DESCRIPTION	POLE #	OCP	LOAD (VA)	FEEDER
1	OGHA	3	100 A	122,597 VA	SEE SINGLE LINE DIAGRAM
2	ELEVATOR ROOM M-0117	3	80 A	28,221 VA	SEE SINGLE LINE DIAGRAM
3	O1HA	3	200 A	121,534 VA	SEE SINGLE LINE DIAGRAM
4	F-OHP (FTU BLDG)	3	225 A	65,098 VA	SEE SINGLE LINE DIAGRAM
5	O2HA	3	125 A	99,713 VA	SEE SINGLE LINE DIAGRAM
6	WWHRM-1	3	600 A	403,000 VA	(2) SETS OF 3#350KCMIL + 1#1G IN (2) 3"C
7	O4HA	3	200 A	154,693 VA	SEE SINGLE LINE DIAGRAM
8	WWHRM-2	3	600 A	403,000 VA	(2) SETS OF 3#350KCMIL + 1#1G IN (2) 3"C
9	O3HA	3	125 A	95,939 VA	SEE SINGLE LINE DIAGRAM
10	DP-OGHB	3	1,200 A	961,507 VA	SEE SINGLE LINE DIAGRAM
11	PREPARED SPACE	1	--	--	--
12	PREPARED SPACE	1	--	--	--
13	PREPARED SPACE	1	--	--	--
14	PREPARED SPACE	1	--	--	--
15	PREPARED SPACE	1	--	--	--
16	PREPARED SPACE	1	--	--	--
17	PREPARED SPACE	1	--	--	--
18	PREPARED SPACE	1	--	--	--
19	PREPARED SPACE	1	--	--	--
20	PREPARED SPACE	1	--	--	--
21	PREPARED SPACE	1	--	--	--
22	PREPARED SPACE	1	--	--	--
23	PREPARED SPACE	1	--	--	--
24	PREPARED SPACE	1	--	--	--
25	PREPARED SPACE	1	--	--	--
26	PREPARED SPACE	1	--	--	--
27	PREPARED SPACE	1	--	--	--
28	PREPARED SPACE	1	--	--	--
29	PREPARED SPACE	1	--	--	--
30	PREPARED SPACE	1	--	--	--
			TOTAL CONNECT LOAD	2,455,218 VA	
			TOTAL CONECTED AMPS	2,953 A	

LOAD CLASSIFICATION	CONNECTED...	Demand Factor	Estimated...	TOTALS	
Equipment	4,000 VA	100.00%	4,000 VA		
HVAC	62,820 VA	100.00%	62,820 VA	TOTAL CONN. LOAD:	2,455,218 VA
Lighting	142,188 VA	100.00%	142,188 VA	TOTAL DEMAND...	2,028,025 VA
Motor	2,000 VA	106.25%	2,125 VA	TOTAL CONN. AMPS:	2,953 A
Other	22,096 VA	100.00%	22,096 VA	TOTAL DEMAND...	2,439 A
Power	1,357,510 VA	100.00%	1,357,510 VA		
Receptacle	864,664 VA	50.58%	437,332 VA		

Notes:

PANEL NAME: DP-MGLA

LOCATION: ELECTRICAL SERVICE ROOM M-0201 **VOLT:** 120/208 Wye **A.I.C. RATING:** 10,000
FED FROM: T-MGLA **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 125A
NEMA RATING: Type 1 **MCB TRIP:** 110 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A	A	B	B	C	C	POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	RECEPTS RM-0214	2#10+1#10G	20 A	1	180	198					1	20 A	2#10+1#10G	EAST ELEV PIT...	2
3	M-0114 TELECOM	2#10+1#10G	20 A	1			360	360			1	20 A	2#10+1#10G	SEC PANEL M-0308	4
5	TELECOM SERVER	2#10+1#10G	20 A	1					360	540					6
7	ELEV PIT RECEPTS...	2#10+1#10G	20 A	1	378	540					3	30 A	SEE SINGLE LINE DIAGRAM	M4LA	8
9							540	0							10
11	M2LB	SEE SINGLE LINE DIAGRAM	30 A	3					360	540					12
13					0	540					3	30 A	SEE SINGLE LINE DIAGRAM	M3LA	14
15							3400	360							16
17	M1LA	SEE SINGLE LINE DIAGRAM	30 A	3					3540	360	1	20 A	2#10+1#10G	TELECOM SERVER	18
19					3040	360					1	20 A	2#10+1#10G	TELECOM SERVER	20
21	TELECOM SERVER	2#10+1#10G	20 A	1			360	360			1	20 A	2#10+1#10G	TELECOM SERVER	22
23	TELECOM SERVER	2#10+1#10G	20 A	1					360	360	1	20 A	2#10+1#10G	TELECOM SERVER	24
25	TELECOM SERVER	2#10+1#10G	20 A	1	360	0					1	20 A	--	SPARE	26
27	TELECOM SERVER	2#10+1#10G	20 A	1			360	0			1	20 A	--	SPARE	28
29	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	30
31	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	32
33	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	34
35	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	36
37	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	38
39	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	40
41	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	42
	TOTAL PHASE LOAD				5,596 VA		6,100 VA		6,420 VA						
	TOTAL CONNECTED LOAD						50 A								

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Other	36 VA	100.00%	36 VA		
Receptacle	18,080 VA	77.65%	14,040 VA	TOTAL CONN. LOAD...	18,116 VA
				TOTAL EST. DEMAND...	14,076 VA
				TOTAL CONN. AMPS:	50 A
				TOTAL DEMAND AMPS:	39 A

Notes:

Branch Panel: DP-OGHB

Location: ELECTRICAL DISTRIBUTION M-0304 **Volts:** 480/277 Wye **A.I.C. Rating:** 22,000
Supply From: DP-OGHA **Phase:** 3 **Mains Type:** MCB
Mounting: WALL MOUNTED **Wires:** 4 **Bussing:** 800 A
Enclosure: NEMA-1 **Mains Rating:** 1,000 A
Feeder: SEE SINGE LINE DIAGRAM

Ckt No.	Circuit Description	Wire Size Text	Trip	Poles	A	A	B	B	C	C	Poles	Trip	Wire Size Text	Circuit Description	Ckt No.
1					35807	45131									2
3	T-O1LK	SEE SINGLE LINE DIAGRAM	800 A	3			40109	45131			3	225 A	SEE SINGLE LINE DIAGRAM	GYM	4
5									57505	45131					6
7					43056	59550									8
9	O1HB	SEE SINGLE LINE DIAGRAM	400 A	3			42821	59550			3	100 A	SEE SINGLE LINE DIAGRAM	O1HK	10
11									43855	59550					12
13					24914	32054									14
15	O3HB	SEE SINGLE LINE DIAGRAM	100 A	3			35852	28498			3	100 A	SEE SINGLE LINE DIAGRAM	O2HB	16
17									31428	30190					18
19					33754	33414									20
21	OGHB	SEE SINGLE LINE DIAGRAM	100 A	3			36892	31351			3	100 A	SEE SINGLE LINE DIAGRAM	O4HB	22
23									37239	29376					24
25	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	26
27	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	28
29	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	30
31	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	32
33	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	34
35	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	36
37	SPARE	--	20 A	1	0	--					1	--	--	PREPARED SPACE	38
39	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	40
41	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	42
43	PREPARED SPACE	--	--	1	--	--					1	--	--	PREPARED SPACE	44
45	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	46
47	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	48
49	PREPARED SPACE	--	--	1	--	--					1	--	--	PREPARED SPACE	50
51	PREPARED SPACE	--	--	1			--	--			1	--	--	PREPARED SPACE	52
53	PREPARED SPACE	--	--	1					--	--	1	--	--	PREPARED SPACE	54
				Total Load	307,390 VA		320,103 VA		334,018 VA						
				Design Amp			1,157 A								

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	1,000 VA	100.00%	1,000 VA		
HVAC	43,760 VA	100.00%	43,760 VA	Total Conn. Load:	961,507 VA
Lighting	58,597 VA	100.00%	58,597 VA	Total Est. Demand:	739,240 VA
Motor	2,000 VA	106.25%	2,125 VA	Total Conn.:	1,157 A
Other	5,336 VA	100.00%	5,336 VA	Total Est. Demand:	889 A
Power	396,109 VA	100.00%	396,109 VA		
Receptacle	454,872 VA	51.10%	232,436 VA		

Notes:

PANEL NAME: DP-MGLB

LOCATION: ELECTRICAL DISTRIBUTION M-0304 **VOLT:** 120/208 Wye **A.I.C. RATING:** 10,000
FED FROM: T-MGLB **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 125A
NEMA RATING: Type 1 **MCB TRIP:** 110 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A	A	B	B	C	C	POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1					1340	1740									2
3	MGLB	SEE SINGLE LINE DIAGRAM	30 A	3			1520	1920			3	30 A	SEE SINGLE LINE DIAGRAM	M4LB	4
5									3860	1200					6
7					540	540									8
9	M3LA	SEE SINGLE LINE DIAGRAM	30 A	3			720	540			3	30 A	SEE SINGLE LINE DIAGRAM	M2LA	10
11									180	180					12
13					1340	0					1	20 A	--	SPARE	14
15	M1LB	SEE SINGLE LINE DIAGRAM	30 A	3			1340	0			1	20 A	--	SPARE	16
17									1340	0	1	20 A	--	SPARE	18
19	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	20
21	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	22
23	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	24
	TOTAL PHASE LOAD				5,500 VA		6,040 VA		6,760 VA						
	TOTAL CONNECTED LOAD						51 A								

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Power	11,280 VA	100.00%	11,280 VA		
Receptacle	7,020 VA	100.00%	7,020 VA	TOTAL CONN. LOAD...	18,300 VA
				TOTAL EST. DEMAND...	18,300 VA
				TOTAL CONN. AMPS:	51 A
				TOTAL DEMAND AMPS:	51 A

Notes:

PANEL NAME: EGL

LOCATION: ATS ROOM M-0202 **VOLT:** 120/208 Wye **A.I.C. RATING:** 22,000
FED FROM: T-E **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 100 A
NEMA RATING: Type 1 **MCB TRIP:** 30 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A	A	B	B	C	C	POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	LEVEL-0- WEST BPS	2#10+1#10G	20 A	1	732	800					1	20 A	2#10+1#10G	LEVEL 1 - EAST BPS	2
3	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	4
5	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	6
7	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	8
9	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	10
11	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	12
13	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	14
15	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	16
17	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	18
19	SPARE	--	20 A	1	0	465									20
21	SPARE	--	20 A	1			0	465			3	20 A		EL1	22
23	SPARE	--	20 A	1					0	0					24
	TOTAL PHASE LOAD				1,992 VA		465 VA		0 VA						
	TOTAL CONNECTED LOAD						7 A								

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Power	2,310 VA	100.00%	2,310 VA		
Receptacle	180 VA	100.00%	180 VA	TOTAL CONN. LOAD...	2,456 VA
				TOTAL EST. DEMAND...	2,456 VA
				TOTAL CONN. AMPS:	7 A
				TOTAL DEMAND AMPS:	7 A

Notes:

PANEL NAME: EL1

LOCATION: EM. ELEC. CLOSET M-1108 **VOLT:** 120/208 Wye **A.I.C. RATING:**
FED FROM: EGL **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 100 A
NEMA RATING: Type 1 **MCB TRIP:** 100 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A	A	B	B	C	C	POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	LEVEL 1 - WEST BPS	2#10+1#10G	20 A	2	25	290					2	20 A	2#10+1#10G	LEVEL 1 - EAST BPS	2
3							25	290							4
5	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	6
7	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	8
9	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	10
11	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	12
13	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	14
15	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	16
17	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	18
19	SPARE	--	20 A	1	0	150									20
21	SPARE	--	20 A	1			0	150			3	20 A		E2L	22
23	SPARE	--	20 A	1					0	0					24
	TOTAL PHASE LOAD				465 VA		465 VA		0 VA						
	TOTAL CONNECTED LOAD						3 A								

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Power	930 VA	100.00%	930 VA		
				TOTAL CONN. LOAD...	930 VA
				TOTAL EST. DEMAND...	930 VA
				TOTAL CONN. AMPS:	3 A
				TOTAL DEMAND AMPS:	3 A

Notes:

PANEL NAME: E2L

LOCATION: EM. ELEC. CLOSET M-2106B **VOLT:** 120/208 Wye **A.I.C. RATING:**
FED FROM: EL1 **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 100 A
NEMA RATING: Type 1 **MCB TRIP:** 100 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A	A	B	B	C	C	POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	LEVEL 2 - WEST BPS	2#10+1#10G	20 A	2	25	25					2	20 A	2#10+1#10G	LEVEL 2 - EAST BPS	2
3							25	25							4
5	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	6
7	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	8
9	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	10
11	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	12
13	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	14
15	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	16
17	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	18
19	SPARE	--	20 A	1	0	100									20
21	SPARE	--	20 A	1			0	100			3	20 A		E3L	22
23	SPARE	--	20 A	1					0	0					24
	TOTAL PHASE LOAD				150 VA		150 VA		0 VA						
	TOTAL CONNECTED LOAD						1 A								

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Power	300 VA	100.00%	300 VA		
				TOTAL CONN. LOAD...	300 VA
				TOTAL EST. DEMAND...	300 VA
				TOTAL CONN. AMPS:	1 A
				TOTAL DEMAND AMPS:	1 A

Notes:

PANEL NAME: E3L

LOCATION: EM. ELEC. CLOSET M-3106B **VOLT:** 120/208 Wye **A.I.C. RATING:**
FED FROM: E2L **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 100 A
NEMA RATING: Type 1 **MCB TRIP:** 100 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A	A	B	B	C	C	POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	LEVEL 3 - WEST BPS	2#10+1#10G	20 A	2	25	25					2	20 A	2#10+1#10G	LEVEL 3 - EAST BPS	2
3							25	25							4
5	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	6
7	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	8
9	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	10
11	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	12
13	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	14
15	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	16
17	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	18
19	SPARE	--	20 A	1	0	50									20
21	SPARE	--	20 A	1			0	50			3	20 A		E4L	22
23	SPARE	--	20 A	1					0	0					24
	TOTAL PHASE LOAD				100 VA		100 VA		0 VA						
	TOTAL CONNECTED LOAD						1 A								

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Power	200 VA	100.00%	200 VA		
				TOTAL CONN. LOAD...	200 VA
				TOTAL EST. DEMAND...	200 VA
				TOTAL CONN. AMPS:	1 A
				TOTAL DEMAND AMPS:	1 A

Notes:

PANEL NAME: E4L

LOCATION: EM. ELEC. CLOSET M-4106B **VOLT:** 120/208 Wye **A.I.C. RATING:**
FED FROM: E3L **PHASE:** 3 **MCB OR MLO:** MCB
MOUTING STYLE: Surface **WIRE:** 4 **BUS RATING** 100 A
NEMA RATING: Type 1 **MCB TRIP:** 100 A

#	LOAD DESCRIPTION	WIRE SIZE	OCP	POLE	A	A	B	B	C	C	POLE	OCP	WIRE SIZE	LOAD DESCRIPTION	#
1	LEVEL 4 - WEST BPS	2#12+1#10G	20 A	2	25	25					2	20 A	2#10+1#10G	LEVEL 4 - EAST BPS	2
3							25	25							4
5	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	6
7	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	8
9	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	10
11	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	12
13	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	14
15	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	16
17	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	18
19	SPARE	--	20 A	1	0	0					1	20 A	--	SPARE	20
21	SPARE	--	20 A	1			0	0			1	20 A	--	SPARE	22
23	SPARE	--	20 A	1					0	0	1	20 A	--	SPARE	24
	TOTAL PHASE LOAD				50 VA		50 VA		0 VA						
	TOTAL CONNECTED LOAD						0 A								

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	EST. DEMAND	TOTALS	
Power	100 VA	100.00%	100 VA		
				TOTAL CONN. LOAD...	100 VA
				TOTAL EST. DEMAND...	100 VA
				TOTAL CONN. AMPS:	0 A
				TOTAL DEMAND AMPS:	0 A

Notes:

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AV/IT ENGINEER
Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER
Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING
CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER
Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT
Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT
Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

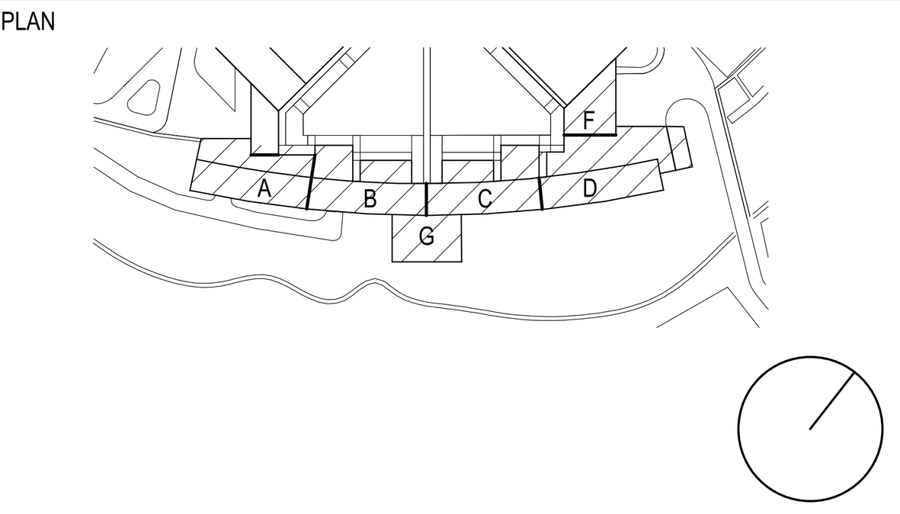
LANDSCAPE
Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING
MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
5	21 JUL 2023	ADDENDUM 34			
3	07 JUL 2023	ADDENDUM 31			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E

JKAgarwal
2023-06-16
SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No. C-0211-0005 PHASE 5
Base Bid No.

PA State Police Academy and BESO - Modernization
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

DISTRIBUTION PANEL SCHEDULES

SHEET No. MAQ-E-610

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED

TYPE	DESCRIPTION	MFR.	CATALOG NO.	NO. OF LAMPS	WATTS	LUMENS	LAMP TYPE	DIMMING CONTROL	VOLTAGE	ACCEPTABLE ALTERNATE MFR.	LOCATION	NOTES
AD1	MOUNTING: RECESSED, CEILING APERTURE SIZE: 4.1"DIA DIMENSIONS: 4"DIA X 5.5"H OPTICS: NA ACCESSORY LENS: MATTE DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	GOTHAM	EVO4--30-15-AR-WD-LD-MVOLT-GZ10	1 ea.	13.7	1293 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	EXTERIOR ENTRIES	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
AG1	MOUNTING: Recessed, Ground APERTURE SIZE: 4-7/16" x LENGTH DIMENSIONS: 8-1/2"W x LENGTH x 5-9/16"H OPTICS: 10°x30°...	LUMENPULSE	LOIRO-120/277-LENGTH-30K-10x30-TS5-INTL-NO-ASL	1 ft.	8.5	600 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	INTERLUX BEGA	EXTERIOR FAÇADE	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER
AW1	MOUNTING: SURFACE, WALL DIMENSIONS: 7.09"W X 3.94"H X 6.94"D OPTICS: MEDIUM SYMMETRIC DOWN ACCESSORY LENS: HEXCELL LOUVER FINISH: BLACK MAT - 9004...	WE-EF LIGHTING	131-9970-9004	1 ea.	13	1182 lm delivered	LED module 3000K 80CRI	NON-DIM	UNV	BEGA LIGMAN LIGHTING	EGRESS DOORS & PATH	
DP1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 20"DIA DIMENSIONS: 20"DIA X 5"H OPTICS: NA ACCESSORY LENS: NA FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES: THE POWER CORD AND AIRCRAFT CAN BE TRIMMED IN THE FIELD.	BROWNLEE	2680-20-WH-C34-WH-CC1-WH-30K-90R	1 ea.	32	2344 lm delivered	LED module 3000K 90CRI	0-10V	120-277	PRUDENTIAL LUMENWERX	LEVEL 0 - HALL WAY	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •SHORTEN AIRCRAFT & POWER CABLE IN FIELD - VERIFY HEIGHT AFF WITH ARCHITECTURAL DRAWINGS
HP2				1 ea.			LED module 3000K 90CRI	0-10V	120-277		LEVEL 0 CORRIDOR	
PA1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 3-1/8"DIA DIMENSIONS: 3-1/8"DIA X 5"H OPTICS: NA ACCESSORY LENS: MATTE DIFFUSE FINISH: POLYESTER POWDER COAT, MATTE BLACK ADD'L ATTRIBUTES: ADJUSTABLE TILT UP TO 90º AND ROTATION 365º, 45º CUTOFF	GOTHAM	EVO2-PTRCHYP-30-20-AR-LD-MVOLT-UGZ-SGBCC-PCAN-S4-90CRI- DBL	1 ea.	29.6	1305 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	LEVEL 1 - CAFETERIA	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PC1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 2-1/4" DIMENSIONS:2-1/4"W X LENGTH X 4-9/16"H OPTICS: NA ACCESSORY LENS: MATTE DIFFUSE FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	FINELITE	HP2-P-B-H-B-930-F-F-96LG-120-SC-FC10-SW	/ft.	9.2	671 lm/ft delivered	LED linear 3000K 90CRI	0-10	120-277	AXIS WHITEGOODS	LEVEL 2-4 - MAQ - DORM CORRIDOR	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PD1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 3-7/64"DIA DIMENSIONS: 3-7/64"DIA X 5"H OPTICS: 60º WIDE FLOOD ACCESSORY LENS: MATTE DIFFUSE FINISH: POLYESTER POWDER COAT, MATTE BLACK ADD'L ATTRIBUTES: 50º CUTOFF, FIELD INTERCHANGABLE OPTIC	GOTHAM	EVO2CC--30-15-AR-LD-WD-MVOLT-UGZ-SGBCC-CCAN-C120-90CRI- DBL	1 ea.	21.2	1302 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	LEVEL 0 - ATRIUM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PD2	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 3-7/64"DIA DIMENSIONS: 3-7/64"DIA X 5"H OPTICS: 40º FLOOD ACCESSORY LENS: MATTE DIFFUSE FINISH: POLYESTER POWDER COAT, MATTE BLACK ADD'L ATTRIBUTES: 50º CUTOFF, FIELD INTERCHANGABLE OPTIC	GOTHAM	ICO2CC--30-10-AR-LD-40D-MVOLT-UGZ-SGBCC-CCAN-C120-90CRI- DBL	1 ea.	12	997 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	LEVEL 0 - ATRIUM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PD3	MOUNTING: Suspended, Ceiling APERTURE SIZE: 6"DIA DIMENSIONS: 6"DIA x 10"H OPTICS: 90º Wide Flood ACCESSORY LENS: Solite Clear FINISH: Polyester Powder Coat, Matte Black ADD'L ATTRIBUTES: 45º cutoff, Field interchangable optic	USA1	CBRD10-36E1-30KH-90-S-BL-PR3-UNV-D6*	1 ea.	36	2760 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	LEVEL 1 - CAFTERIA	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PD6	MOUNTING: Suspended, Ceiling APERTURE SIZE: 9"DIA DIMENSIONS: 9"DIA x 11.75"H x 60" Suspension OPTICS: Direct ACCESSORY LENS: Matte Diffuse FINISH: Polyester Acoustic felt, Architect shall verify finish ADD'L ATTRIBUTES: Aircraft cable suspension, natatorium rated paint finish on all metal parts	EUREKA	4272D-9-LEDHO-90-277V-DV-C-60-BLKE-BLK-BLKE-WH	1 ea.	28.6	1755 lm del1755 lm deliverediver ed	LED module 3000K 90CRI	0-10V	120-277	XAL	LEVEL 0 - OFFICE	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •REFER TO ELEVATIONS FOR DESIRED MOUNTING HEIGHT
PG1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 2.4" DIMENSIONS: 2.4"W X LENGTH X 4.5"H OPTICS: 50º ACCESSORY LENS: RECESSED BLACK LOUVER FINISH: POLYESTER POWDER COAT, MATTE BLACK ADD'L ATTRIBUTES:	WHITEGOODS	WG-60PTL-S-LENGTH-930-RLB-50-P2-E1-B-B	1 /ft	6	850 lm/ft delivered	LED linear 3000K 90CRI	0-10V	120-277	AXIS FINELITE		•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PG2	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 2.4" DIMENSIONS: 2.4"W X LENGTH X 4.5"H OPTICS: 50º ACCESSORY LENS: RECESSED BLACK LOUVER FINISH: POLYESTER POWDER COAT, MATTE BLACK ADD'L ATTRIBUTES:	WHITEGOODS	WG-60PTL-S-LENGTH-930-RLB-50-P2-E1-B-B	1 /ft	6	850 lm/ft delivered	LED linear 3000K 90CRI	0-10V	120-277	AXIS FINELITE	LEVEL 1 - CAFETERIA	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PG3	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 2.4" DIMENSIONS: 2.4"W X LENGTH X 4.5"H OPTICS: 50º ACCESSORY LENS: RECESSED BLACK LOUVER FINISH: POLYESTER POWDER COAT, MATTE BLACK ADD'L ATTRIBUTES:	WHITEGOODS	WG-60PTL-S-LENGTH-930-RLB-50-P2-E1-B-B	1 /ft	6	850 lm/ft delivered	LED linear 3000K 90CRI	0-10V	120-277	AXIS FINELITE	LEVEL 1 - CAFETERIA	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PL1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 2-1/4" DIMENSIONS: 2-1/4"W X LENGTH X 5"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER WITH 1" REGRESSED FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	FINELITE	HP2-PRG-D-V-H-930-RGD-96LG-120-SC-FC10-SW	1 /ft	16.2	1170 lm/ft delivered	LED linear 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	LEVEL 1 - CLASSROOM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PL2	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 2-1/4" DIMENSIONS: 2-1/4"W X LENGTH X 5"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER WITH 1" REGRESSED FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	FINELITE	HP2-PRG-D-V-H-930-RGD-96LG-120-SC-FC10-SW	1 /ft	16.2	1170 lm/ft delivered	LED linear 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	LEVEL 1 - CLASSROOM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PL3	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 4" DIMENSIONS: 4"W X LENGTH X 4-9/16"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	FINELITE	HP4-P-ID-B-B-930-F-F-96LG-120-SC-FC10-SW	1 /ft	9.2	1015 lm/ft delivered	LED linear 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	LEVEL 1 & 2 - BSO TYP LOCKER	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PL4	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 2-1/4" DIMENSIONS: 2-1/4"W X LENGTH X 4-9/16"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	FINELITE	HP4-P-ID-H-V-930-F-F-96LG-120-SC-FC10-SW	1 /ft	16.4	1739 lm/ft delivered	LED linear 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	LEVEL 2 - MAQ-CAFETERIA	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PS1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 12.5"DIA DIMENSIONS: 13.25"DIA X 12.75"H OPTICS: WIDE DISTRIBUTION ACCESSORY LENS: FLAT DIFFUSER FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	HOLOPHANE	BALED-5000LM-6585U-MVOLT-30K-PM	1 ea.	39	4334 lm delivered	LED module 3000K 90CRI	0-10V	120-277		LEVEL 1 - BSO	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PS2	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 6.8"W DIMENSIONS: 6.8"W X 48"L X 4.2"H OPTICS: WIDE DISTRIBUTION ACCESSORY LENS: LOW PROFILE CLEAR LEN FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	LITHONIA	FEM-L48-4000-LPACL-WD-MVOLTZ-GZ10-30K-90CRI	1 ea.	39	3150 lm delivered	LED LINEAR 3000K 90CRI	0-10V	120-277		LEVEL 1 - BSO	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PS3	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 5.5"W DIMENSIONS: 5.5"W X 48"L X 3.5"H OPTICS: NA ACCESSORY LENS: CURVED LEN FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	LITHONIA	BLWP4-20L-ADP-MVOLTZ-GZ10-LP930	1 ea.	16	1985 lm delivered	LED LINEAR 3000K 90CRI	0-10V	120-277		LEVEL 1 - FTU - STORAGE	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PW1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 2-1/4" DIMENSIONS: 2-1/4"W X LENGTH X 5"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER WITH 1" REGRESSED FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	FINELITE	HP2-P-RG-H-930-RGD-96LG-120-SC-FC10-SW	1 /ft	7	419 lm/ft delivered	LED linear 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	- MAQ- CAFETERIA	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PZ1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 17-1/4"DIA DIMENSIONS: 17-1/4"DIA X 8-1/2"H OPTICS: 30º ACCESSORY LENS: CURVED LEN FINISH: POLYESTER POWDER COAT, MATTE BLACK ADD'L ATTRIBUTES:	LUMENPULSE	LBXP-HO-120-RGBW30K-M-SCAN-36-BK	1 ea.	140	8120 lm delivered	LED MODULE 3000K 90CRI	0-10V	120-277		LEVEL 1 - MAG-ITV	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
PZ2	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 17-1/4"DIA DIMENSIONS: 17-1/4"DIA X 8-1/2"H OPTICS: 60º ACCESSORY LENS: CURVED LEN FINISH: POLYESTER POWDER COAT, MATTE BLACK ADD'L ATTRIBUTES:	LUMENPULSE	LBXP-HO-120-RGBW30K-WFL-SCAN-36-BK	1 ea.	140	7826 lm delivered	LED MODULE 3000K 90CRI	0-10V	120-277		LEVEL 1 - MAG-ITV	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RA1	MOUNTING: Recessed, Ceiling APERTURE SIZE: 4.5"DIA DIMENSIONS: 13"W x 22-1/4"L x 6-7/8"H OPTICS: 60° ACCESSORY LENS: NA FINISH: Polyester Powder Coat, White ADD'L ATTRIBUTES:	USAI	B4RAL-25-36E1-30KH-R60-S-WH-WH-NC-UNV-D6*	1 ea.	36	2340 lm delivered	LED MODULE 3000K 90CRI	0-10V	120-277		LEVEL 0 - AUDITORUM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING •FIXTURE REQUIRES TAPE, SKIMCOAT AND SANDING TO INTEGRATE WITH GYPSUM CEILING
RC1	MOUNTING: SURFACE, CEILING APERTURE SIZE: 18.1"DIA DIMENSIONS: 18.1"DIA X 5.5"H OPTICS: NA ACCESSORY LENS: NA FINISH: SATIN CHROME PLATED ADD'L ATTRIBUTES:	LOUIS POULSEN	10000122581	1 ea.	30	2147 lm delivered	LED MODULE 3000K 90CRI	0-10V	120-277		LEVEL 0 - MAG-ELEVATOR LOBBY	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RD1	MOUNTING: RECESSED, CEILING APERTURE SIZE: 18.1"DIA DIMENSIONS: 18.1"DIA X 5.5"H OPTICS: NA ACCESSORY LENS: MATTE DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	GOTHAM	EVO4--30-15-AR-WD-LD-MVOLT-GZ10	1 ea.	13.7	1293 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	TYP CORRIDOR & RESTROOM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RD2	MOUNTING: RECESSED, CEILING APERTURE SIZE: 18.1"DIA DIMENSIONS: 18.1"DIA X 5.5"H OPTICS: NA ACCESSORY LENS: MATTE DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	GOTHAM	EVO4--30-20-AR-WD-LD-MVOLT-GZ10	1 ea.	19.5	1689 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	LEVEL 1 - FTU - CONTROL ROOM LEVEL 1- MAQ - CAFETERIA	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RD3	MOUNTING: RECESSED, CEILING APERTURE SIZE: 4-5/16"DIA DIMENSIONS: 15-7/8"W X 15-15/16"L X 6-5/8"H OPTICS: WIDE DISTRIBUTION ACCESSORY LENS: MATTE DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	GOTHAM	EVO4-ARTC-RGBW-12-4AR-WD-LD-120	1 ea.	31	1084 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	LEVEL 1 - FTU	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RD4	MOUNTING: Recessed, Ceiling APERTURE SIZE: 3"DIA DIMENSIONS: 14-1/2"W x 5-3/4"L x 2"H OPTICS: 65° ACCESSORY LENS: Solite Lens FINISH: Powder Coat, White ADD'L ATTRIBUTES:	USAI	B3RDL-20X3-30KH-65-S-WH-FT-UNV-D6*	1 ea.	20	1677 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	LEVEL 0 -AUDITORUM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RG1	MOUNTING: Recessed, Ceiling APERTURE SIZE: 2.4" DIMENSIONS: 2.4"W x LENGTH X 4.5"H OPTICS: 50° ACCESSORY LENS: Black Louver FINISH: Polyester Powder Coat, White ADD'L ATTRIBUTES:	WHITEGOODS		1 ea.	6	707 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	LEVEL 1 - ATRIUM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING •FIXTURE HAS A TRIMLESS DETAIL THAT REQUIRES TAPE, SKIMCOAT AND SANDING TO INTEGRATE WITH CEILING PLANE
RG2	MOUNTING: Recessed, Ceiling APERTURE SIZE: 2.4" DIMENSIONS: 2.4"W x LENGTH X 4.5"H OPTICS: 80° ACCESSORY LENS: Micro-Prismatic FINISH: Polyester Powder Coat, White ADD'L ATTRIBUTES:	MAQ		1 ea.	6	617 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	LEVEL 0 - AUDITORUM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RL1	MOUNTING: RECESSED, CEILING APERTURE SIZE: 2-1/4"W DIMENSIONS: 2-1/4"W X LENGTH - 5"H OPTICS: NA ACCESSORY LENS: REGRESSED DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HP2-RG-V-930-F-96LG-120-SC-FC10-SW	1 ea.	9.3	542 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	LEVEL 1 - FTU - CLASSROOM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RL2	MOUNTING: RECESSED, CEILING APERTURE SIZE: 2-1/4"W DIMENSIONS: 2-1/4"W X LENGTH X 5"H OPTICS: NA ACCESSORY LENS: REGRESSED DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HP2-RG-H-930-F-96LG-120-SC-FC10-SW	1 ea.	7.1	422 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	LEVEL 1 - TFU - WEAPON CLEANING	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RL4	MOUNTING: Recessed, Ceiling APERTURE SIZE: 2-1/4"W DIMENSIONS: 2-1/4"W x LENGTH - 5"H OPTICS: NA ACCESSORY LENS: Regressed Diffuser FINISH: Powder Coat, White ADD'L ATTRIBUTES:	FINELITE	P2-RG-V-930-F-96LG-120-SC-FC10-SW	1 ea.	9.3	542 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	LEVEL 1 CAFETERIA	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RP1	MOUNTING: RECESSED, CEILING APERTURE SIZE: 1.2" DIMENSIONS: 1.2"W X LENGTH X 5.2"H OPTICS: NA ACCESSORY LENS: SATIN OPAL DIFFUSER FINISH: POLYESTER POWDER COAT, WHITE ADD'L ATTRIBUTES:	WHITEGOODS	WG-20LPR-RPT-S-LENGTH-M-930-D010-OD-W	1 ea.	6.4	359 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS FINELITE	LEVEL 1 LOBBY	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RP2	MOUNTING: RECESSED, CEILING APERTURE SIZE: 4"W DIMENSIONS: 4"W X LENGTH X 5-1/8"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER WITH 2" REGRESSED FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HP-WS-4W-2D-LENGTH-V-930-SW-120-SC-FC10-	1 ea.	9.3	577 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	TYP. RESTROOM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RT1	MOUNTING: RECESSED, CEILING APERTURE SIZE: 2'X2' DIMENSIONS: 24"W X 5-1/8"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HP-WS-4W-2D-LENGTH-V-930-SW-120-SC-FC10-MOD	1 ea.	9.3	3377 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	TYP. OFFICE KITCHEN	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RD6	MOUNTING: Recessed, Ceiling APERTURE SIZE: 2" DIA DIMENSIONS: 4"DIA TRIM, HOUSING: 5-3/4"W x 14-3/4"L x 3"H OPTICS: NA ACCESSORY LENS: Solite FINISH: Powder Coat, Grey ADD'L ATTRIBUTES:	USAI	B3RDF-20X3-30KH-65-S-GR-FT-UNV-D6*	1 ea.	20	1677 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	LEVEL 1 ENTRY	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING •PROVIDE NATATORIUM RATED FINISH ON METAL PARTS
TA5	MOUNTING: Surface Track, Ceiling APERTURE SIZE: 5-3/4"DIA DIMENSION: 5-3/4"DIA x 12-3/8"H OPTIC: 30° ACCESSORY LENS: Solite lens with Honeycomb Louver FINISH: Black ADD' ATTRIBUTES:	LIGHTING SERVICES INC	LX2084-30-98-30-J3-CT1-10-277-B + C998 + HOOD-EXT-LX84-WXB-B	1 ea.	41	2848 lm delivered	LED module 3000K 83 CRI	0-10V	120-277	LITELAB EDISON PRICE	AUDITORUM	VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DMX DIMMING DRIVER •PROVIDE 5 DAYS FOR 3RD PARTY PROGRAMMING AND COMISSIONING •AIM FIXTURES AT CENTER OF STREET •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING INSTALLATION
TA6	MOUNTING: Surface Track, Ceiling APERTURE SIZE: 5-3/4"DIA DIMENSION: 5-3/4"DIA x 12-3/8"H OPTIC: 10° ACCESSORY LENS: Solite lens with Honeycomb Louver FINISH: Black ADD' ATTRIBUTES:	LIGHTING SERVICES INC	LX2084-30-98-30-K1-CT1-10-277-B + C998 + HOOD-EXT-LX84-WXB-B + LOUVER HEX CB	1 ea.	41	2180 lm delivered	LED module 3000K 83 CRI	0-10V	120-277	LITELAB EDISON PRICE	AUDITORUM	VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DMX DIMMING DRIVER •PROVIDE 5 DAYS FOR 3RD PARTY PROGRAMMING AND COMISSIONING •AIM FIXTURES AT CENTER OF STREET •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING INSTALLATION
RG1	MOUNTING: Recessed, Ceiling APERTURE SIZE: 2.4" DIMENSIONS: 2.4"W x LENGTH x 4.5"H OPTICS: 50° ACCESSORY LENS: Black Louver FINISH: Polyester Powder Coat, White ADD'L ATTRIBUTES:	WHITEGOODS	WG-60PTL-RPT-S-LENGTH-930-RLB-50-P2-E1-W	1 ea.	6	707 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS FINELITE	ATRIUM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING •FIXTURE HAS A TRIMLESS DETAIL THAT REQUIRES TAPE, SKIMCOAT AND SANDING TO INTEGRATE WITH CEILING PLAN
RG2	MOUNTING: Recessed, Ceiling APERTURE SIZE: 2.4" DIMENSIONS: 2.4"W x LENGTH x 4.5"H OPTICS: 80° ACCESSORY LENS: Micro-Prismatic FINISH: Polyester Powder Coat, White ADD'L ATTRIBUTES:	WHITEGOODS	WG-60PTL-RPT-S-LENGTH-930-RLB-50-P2-E1-W	1 ea,	6	6177 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS FINELITE	AUDITORUM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING

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TYPE	DESCRIPTION	MFR.	CATALOG NO.	NO. OF LAMPS	WATTS	LUMENS	LAMP TYPE AND ATTRIBUTES	DIMMING CONTROL	VOLTAGE	ACCEPTABLE ALTERNATE MFR.	LOCATION	NOTES
RT1a	MOUNTING: RECESSED, CEILING APERTURE SIZE: 2'X2' DIMENSIONS: 24"W X 5-1/8"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HPT-RSE-2X2-H-930-96-120-SC-FC10	1 ea.	41.7	3821 lm delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS		•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RT2	MOUNTING: RECESSED, CEILING APERTURE SIZE: 2'X2' DIMENSIONS: 24"W X 5-1/8"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HPT-RSE-2X2-H-930-96-120-SC-FC9	1 ea.	41.7	3821 lm delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	GYM - LEVEL 1 EXAM ROOMS	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RT3	MOUNTING: RECESSED, CEILING APERTURE SIZE: 2'X2' DIMENSIONS: 24"W X 5-1/8"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HPT-RSE-2X2-B-930-96-120-SC-FC9	1 ea.	36.1	3377 lm delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	LEVEL 1 - ATO/P&S - OFFICE	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RW1	MOUNTING: RECESSED, CEILING APERTURE SIZE: 4"W DIMENSIONS: 4"W X LENGTH X 4"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HP-4R-WWD-LENGTH-B-930-F-96LG-120-SC-FC10	1 ea.	4.6	357 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	TYP. CLASSROOM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
RW2	MOUNTING: RECESSED, CEILING APERTURE SIZE: 5-3/4"W DIMENSIONS: 8"W X LENGTH X 4"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HPW-LED-LENGTH-FR-H-935-120-SC	1 ea.	4.6	375 lm/ft delivered	LED module 3500K 90CRI	0-10V	120-277	AXIS WHITEGOODS	LEVEL 1 - FTU - INDOOR RANGE	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SA1	MOUNTING: SURFACE, CEILING APERTURE SIZE: 3-1/8"DIA DIMENSIONS: 3-1/8"DIA X 7"H OPTICS: 30º ACCESSORY LENS: SOLITE CLEAR FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	GOTHAM	ICO2-SRTCBEV-30-20-SMO-30D-MVOLT-UGZ-SGBPR-90CRI	1 ea.	28.6	1167 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	LEVEL 1 -MAQ-LOBBY	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SC1	MOUNTING: SURFACE, CEILING APERTURE SIZE: 4-1/8"DIA DIMENSIONS: 7-5/16"DIA X 24"L X 2-11/16"H OPTICS: NA ACCESSORY LENS: SOLITE CLEAR FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	DMF	DRD5S-4R-10-9-30-O	1 ea.	12	1000 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER...	TYP. RESTROOM/ SHOWER	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SC2	MOUNTING: SURFACE, WALL APERTURE SIZE: NA DIMENSIONS: 1-5/46"W X 2-3/16"D X 25"L OPTICS: NA ACCESSORY LENS: SOLITE CLEAR FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	WAC	WS-35825-WT	1 ea.	22	1054 lm delivered	LED module 3000K 90CRI	0-10V	120-277		LEVEL 2 - MAQ -DORM ROOM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SC3	MOUNTING: RECESSED, CEILING APERTURE SIZE: 2-1/4"W DIMENSIONS: 2-1/4"W X LENGTH X 4-9/16"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HP2-WM-ID-LENGTH-B-B-930-F-F-96LG-120-SC-FC10	1 ea.	9.2	671 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS	LEVEL 2 - MAQ -DORM ROOM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SC4	MOUNTING: RECESSED, CEILING APERTURE SIZE: 2-1/4"W DIMENSIONS: 2-1/4"W X LENGTH X 4-9/16"H OPTICS: NA ACCESSORY LENS: FLAT DIFFUSER FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	FINELITE	HP2-WM-ID-LENGTH-B-B-930-F-F-96LG-120-SC-FC10	1 ea.	9.2	671 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS WHITEGOODS		•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SC5	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 0.7" DIMENSIONS: 0.7"W X LENGTH X 0.7"H OPTICS: NA ACCESSORY LENS: SATIN OPAL DIFFUSER FINISH: POLYESTER POWDER COAT, WHITE ADD'L ATTRIBUTES:	WHITEGOODS	WG-20LDL-SM-GT9-S-LENGTH-M-930-D010-OD-W-C4	1 ea.	6.4	464 lm/ft delivered	LED module 3000K 90CRI	0-10V	120-277	AXIS FINELITE	LEVEL 1 - MAQ - LOBBY	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SD1	MOUNTING: SURFACE, CEILING APERTURE SIZE: 4-1/8"DIA DIMENSIONS: 7-5/16"DIA X 24"L X 2-11/16"H OPTICS: NA ACCESSORY LENS: SOLITE CLEAR FINISH: POWDER COAT, WHITE ADD'L ATTRIBUTES:	DMF	DRD5S-4R-10-9-30-O	1 ea.	12	1000 lm delivered	LED module 3000K 90CRI	0-10V	120-277	ELEMENT LIGHTING LUCIFER LIGHTING	LEVEL 0 & 1 -ITV	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SF1	MOUNTING: Surface, Cove APERTURE SIZE: 2"W x Length DIMENSIONS: 2-5/16"W x Length x 3-1/2"H OPTICS: 80° x 80° ACCESSORY LENS: Clear FINISH: Powder Coat, Black ADD'L ATTRIBUTES: DMX Controls	LUMENPULSE	LOG-277-LENGTH-RGBW30K-80x80-SAM-BK-DMX/RDM-ETE	1 ea.	17.25	725 lm/FT delivered	LED module RGBW 3000K 90CRI	0-10V	120-277	GVA LIGHTING	LEVEL 1 - ITV	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DMX DIMMING CONTROL AND WIRING FOR FLEXIBLE SCENES •FIXTURE MOUNTS IN A COVE ON ITV BUILDINGS, REFER TO ARCHITECUTURAL DRAWINGS FOR MOUNTING DETAIL
SL1	MOUNTING: Surface, Ceiling APERTURE SIZE: 2.2" DIMENSIONS: 2.2W x 2.1"H x 48"L OPTICS: NA ACCESSORY LENS: Solite Clear FINISH: Powder Coat, White ADD'L ATTRIBUTES:	i2 SYSTEM	C-06W-30K-H-V-4-AJ1	1 ea.	6	504 lm/ft delivered	LED linear 3000K 90CRI	0-10V	120-277	AXIS FINELITE	LEVEL 0 - AUDITRUM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •FIXTURE MOUNTS IN ARCHITECTURAL COVE, REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING DETAIL
SL2	MOUNTING: Surface, Ceiling APERTURE SIZE: 2.2" DIMENSIONS: 2.2W x 2.1"H x 12"L OPTICS: NA ACCESSORY LENS: Solite Clear FINISH: Powder Coat, White ADD'L ATTRIBUTES:	i2 SYSTEM	C-06W-30K-H-V-1-AJ1	1 ea.	6	504 lm/ft delivered	LED linear 3000K 90CRI	010V	120-277	AXIS FINELITE	LEVEL 0 - AUDITORUM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •FIXTURE MOUNTS IN ARCHITECTURAL COVE, REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING DETAIL
SL3	MOUNTING: Suspended, Ceiling APERTURE SIZE: 0.7" DIMENSIONS: 0.7"W x LENGTH X 0.7"H OPTICS: NA ACCESSORY LENS: Satin Opal Diffuser FINISH: Polyester Powder Coat, White ADD'L ATTRIBUTES:	WHITEGOODS	WG-20LDL-SM-GT9-S-LENGTH-M-930-D010-OD-W-C4	1 ea.	6.4	464 lm/ft delivered	LED linear 3000K 90CRI	0-10V	120-277	AXIS FINELITE	LEVEL 0 - AUDITORUM	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY WALL DETAIL FOR COMPATIBLE MOUNTING
SP1	MOUNTING: Surface, Column APERTURE SIZE: N/A DIMENSIONS: Post Top: 32"W x 24"H OPTICS: NA ACCESSORY LENS: Prismatic Globe FINISH: Powder Coat, Black ADD'L ATTRIBUTES: Ballast box for wire splice	STERNBERG	1W-1910LED-RLM32 PARK RIDGE-1L30T3-MDL03-A/480HWBBB-BKT	1 ea..	17	2225 lm/ft delivered	LED linear 3000K 80CRI	0-10V	120-277		LEVEL 0 - ITV	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •FIXTURE MOUNTS TO COLUMNS IN ITV ALIGN HEIGHT WITH SP2 POLE FIXTURES •CONFIRM IF BALLAST BOX IS REQUIRED FOR SPLICE CONNECTION
SP2	MOUNTING: Surface, Ground APERTURE SIZE: N/A DIMENSIONS: Post Top: 32"W x 24"H Pole: 4" Dia x 12' H OPTICS: NA ACCESSORY LENS: Prismatic Globe FINISH: Powder Coat, Black ADD'L ATTRIBUTES:	STERNBERG	1W-1910LED-RLM32 PARK RIDGE-1L30T3-MDL03-A/480HPM-BKT + 1212T64-.188-BCC-BKT	1 ea.	17	2225 lm/ft delivered	LED linear 3000K 80CRI	0-10V	120-277		LEVEL 0 - ITV	•FINISH PER ARCHITECT •VOLTAGE PER ELECTRICAL ENGINEER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •FIXTURE MOUNTS TO COLUMNS IN ITV ALIGN HEIGHT WITH SP2 POLE FIXTURES •CONFIRM IF BALLAST BOX IS REQUIRED FOR SPLICE CONNECTION
SS1	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: 6.8"W DIMENSIONS: 6.8"W X 48"L X 4.2"H OPTICS: WIDE DISTRIBUTION ACCESSORY LENS: LOW PROFILE CLEAR LEN FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	LITHONIA	FEM-L48-4000-LPACL-WD-MVOLTZ-GZ10-30K-90CRI	1 ea.	39	3150 lm delivered	LED LINEAR 3000K 90CRI	0-10V	120-277			•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SW1	MOUNTING: SURFACE, WALL APERTURE SIZE: 2.25"W DIMENSIONS: 4.5"W X 23.41"L X 3.95"H OPTICS: ACCESSORY LENS: FINISH: POLYESTER POWDER COAT, MATTE WHITE ADD'L ATTRIBUTES:	EUREKA	3541-23-LED-30-120V-WH	1 ea.	10	728 lm delivered	LED MODULE 3000K 90CRI	0-10V	120-277		TYP RESTROOM	•FINISH PER ARCHITECT •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
SZ1	MOUNTING: SURFACE ILLUMINATED FABRIC, CEILING APERTURE SIZE: DIMENSION: CUSTOM OPTIC: ACCESSORY LENS: FINISH: ADD' ATTRIBUTES:	COOLEDGE	CUSTOM LUMINOUS CEILING-SPECIALTY ILLUMINATION SOLUTIONS-HF-POWER...	1 /sf.	5.6	395 lm/sq ft delivered (AFTER CEILING)	LED module 3000K 90CRI	0-10V	58VDC 120-277V		LEVEL 1 - ATRIUM	•PROVIDE DIMMING DRIVER COMPATIBLE WITH CONTROL SYSTEM •FIXTURE TO BE CUSTOM TO ACCOMODATE EXACT SIZE AND CONDITIONS FOR EVENLY GLOWING SMOOTH BACKLIT CEILING •MANUFACTURER TO PROVIDE SHOP DRAWINGS FOR APPROVAL •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING INSTALLATION
TA1	MOUNTING: SURFACE TRACK, CEILING APERTURE SIZE: 3-1/2"DIA DIMENSION: 3-1/2"DIA X 6-9/16"H OPTIC: FLOOD DISTRIBUTION ACCESSORY LENS: FINISH: BLACK ADD' ATTRIBUTES:	JUNO	R610L-HTEK-30K-90CRI-OFF-FL-BL	1 ea.	21.3	1877 lm delivered	LED module 3000K 90CRI	NON DIM	277V		LEVEL 1 - MAQ GIFT SHOP	•FIXTURES ATTACH TO TRACK AND AIMI AT SHELVING & MERCHANDISE DISPLAY •AIM FIXTURES IN FIELD AS DIRECTED BY RETAIL TEAM
TA2	MOUNTING: SURFACE TRACK, CEILING APERTURE SIZE: 4"DIA DIMENSION: 4"DIA X 7-1/2"H OPTIC: 60º ACCESSORY LENS: FINISH: BLACK ADD' ATTRIBUTES:	TIMES SQUARE	ACT20-B-40-HSTA-DX + XH22	1 ea.	25	2000 lm delivered	LED module RGBW 90CRI	0-10V	277V		LEVEL 1 - MAQ - ITV	•PROVIDE DIMMING DRIVER COMPATIBLE WITH CONTROL SYSTEM •FIXTURE TO BE CUSTOM TO ACCOMODATE EXACT SIZE AND CONDITIONS FOR EVENLY GLOWING SMOOTH BACKLIT CEILING •MANUFACTURER TO PROVIDE SHOP DRAWINGS FOR APPROVAL •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING INSTALLATION
TA3	MOUNTING: Surface Track, Ceiling APERTURE SIZE: 5-3/4"DIA DIMENSION: 5-3/4"DIA x 12-3/8"H OPTIC: 40° ACCESSORY LENS: Solite lens with Cross Baffle FINISH: Black ADD' ATTRIBUTES: DMX Control	LIGHTING SERVICES INC	LX2084-50-83-RGBW-W4-CT3-DX-277-B + C998 + HOOD-EXT-LX84-WXB-B	1 ea.	56	1500 lm delivered	LED module 3000K 98 CRI	0-10V	120-277		LEVEL 0 & 1 - ITV	•VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DMX DIMMING DRIVER •PROVIDE 5 DAYS FOR 3RD PARTY PROGRAMMING AND COMISSIONING •AIM FIXTURES AT CENTER OF STREET •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING INSTALLATION
TA4	MOUNTING: Surface Track, Ceiling APERTURE SIZE: 5-3/4"DIA DIMENSION: 5-3/4"DIA x 12-3/8"H OPTIC: 50° ACCESSORY LENS: Spread lens with Cross Baffle FINISH: Black ADD' ATTRIBUTES: DMX Control	LIGHTING SERVICES INC	LX2084-50-83-30-J3-CT3-DX-277-B + C995 + HOOD-EXT-LX84-WXB-B	1 ea.	56	2848 lm delivered	LED module 3000K 98 CRI	0-10V	120-277		LEVEL 0 & 1 - ITB	•VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DMX DIMMING DRIVER •PROVIDE 5 DAYS FOR 3RD PARTY PROGRAMMING AND COMISSIONING •AIM FIXTURES AT CENTER OF STREET •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING INSTALLATION
TA7	MOUNTING: Surface Track, Ceiling APERTURE SIZE: 5-3/4"DIA DIMENSION: 5-3/4"DIA x 12-3/8"H OPTIC: 50° ACCESSORY LENS: Spread lens with Cross Baffle FINISH: Black ADD' ATTRIBUTES: DMX Control, Tunable White	LIGHTING SERVICES INC	LX2084-50-83-TW-J3-CT3-DX-277-B + C995 + HOOD-EXT-LX84-WXB-B	1 ea.	56	2848 lm delivered	LED module 3000K 98 CRI	0-10V	120-277		LEVEL 0 - ITV	•VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DMX DIMMING DRIVER •PROVIDE 5 DAYS FOR 3RD PARTY PROGRAMMING AND COMISSIONING •AIM FIXTURES AT WALLS IN CORRIDOR •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING INSTALLATION
TA8	MOUNTING: Surface Track, Ceiling APERTURE SIZE: 3-1/4"DIA DIMENSION: 3-1/4"DIA x 8"H OPTIC: Adjustable - 5° to 50° ACCESSORY LENS: Hexcell Louver FINISH: Black ADD' ATTRIBUTES: 0-10v	LIGHTING SERVICES INC	LZC06-15-90-30-ZM-CT2-10-277-B +LOUVER HEX ZM	1 ea.	19	700 lm delivered	LED module 3000K 98 CRI	0-10V	120-277		LEVEL 1 & 1 - ITV	•VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE 0-10V DIMMING DRIVER •VERIFY DIMMING COMPATIBILITY WITH SUBMITTED DIMMING CONTROLS •AIM FIXTURES AT ROOM SETUP AS DESIRED BY INSTRUCTOR •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING INSTALLATION
TA9	MOUNTING: Surface Track, Ceiling APERTURE SIZE: 4-3/16"DIA DIMENSION: 4-3/16"DIA x 10-1/4"H OPTIC: 60° ACCESSORY LENS: Solite lens with Cross Baffle Hood FINISH: Black ADD' ATTRIBUTES:	LIGHTING SERVICES INC	LX2044-T19-20-98-30-M6-CT1-10-277-B + C998 + HOOD-EXT-LX44-WXB-B	1 ea.	28	1440 lm delivered	LED module 3000K 98 CRI	0-10V	120-277		LEVEL 1 - ITS SIM SPACE	•VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE 0-10V DIMMING DRIVER •SEPARATE TA5 & TA6 FIXTURES ONTO SEPARATE 0-10V CONTROL CIRCUITS •AIM FIXTURES AT AUDITORIUM STAGE •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING INSTALLATION
TT1	MOUNTING: SURFACE, CEILING APERTURE SIZE: DIMENSION: 1.25"W X 1.35"H OPTIC: ACCESSORY LENS: FINISH: BLACK ADD' ATTRIBUTES:	JUNO	HTEK4-8FT-BL + HTEK11CLBL + HTEK21 BL + SKBX12BL	1 FT	NA	NA	NA	NA	277V		LEVEL 1 - MAQ - GIFT SHOP	•TRACK ATTACHES TO GRID, VERIFY CEILING SYSTEM AND COORDINATE INSTALLATION WITH CEILING CONTRACTOR •PROVIDE CURRENT LIMITING DEVICE PER RUN OF TRACK •PROVIDE MINI IN LINE CONNECTOR FOR CONTINUOUS RUNS OF TRACK •CONFIRM POLARITY OF ALL CONNECTORS AND POWER FEEDS
TT2	MOUNTING: SURFACE, CEILING APERTURE SIZE: DIMENSION: 1.25"W X 1.35"H OPTIC: ACCESSORY LENS: FINISH: BLACK ADD' ATTRIBUTES:	JUNO	HTEK4-8FT-BL + HTEK11CLBL + HTEK21 BL + SKBX12BL + HTEK34BL + HTE...	1 FT	NA	NA	NA	NA	277V		LEVEL 1 - MAQ - GIFT SHOP	•TRACK ATTACHES TO GRID, COORDINATEWITH CEILING CONTRACTOR •PROVIDE CURRENT LIMITING DEVICE PER RUN OF TRACK AND MINI IN LINE CONNECTOR FOR CONTINUOUS RUNS OF TRACK •PROVIDE CORNER AND T CONNECTORS TO CREATE PATTERNS SHOWN IN PLAN •CONFIRM POLARITY OF ALL CONNECTORS AND POWER FEEDS
TT3	MOUNTING: SUSPENDED, CEILING APERTURE SIZE: DIMENSION: 1.24"W X 1.5"H OPTIC: ACCESSORY LENS: FINISH: BLACK ADD' ATTRIBUTES:	TIMES SQUARE	HDT8B + HDT11B + HDT11-TERM-B + SPUS*	1 FT	NA	NA	NA	NA	277V		LEVEL 1 - MAQ - ITV	•PROVIDE DIMMING DRIVER COMPATIBLE WITH CONTROL SYSTEM •FIXTURE TO BE CUSTOM TO ACCOMODATE EXACT SIZE AND CONDITIONS FOR EVENLY GLOWING SMOOTH BACKLIT CEILING •MANUFACTURER TO PROVIDE SHOP DRAWINGS FOR APPROVAL •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING...
TT4	MOUNTING: Suspended, Ceiling APERTURE SIZE: N/A DIMENSION: 1-13/16"W x LENGTH x 1-7/16"H OPTIC: N/A ACCESSORY LENS: FINISH: Black ADD' ATTRIBUTES: Surface mounting bracket or Aircraft cable suspension	LIGHTING SERVICES INC	TRK-SC-08-277-B + TRK-SC-EF1L-277-B + TRK-SC-MJ1-277 + MOUNT	1 FT.	NA	NA	NA	NA	277V		LEVEL 0 & 1 - ITV	•VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DIMMING DRIVER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING INSTALLATION
TT5	MOUNTING: Suspended, Ceiling APERTURE SIZE: N/A DIMENSION: 1-13/16"W x LENGTH x 1-7/16"H OPTIC: N/A ACCESSORY LENS: FINISH: Black ADD' ATTRIBUTES: Surface mounting bracket or Aircraft cable suspension	LIGHTING SERVICES INC	TRK-SC-08-277-B + TRK-SC-EF1L-277-B + TRK-SC-MJ1-277 + MOUNT	1 FT	NA	NA	NA	NA	277V		LEVEL 0 - AUDITRUM	•VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DIMMING DRIVER •DIMMER SHALL BE COMPATIBLE WITH CONTROL SYSTEM •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING INSTALLATION
TW1	MOUNTING: Surface Track, Ceiling APERTURE SIZE: 5-3/4"DIA DIMENSION: 5-3/4"DIA x 12-7/16"H OPTIC: ASYMMETRIC WALLWASH ACCESSORY LENS: FINISH: Black ADD' ATTRIBUTES: DMX Control	LIGHTING SERVICES INC	LX2087-30-98-30-CT3-DX-277-B	1 FT.	NA	NA	NA	NA	277V		LEVEL 1 - ITV	•VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DMX DIMMING DRIVER •PROVIDE 5 DAYS FOR 3RD PARTY PROGRAMMING AND COMISSIONING •AIM FIXTURES AT ITV FACADES •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING INSTALLATION
TW2	MOUNTING: Surface Track, Ceiling APERTURE SIZE: 5-3/4"DIA DIMENSION: 5-3/4"DIA x 12-3/8"H OPTIC: 45°x50° ACCESSORY LENS: 45°x50° Spread lens with Cross Baffle FINISH: Black ADD' ATTRIBUTES: DMX Control	LIGHTING SERVICES INC	LX2084-50-83-30-W4-CT3-DX-277-B + C996 + HOOD-EXT-LX84-WXB-B	1 FT	NA	NA	NA	NA	277V		LEVEL 0 - ITV	•VOLTAGE PER ELECTRICAL ENGINEER •PROVIDE DMX DIMMING DRIVER •PROVIDE 5 DAYS FOR 3RD PARTY PROGRAMMING AND COMISSIONING •AIM FIXTURES AT ITV FACADES •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING INSTALLATION
W	MOUNTING: Surface Track, Ceiling APERTURE SIZE: 5-3/4"DIA DIMENSION: 5-3/4"DIA x 12-3/8"H OPTIC: 45°x50° ACCESSORY LENS: 45°x50° Spread lens with Cross Baffle...	H.E. Williams	SLF-2-L13-830-HIA-EM/10W-DIM	1 ea.	54	1300 lm delivered	LED module 3000K 90 CRI	0-10V	UNIV		STAIRWELL	•LIGHT FIXTURE TO HAVE INTEGRATE3D DAYLIGHT SENSOR AND OCCUPANCY SENSOR. •PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR CLEAN MOUNTING INSTALLATION
X1	MOUNTING: WALL FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES: FIELD ADJUSTABLE CHEVRONS	COLUMBIA	LSNXX NRWA	1 ea.		LED	NON-DIM	0-10V	UNV		BACK OF HOUSE	EXIT SIGN FINSH PER ARCHITCT.
Z1	MOUNTING: PENDANT, RECESSED, SURFACE FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES:	COLUMBIA	MPS-4-40-U-*-ELL14 FOR EM BATTERY PACK	1 ea	34	4200	LED module, 4000K, 80 CRI	NON-DIM	UNV		BACK OF HOUSE SPACES	•FINISH PER ARCHITECT •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING
Z2	MOUNTING: PENDANT, RECESSED, SURFACE FINISH: ARCHITECT TO SELECT ADD'L ATTRIBUTES:	COLUMBIA	MPS-2-40-U-*-ELL14 FOR EM BATTERY PACK	1 ea	20.4	2500	LED module, 4000K, 80 CRI	NON-DIM	UNV		BACK OF HOUSE SPACES	•FINISH PER ARCHITECT •ARCHITECT TO VERIFY CEILING FOR COMPATIBLE MOUNTING

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SIGNAGE CONSULTANT
Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

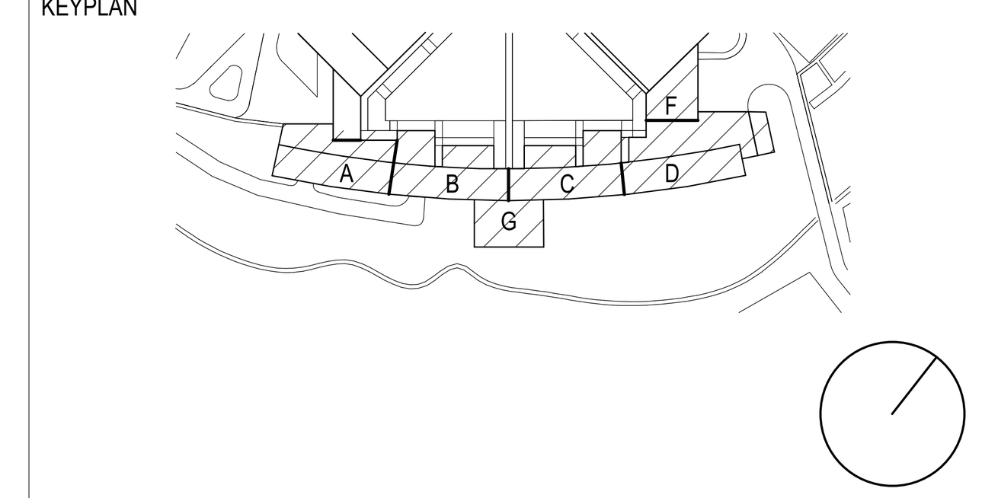
LANDSCAPE
Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING
MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
5	21 JUL 2023	ADDENDUM 34			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E

2023-06-16
SIGNATURE DATE

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SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No. C-0211-0005 PHASE 5
Base Bid No. 1

PA State Police Academy and BESO - Modernization
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

LIGHTING FIXTURES SCHEDULE

SHEET No. MAQ-E-615

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED

1 MARQUEE - FLOOR PART PLAN A - LEVEL 0 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

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POOL DESIGN

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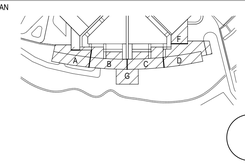
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	21 JULY 2023	ADDENDUM 34			
	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
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JITENDRA K AGARWAL
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2023-07-21
SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING:
0 1

IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

MARQUEE - FLOOR PART PLAN A - LEVEL 0 - FIRE PROTECTION

SHEET No. MAQ-F-101

DRAWN BY	CHECKED BY	DATE	SCALE
NK	HS/JKA		AS NOTED

1 MARQUEE - FLOOR PART PLAN B - LEVEL 0 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

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STRUCTURAL ENGINEER

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250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

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CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
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LANDSCAPE

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638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

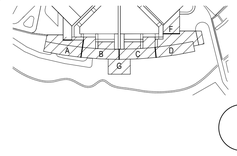
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
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	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E

2023-07-21

SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
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MARQUEE - FLOOR PART PLAN B - LEVEL 0 - FIRE PROTECTION

SHEET No. MAQ-F-102

DRAWN BY	CHECKED BY	DATE	SCALE
NK	HS/JKA		AS NOTED

1 MARQUEE - FLOOR PART PLAN D - LEVEL 0 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

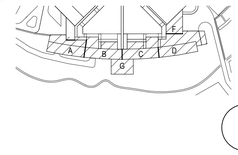
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



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RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033178E
PENNSYLVANIA

JK Agarwal

2023-07-21

SIGNATURE DATE

ARCHITECT

SOM

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
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0 1

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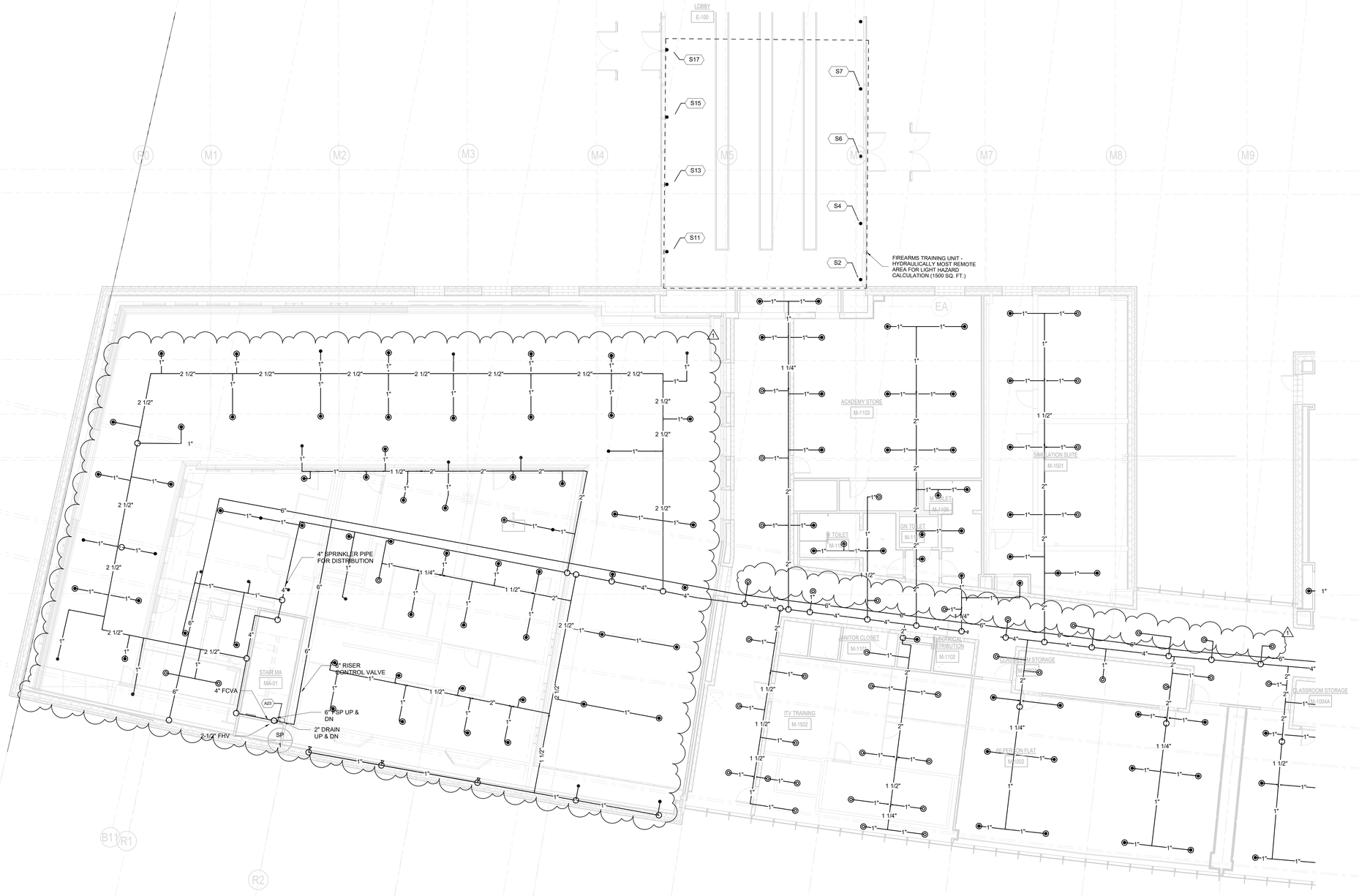
MARQUEE - FLOOR PART PLAN D - LEVEL 0 - FIRE PROTECTION

SHEET No. MAQ-F-104

DRAWN BY	CHECKED BY	DATE	SCALE
NK	HS/JKA		AS NOTED



1 MARQUEE - FLOOR PART PLAN A - LEVEL 1 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

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164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

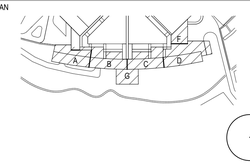
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	21 JULY 2023	ADDENDUM 34			
	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E

2023-07-21
SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING:
0 1

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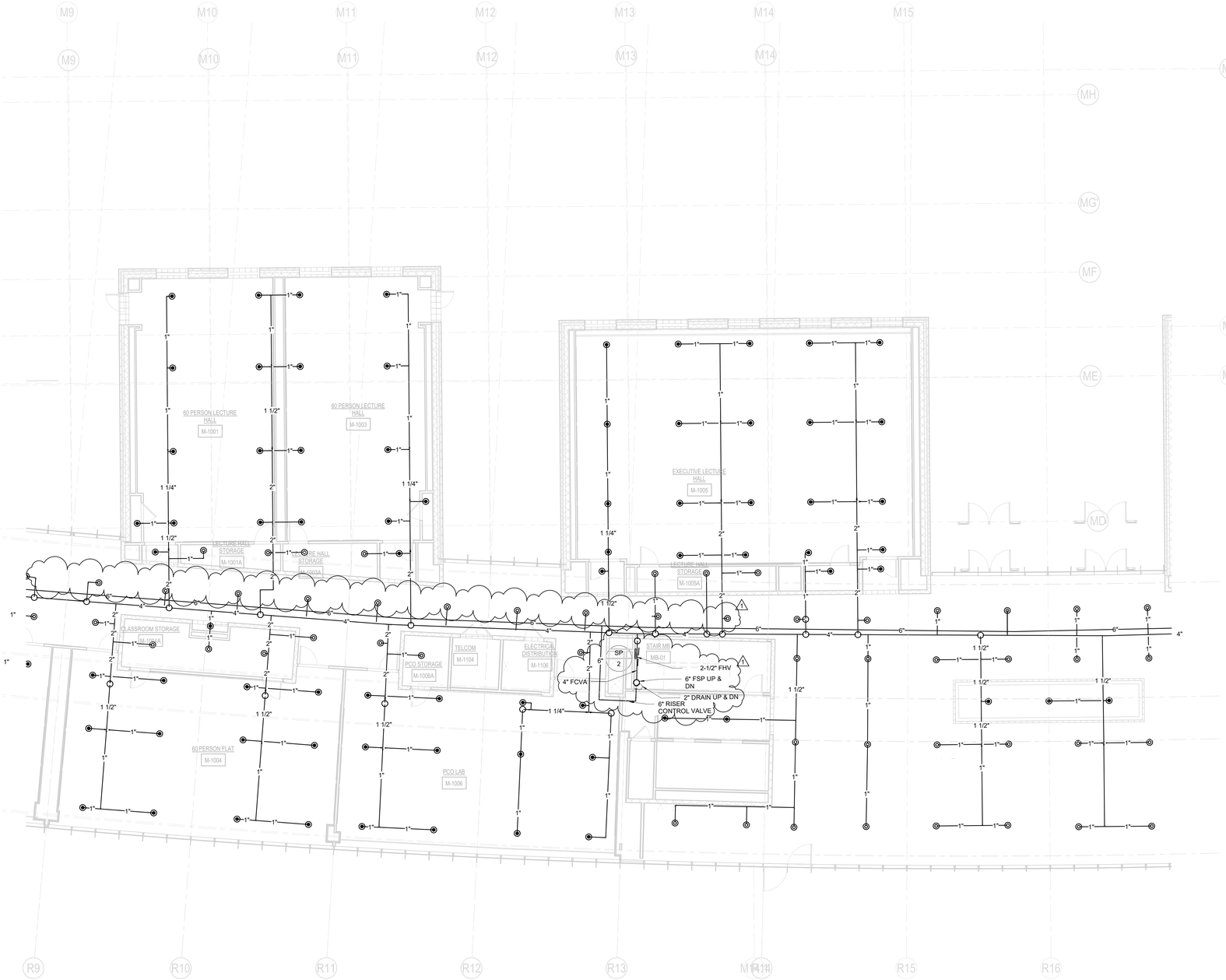
MARQUEE - FLOOR PART PLAN A - LEVEL 1 - FIRE PROTECTION

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

SHEET No. MAQ-F-111

DRAWN BY	CHECKED BY	DATE	SCALE
NK	HS/JKA		AS NOTED



1 MARQUEE - FLOOR PART PLAN B - LEVEL 1 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
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MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

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CODE CONSULTING

CCI
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CIVIL ENGINEER

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1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE

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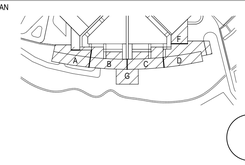
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
	19 MAY 2023	ISSUED FOR BID			
1	21 JULY 2023	ADDENDUM 34			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E
PENNSYLVANIA

2023-07-21
SIGNATURE DATE

ARCHITECT

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

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MARQUEE - FLOOR PART PLAN B - LEVEL 1 - FIRE PROTECTION

SHEET No.
MAQ-F-112

DRAWN BY	CHECKED BY	DATE	SCALE
NK	HS/JKA		AS NOTED

1 MARQUEE - FLOOR PART PLAN D - LEVEL 1 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

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LOCAL ARCHITECT

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1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

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CIVIL ENGINEER

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VERTICAL TRANSPORT

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SIGNAGE CONSULTANT

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LIGHTING

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FOOD SERVICE

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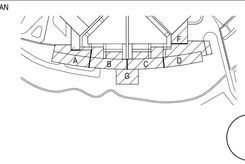

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RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E

JKAgarwal 2023-07-21

SIGNATURE DATE

ARCHITECT

SOM

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

MARQUEE - FLOOR PART PLAN D - LEVEL 1 - FIRE PROTECTION

SHEET No. MAQ-F-114

DRAWN BY	CHECKED BY	DATE	SCALE
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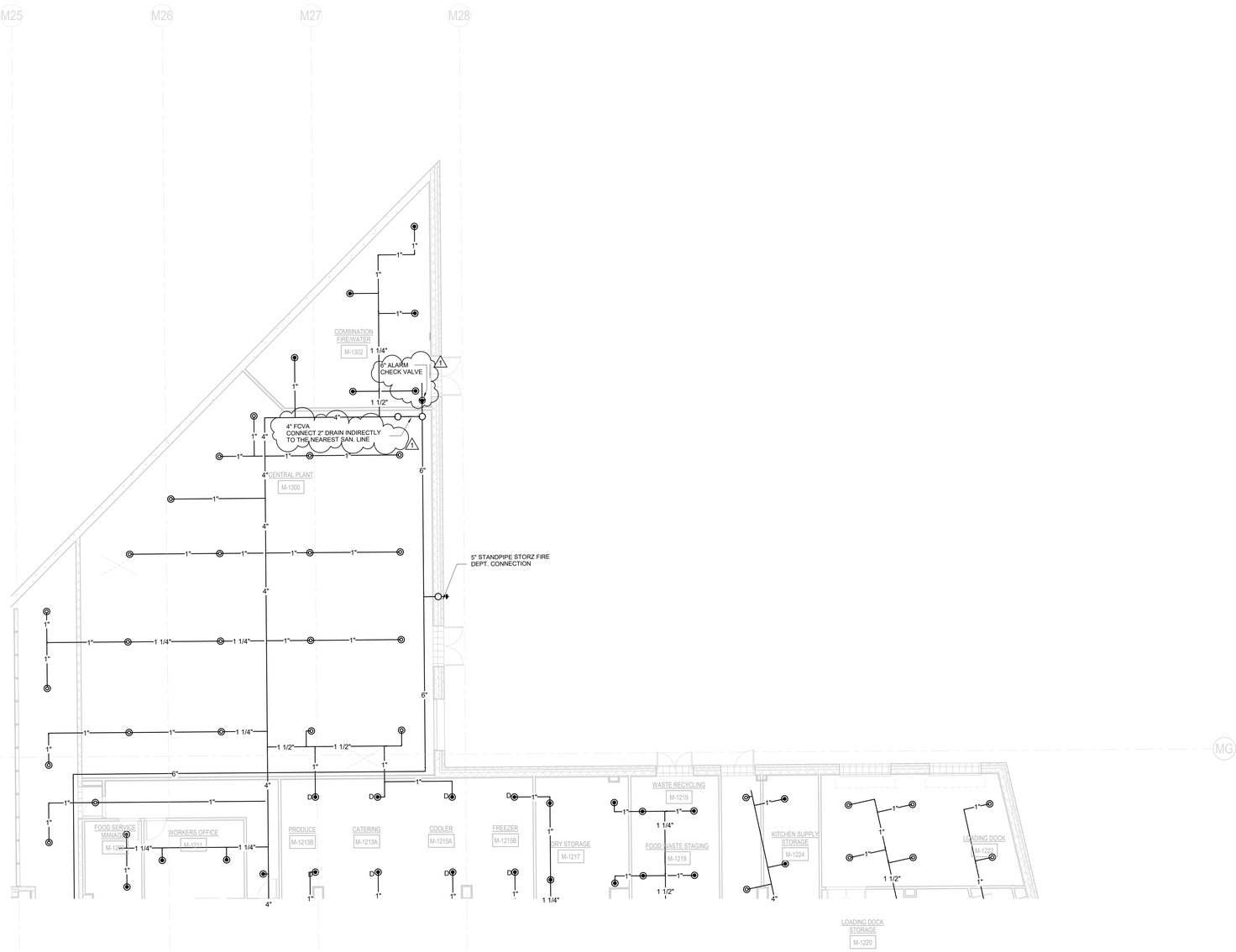

1 MARQUEE - FLOOR PART PLAN F - LEVEL 1 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

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VERTICAL TRANSPORT

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POOL DESIGN

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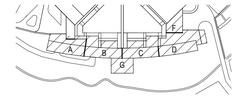
KEYPLAN



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RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E

JKAgarwal 2023-07-21

SIGNATURE DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1

IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

MARQUEE - FLOOR PART PLAN F - LEVEL 1 - FIRE PROTECTION

SHEET No. MAQ-F-116

DRAWN BY	CHECKED BY	DATE	SCALE
NK	HS/JKA		AS NOTED

1 MARQUEE - FLOOR PART PLAN A - LEVEL 2 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

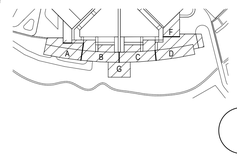
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	21 JULY 2023	ADDENDUM 34			
	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033176E

2023-07-21
SIGNATURE DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

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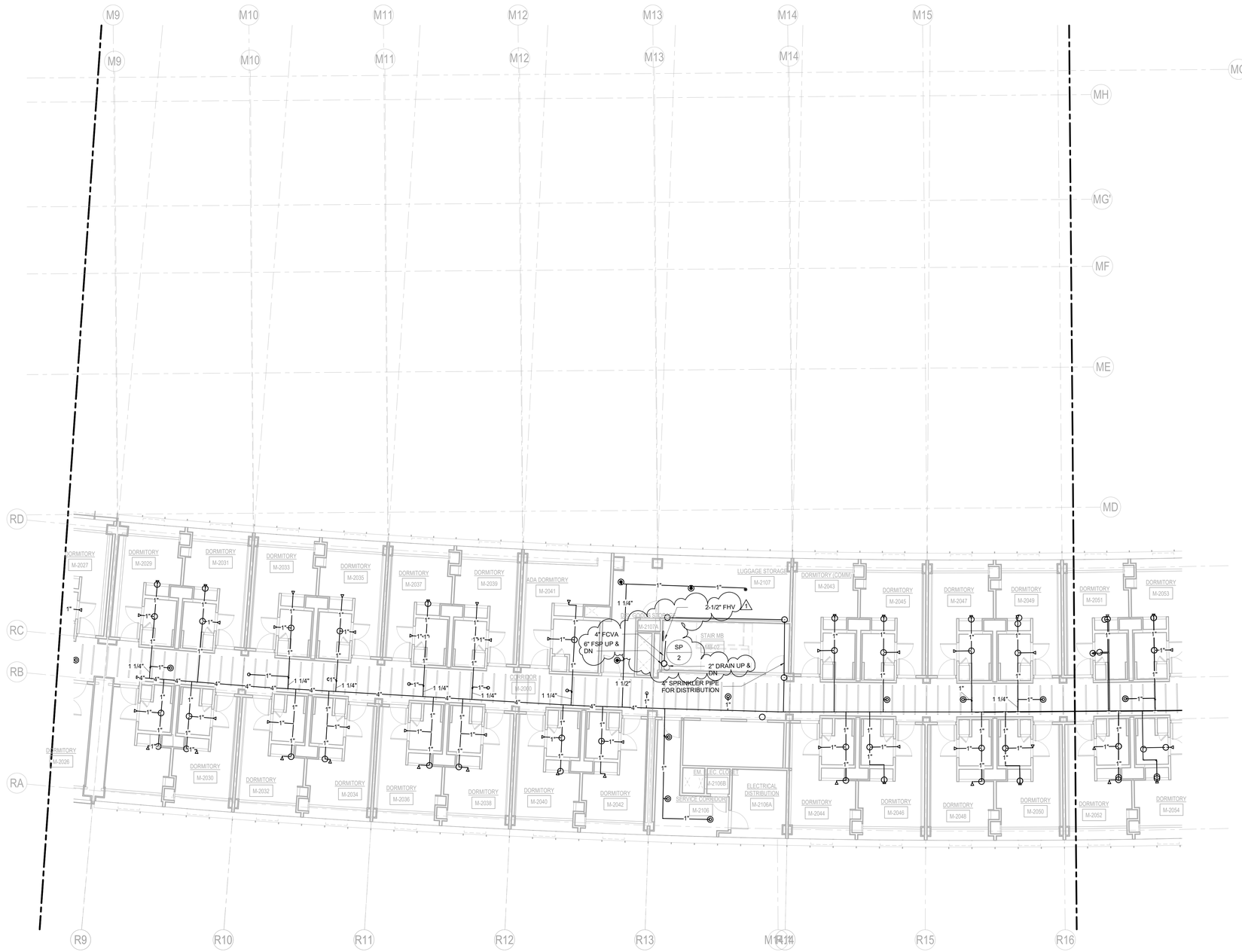
MARQUEE - FLOOR PART PLAN A - LEVEL 2 - FIRE PROTECTION

SHEET No. MAQ-F-121

DRAWN BY	CHECKED BY	DATE	SCALE
NK	HS/JKA		AS NOTED



1 MARQUEE - FLOOR PART PLAN B - LEVEL 2 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

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164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

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1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE

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POOL DESIGN

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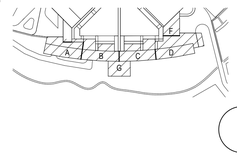
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



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RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E
PENNSYLVANIA

2023-07-21
SIGNATURE DATE

ARCHITECT

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

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MARQUEE - FLOOR PART PLAN B - LEVEL 2 - FIRE PROTECTION

SHEET No. MAQ-F-122

DRAWN BY	CHECKED BY	DATE	SCALE
NK	HS/JKA		AS NOTED

1 MARQUEE - FLOOR PART PLAN D - LEVEL 2 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

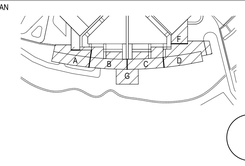
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



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RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033176E

2023-07-21
SIGNATURE DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING:
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MARQUEE - FLOOR PART PLAN D - LEVEL 2 - FIRE PROTECTION

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

SHEET No. MAQ-F-124

DRAWN BY	CHECKED BY	DATE	SCALE
NK	HS/JKA		AS NOTED

1 MARQUEE - FLOOR PART PLAN A - LEVEL 3 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

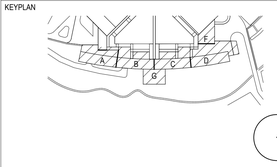
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	21 JULY 2023	ADDENDUM 34			
	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E

2023-07-21

SIGNATURE DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING:
0 1

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MARQUEE - FLOOR PART PLAN A - LEVEL 3 - FIRE PROTECTION

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

SHEET No. MAQ-F-131

DRAWN BY	CHECKED BY	DATE	SCALE
NK	HS/JKA		AS NOTED

1 MARQUEE - FLOOR PART PLAN B - LEVEL 3 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

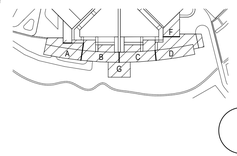
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	21 JULY 2023	ADDENDUM 34			
	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE031176E

SIGNATURE

2023-07-21
DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
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0 1

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MARQUEE - FLOOR PART PLAN B - LEVEL 3 - FIRE PROTECTION

SHEET No. MAQ-F-132

DRAWN BY	CHECKED BY	DATE	SCALE
NK	HS/JKA		AS NOTED

1 MARQUEE - FLOOR PART PLAN D - LEVEL 3 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

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MECHANICAL, AVIT ENGINEER

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ACOUSTICAL ENGINEER

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CODE CONSULTING

CCI
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CIVIL ENGINEER

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1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

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SIGNAGE CONSULTANT

Patricia Hord Graphik Design
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LANDSCAPE

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638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE

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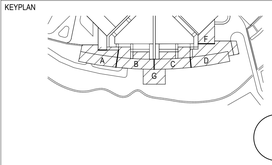
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	21 JULY 2023	ADDENDUM 34			
	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033176E

2023-07-21

SIGNATURE DATE

ARCHITECT

SOM

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1

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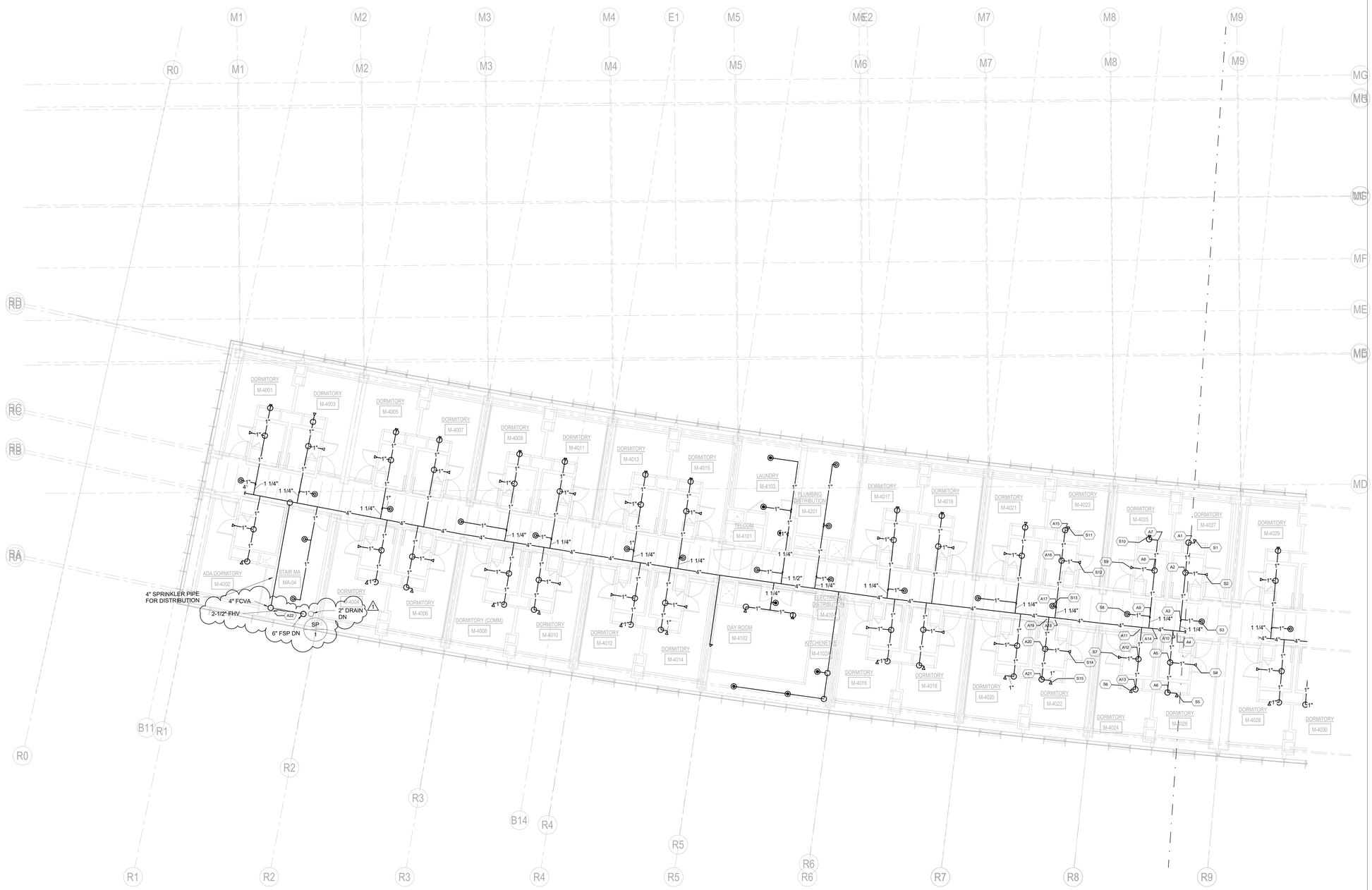
MARQUEE - FLOOR PART PLAN D - LEVEL 3 - FIRE PROTECTION

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

SHEET No. MAQ-F-134

DRAWN BY	CHECKED BY	DATE	SCALE
NK	HS/JKA		AS NOTED



1 MARQUEE - FLOOR PART PLAN A - LEVEL 4 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

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CIVIL ENGINEER

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LIGHTING

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FOOD SERVICE

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POOL DESIGN

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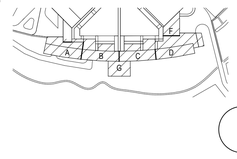

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RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E

2023-07-21
SIGNATURE DATE

ARCHITECT

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Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

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Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

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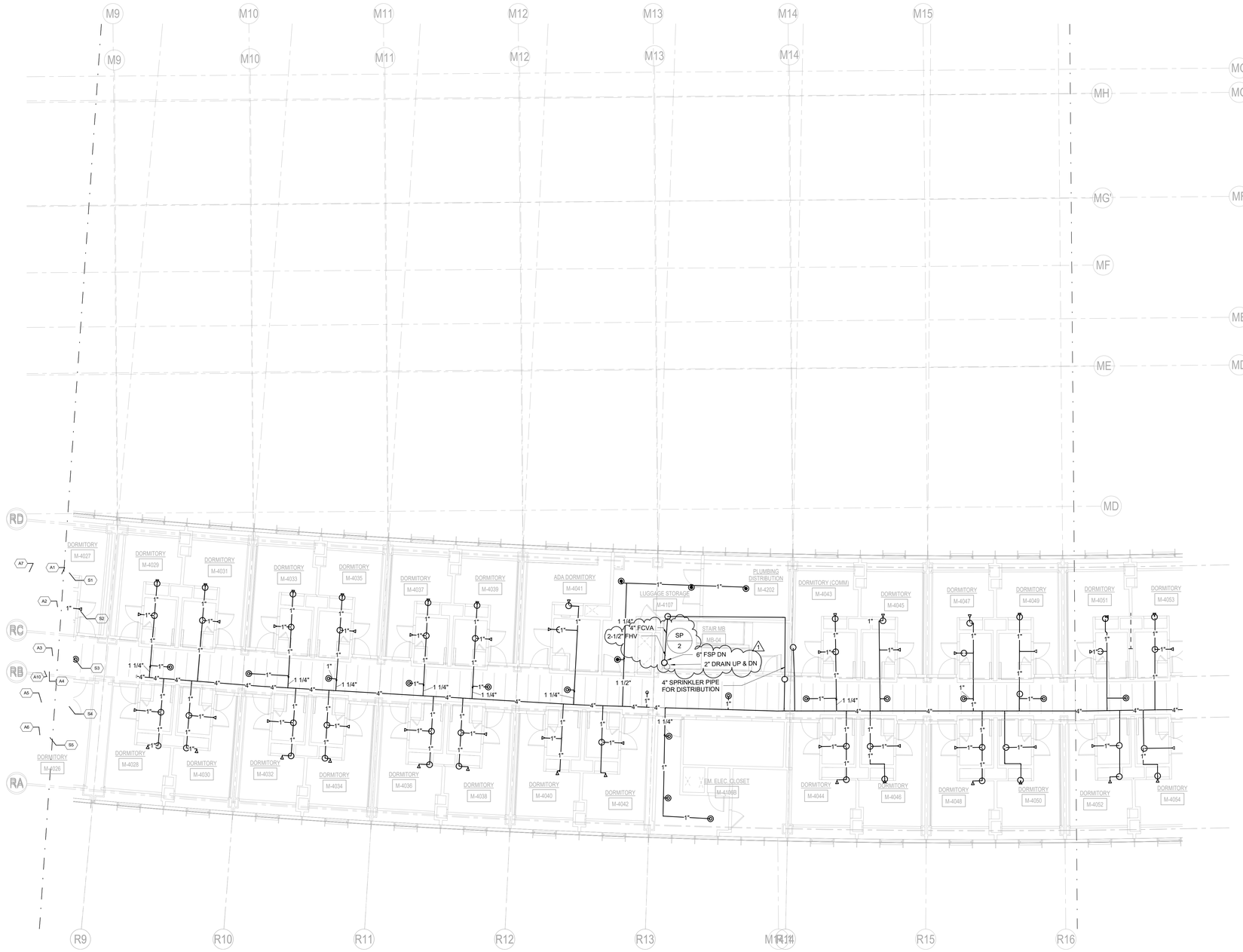
MARQUEE - FLOOR PART PLAN A - LEVEL 4 - FIRE PROTECTION

SHEET No. MAQ-F-141

DRAWN BY	CHECKED BY	DATE	SCALE
NK	HS/JKA		AS NOTED



1 MARQUEE - FLOOR PART PLAN B - LEVEL 4 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

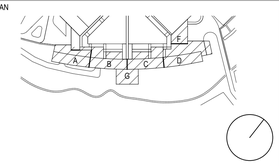
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	21 JULY 2023	ADDENDUM 34			
	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033176E

2023-07-21

SIGNATURE DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

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MARQUEE - FLOOR PART PLAN B - LEVEL 4 - FIRE PROTECTION

SHEET No. MAQ-F-142

DRAWN BY	CHECKED BY	DATE	SCALE
NK	HS/JKA		AS NOTED

1 MARQUEE - FLOOR PART PLAN D - LEVEL 4 - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

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CCI
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MCLA
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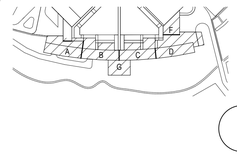
POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



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JITENDRA K AGARWAL
ENGINEER PE033176E

2023-07-21

SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

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MARQUEE - FLOOR PART PLAN D - LEVEL 4 - FIRE PROTECTION

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SHEET No. MAQ-F-144

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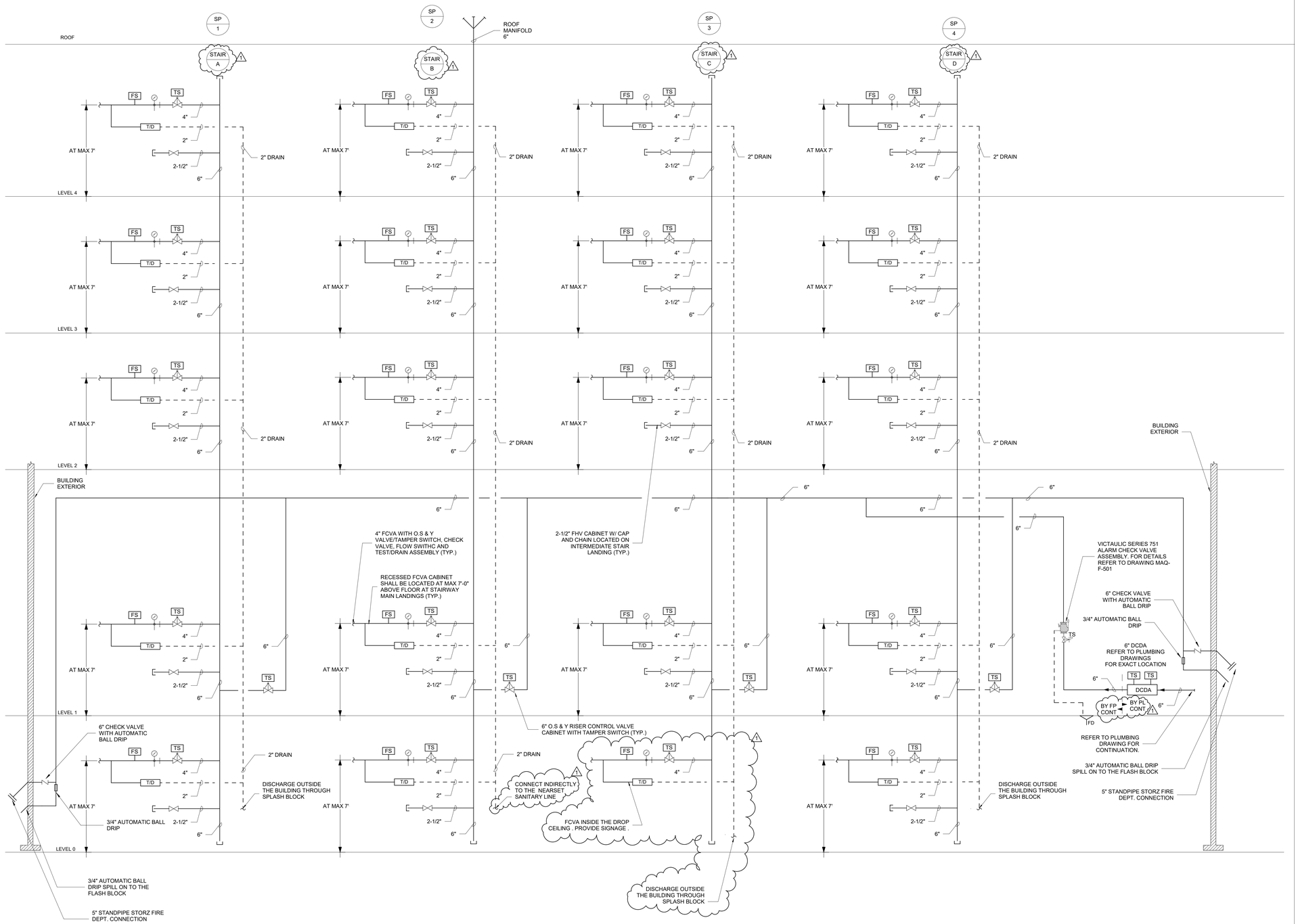

1 MARQUEE - SPRINKLER AND STANDPIPE RISE - FIRE PROTECTION

SCALE: N.T.S

0 4'-0" 8'-0" 16'-0" 32'-0"

VERIFY SCALE

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CIVIL ENGINEER

Langan
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LANDSCAPE

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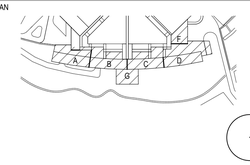

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2023-07-21

SIGNATURE DATE

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SOM

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

MARQUEE - SPRINKLER AND STANDPIPE RISE - FIRE PROTECTION

SHEET No.
MAQ-F-301

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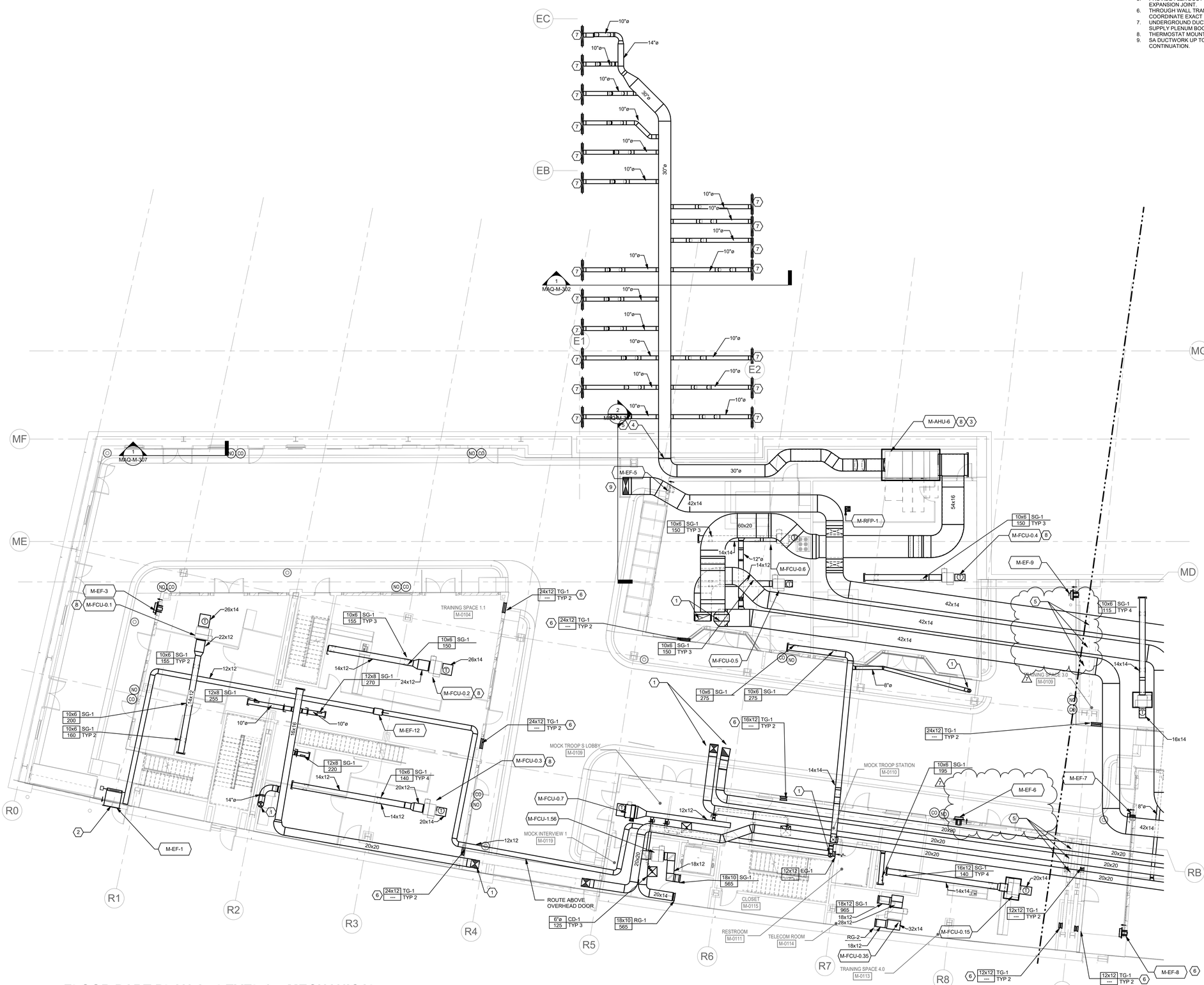
NK	HS/JKA		AS NOTED

GENERAL SHEET NOTES

A. PROVIDE ACOUSTIC LINING ON FIRST 20' OF SUPPLY AND EXHAUST/RETURN DUCT DOWNSTREAM OF ANY DOAS AND AHU.
B. PROVIDE ACOUSTIC LINING ON FIRST 10' OF DUCT DOWNSTREAM OF ANY FCU.

SHEET KEYNOTES

1. OUTSIDE AIR AND RETURN AIR UP TO LEVEL 1. SEE MAQ-M-120 FOR CONTINUATION. FIRE DAMPER IN SLAB.
2. 5'X5' EXHAUST AIR LOUVER WITH 50% FREE AREA.
3. M-AHU-6 TO BE INSTALLED TIGHT TO BEAMS VIA HANGERS.
4. DUCT PENETRATE SIDEWALL TO BELOW GRADE BELOW ENTRY WAY.
5. PROVIDE FLEX DUCT CONNECTION THROUGH BUILDING EXPANSION JOINT.
6. THROUGH WALL TRANSFER GRILLE MOUNTED 6" AFF. COORDINATE EXACT LOCATION WITH ARCHITECT.
7. UNDERGROUND DUCTWORK ATTACH TO UNDERGROUND SUPPLY PLENUM BOOT.
8. THERMOSTAT MOUNTED TO RETURN AIR DUCTWORK. (TYP.)
9. SA DUCTWORK UP TO HIGH BAY AREA, SEE LEVEL 1 FOR CONTINUATION.



1 FLOOR PART PLAN A - LEVEL 0 – MECHANICAL

0' 4' 8' 16'
1/8" = 1'-0"

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

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Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

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164 Brighton Rd, Clifton, NJ 07012

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2000 M Street NW, Suite 270, Washington, DC 20036

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Cerami
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CODE CONSULTING
CCI
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CIVIL ENGINEER
Langan
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5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT
Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE
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638 I Street NW, Washington, DC 20001

LIGHTING
MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
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7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
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2	19 MAY 2023	ISSUED FOR BID			
1	19 FEB 2023	ISSUED TO I&I			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ANDREW J. FLANAGAN ENGINEER PE088450 PENNSYLVANIA

07/21/2023
SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 6

Pennsylvania State Police Academy
Outbuildings, Tactical Villages & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

INTERFACE ENGINEERING
PROJECT 2021-0159
CONTACT Keith Pasma
2000 M Street NW, Suite 270
Washington, DC 20036
TEL 202.370.9555
www.interfaceengineering.com

VERIFY SCALE

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FLOOR PART PLAN A - LEVEL 0 – MECHANICAL

SHEET No. MAQ-M-110

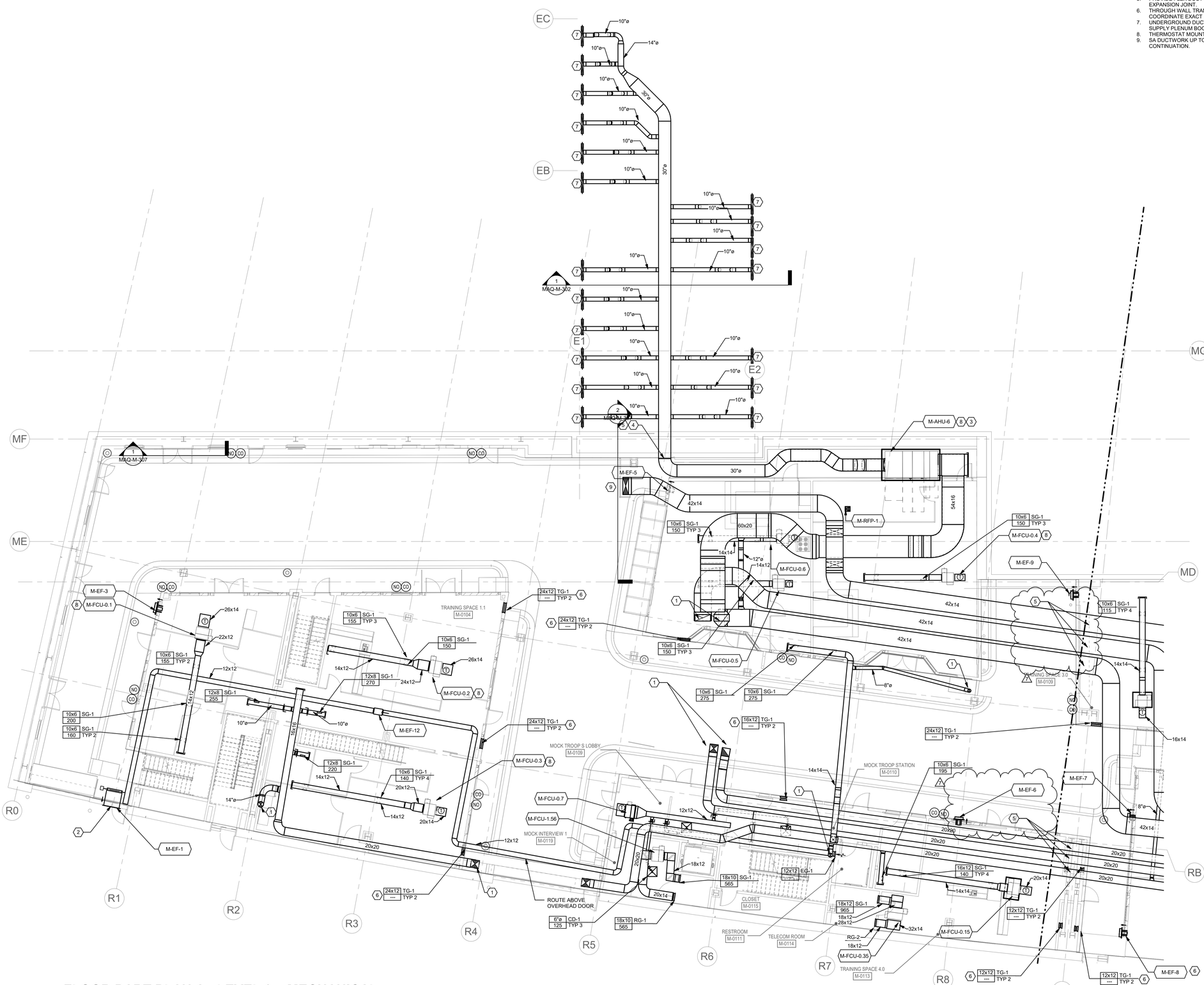
DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED

GENERAL SHEET NOTES

A. PROVIDE ACOUSTIC LINING ON FIRST 20' OF SUPPLY AND EXHAUST/RETURN DUCT DOWNSTREAM OF ANY DOAS AND AHU.
B. PROVIDE ACOUSTIC LINING ON FIRST 10' OF DUCT DOWNSTREAM OF ANY FCU.

SHEET KEYNOTES

1. OUTSIDE AIR AND RETURN AIR UP TO LEVEL 1. SEE MAQ-M-120 FOR CONTINUATION. FIRE DAMPER IN SLAB.
2. 5'X5' EXHAUST AIR LOUVER WITH 50% FREE AREA.
3. M-AHU-6 TO BE INSTALLED TIGHT TO BEAMS VIA HANGERS.
4. DUCT PENETRATE SIDEWALL TO BELOW GRADE BELOW ENTRY WAY.
5. PROVIDE FLEX DUCT CONNECTION THROUGH BUILDING EXPANSION JOINT.
6. THROUGH WALL TRANSFER GRILLE MOUNTED 6" AFF. COORDINATE EXACT LOCATION WITH ARCHITECT.
7. UNDERGROUND DUCTWORK ATTACH TO UNDERGROUND SUPPLY PLENUM BOOT.
8. THERMOSTAT MOUNTED TO RETURN AIR DUCTWORK. (TYP.)
9. SA DUCTWORK UP TO HIGH BAY AREA, SEE LEVEL 1 FOR CONTINUATION.



1 FLOOR PART PLAN A - LEVEL 0 – MECHANICAL

0' 4' 8' 16'
1/8" = 1'-0"

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

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07/21/2023
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ARCHITECT
SOM
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250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 6

Pennsylvania State Police Academy
Outbuildings, Tactical Villages & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

INTERFACE ENGINEERING
PROJECT 2021-0159
CONTACT Keith Pasma
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FLOOR PART PLAN A - LEVEL 0 – MECHANICAL

SHEET No. MAQ-M-110

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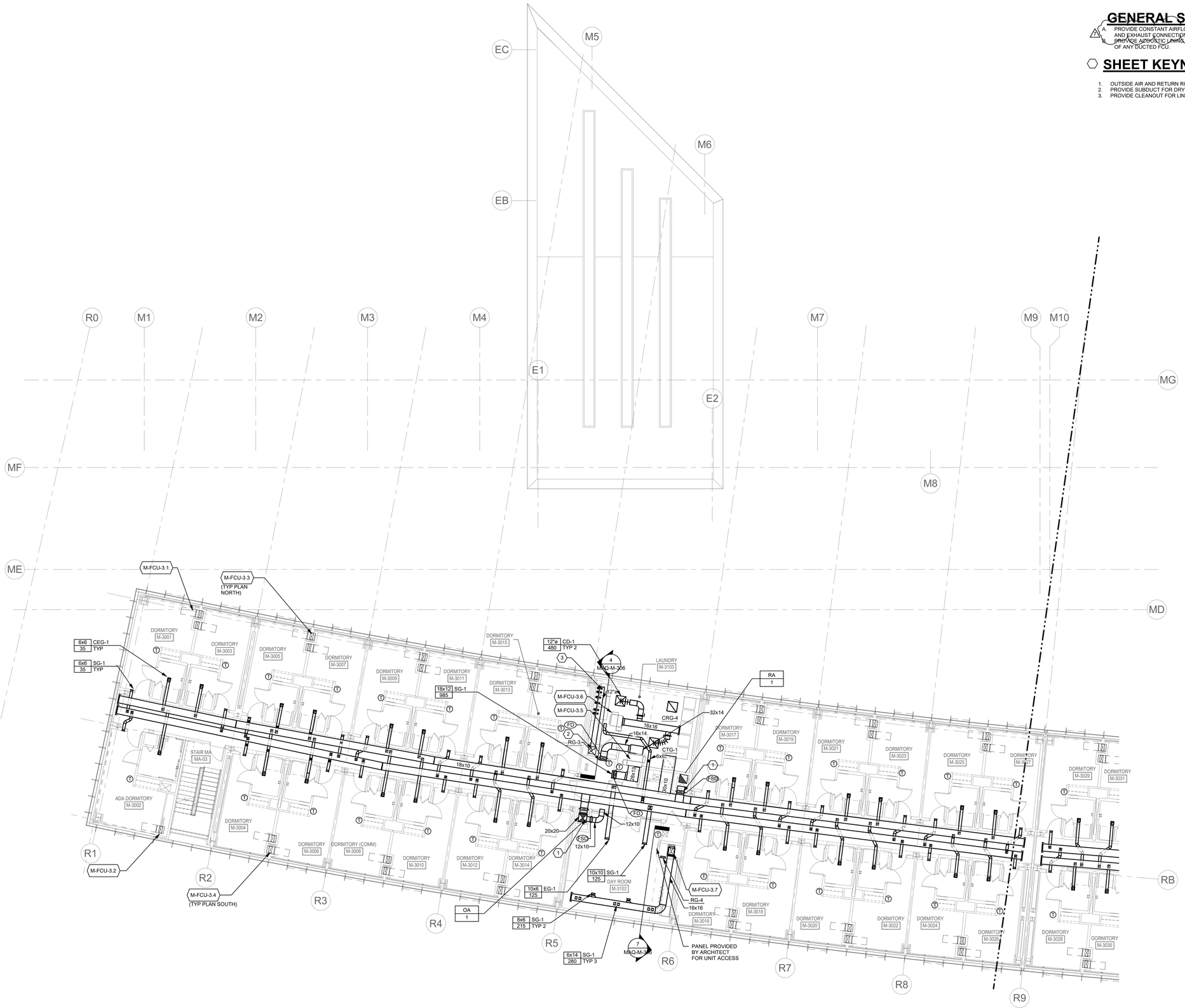

1 OVERALL FLOOR PLAN - LEVEL 3 PHASE 1 - ACADEMY MECHANICAL PLAN - PART PLAN A

0' 4' 8' 16'

1/8" = 1'-0"

GENERAL SHEET NOTES

A. PROVIDE CONSTANT AIRFLOW REGULATOR FOR EVERY SUPPLY AND EXHAUST CONNECTION. BALANCE TO DIFFUSER CFM.
B. PROVIDE ACOUSTIC LINING ON FIRST 10'-0" OF DUCT DOWNSTREAM OF ANY DUCTED FCU.

SHEET KEYNOTES

1. OUTSIDE AIR AND RETURN RISERS UP AND DOWN.
2. PROVIDE SUBDUCT FOR DRYER EXHAUSTS INTO SHAFT
3. PROVIDE CLEANOUT FOR LINT REMOVAL AT END OF DUCT

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
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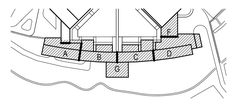

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D.G.S. PROJECT No.
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FLOOR PART PLAN A - LEVEL 3 - MECHANICAL

SHEET No. MAQ-M-140

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Author	Checker		AS NOTED

GENERAL SHEET NOTES

A. PROVIDE CONSTANT AIRFLOW REGULATOR FOR EVERY SUPPLY AND EXHAUST CONNECTION. BALANCE TO DIFFUSER CFM.
B. PROVIDE ACOUSTIC LINING ON FIRST 10' OF DUCT DOWNSTREAM OF ANY DUCTED FCU.

SHEET KEYNOTES

1. OUTSIDE AIR AND RETURN RISERS UP AND DOWN.

1 OVERALL FLOOR PLAN - LEVEL 3 PHASE 1 - ACADEMY MECHANICAL PLAN - PART PLAN B

0' 4' 8' 16'
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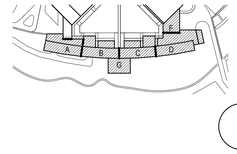
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
7	21 JUL 23	ADDENDUM 34			
2	19 MAY 2023	ISSUED FOR BID			
1	18 FEB 2022	ISSUED TO L&I			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ANDREW J. FLANAGAN ENGINEER PE088450 PENNSYLVANIA

SIGNATURE 07/21/2023 DATE

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250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
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HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 6

Pennsylvania State Police Academy
Outbuildings, Tactical Villages & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

INTERFACE ENGINEERING
PROJECT 2021-0159
CONTACT Keith Pasma
2000 M Street NW, Suite 270
Washington, DC 20036
TEL 202.370.9555
www.interfaceengineering.com

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FLOOR PART PLAN B - LEVEL 3 - MECHANICAL

SHEET No. MAQ-M-141

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Author	Checker		AS NOTED

GENERAL SHEET NOTES

A. PROVIDE CONSTANT AIRFLOW REGULATOR FOR EVERY SUPPLY AND EXHAUST CONNECTION. BALANCE TO DIFFUSER CFM.
B. PROVIDE ACOUSTIC LINING ON FIRST 10'-0" OF DUCT DOWNSTREAM OF ANY DUCTED FCU.

SHEET KEYNOTES

1. OUTSIDE AIR AND RETURN RISERS UP AND DOWN.
2. TYPE 2 EXHAUST UP AND DOWN.
3. TYPE 1 EXHAUST UP AND DOWN.
4. PROVIDE SUBDUCT FOR DRYER EXHAUSTS INTO SHAFT.
5. PROVIDE CLEANOUT FOR LINT REMOVAL AT END OF DUCT.

1 OVERALL FLOOR PLAN - LEVEL 3 PHASE 1 - ACADEMY MECHANICAL PLAN - PART PLAN D

0' 4' 8' 16'
1/8" = 1'-0"

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
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250 Greenwich St, New York, NY 10007

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CIVIL ENGINEER
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7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

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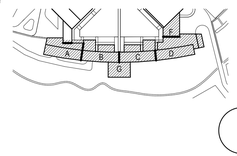

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FLOOR PART PLAN D - LEVEL 3 - MECHANICAL

SHEET No. MAQ-M-143

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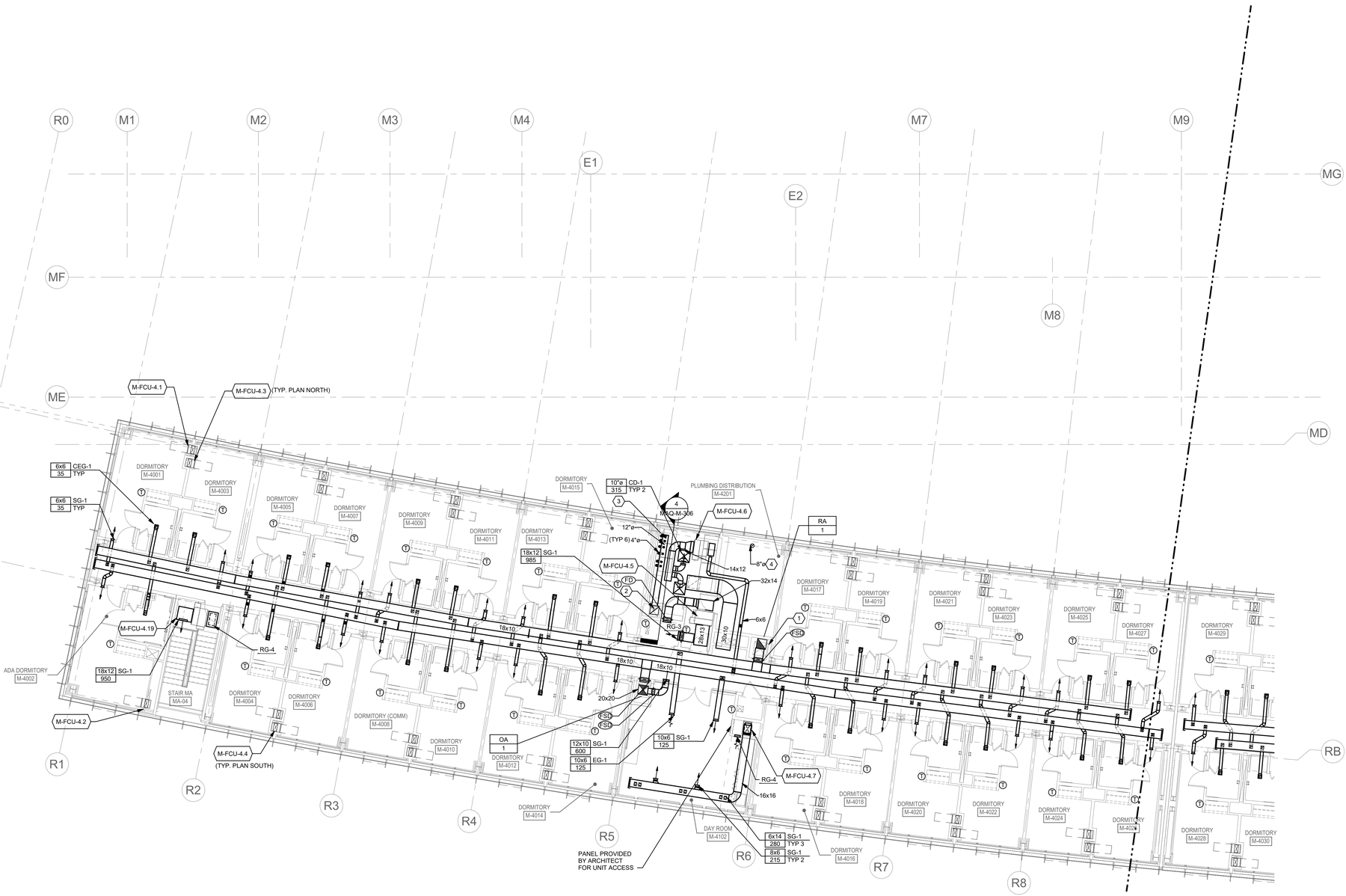
GENERAL SHEET NOTES

A. PROVIDE CONSTANT AIRFLOW REGULATOR FOR EVERY SUPPLY AND EXHAUST CONNECTION. BALANCE TO DIFFUSER CFM.
B. PROVIDE ACOUSTIC LINING ON FIRST 10'-0" OF DUCT DOWNSTREAM OF ANY DUCTED FCU.

SHEET KEYNOTES

1. OUTSIDE AIR AND RETURN AIR DOWN.
2. PROVIDE SNUBOUT FOR DRYER EXHAUSTS INTO STRUCT.
3. PROVIDE CLEANOUT FOR LINT REMOVAL AT END OF DUCT.
4. CONCENTRIC FLUE VENT DUCT CONNECTION TO BOILER REFER TO PLUMBING PLANS FOR BOILER LOCATION.



1 FLOOR PART PLAN A - LEVEL 4 - MECHANICAL

0' 4' 8' 16'
1/8" = 1'-0"

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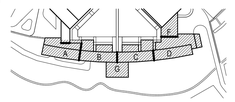
KEYPLAN



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ANDREW J. FLANAGAN
ENGINEER
PE088450
PENNSYLVANIA

07/21/2023
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FLOOR PART PLAN A - LEVEL 4 - MECHANICAL

SHEET No. MAQ-M-150

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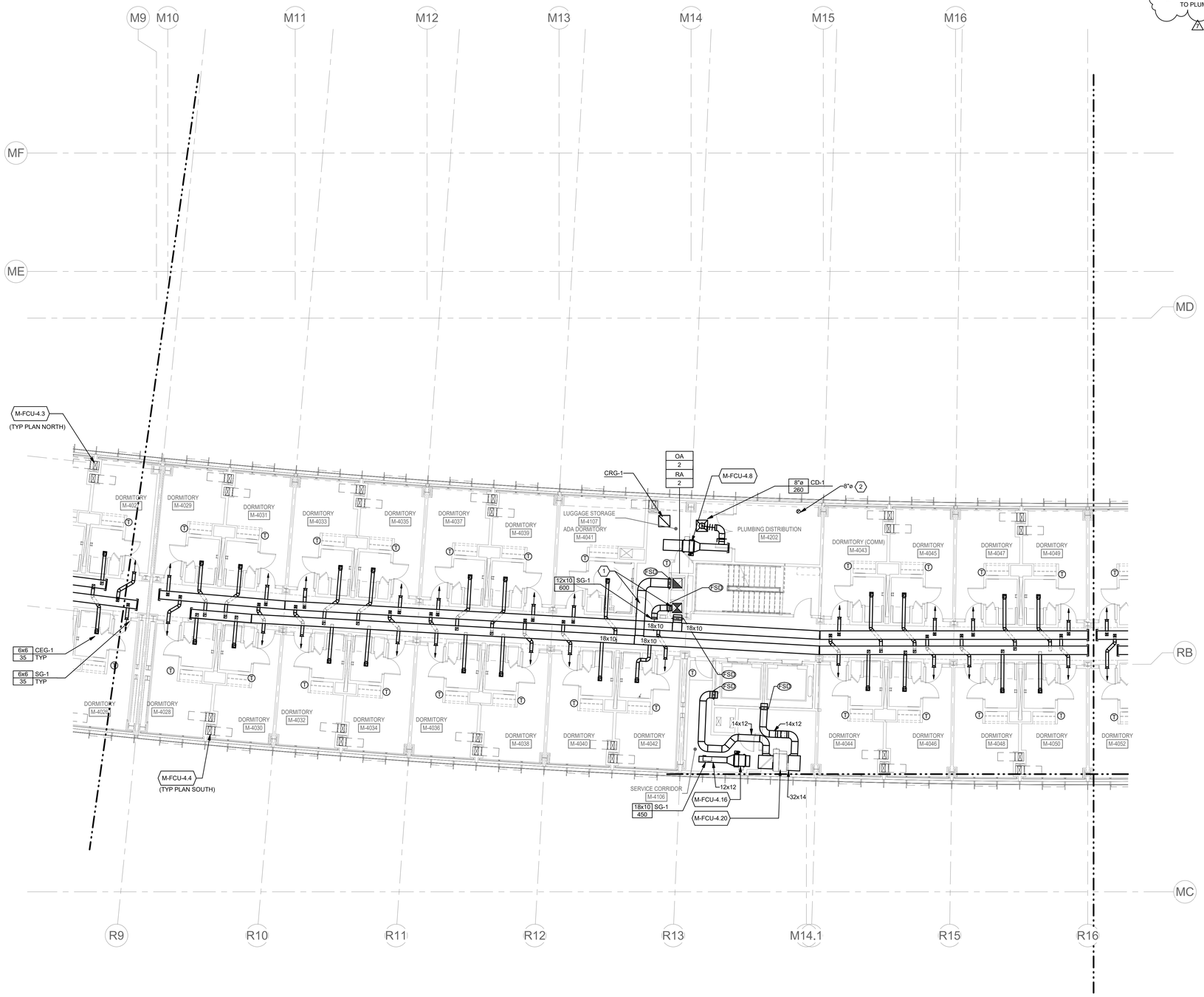

1 FLOOR PART PLAN B - LEVEL 4 - MECHANICAL

0' 4' 8' 16'
1/8" = 1'-0"

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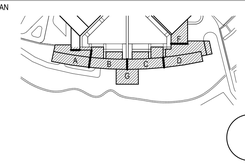

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07/21/2023
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DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 6

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HERSHEY, DAUPHIN COUNTY, PA

INTERFACE ENGINEERING
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FLOOR PART PLAN B - LEVEL 4 - MECHANICAL

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SHEET No. MAQ-M-151

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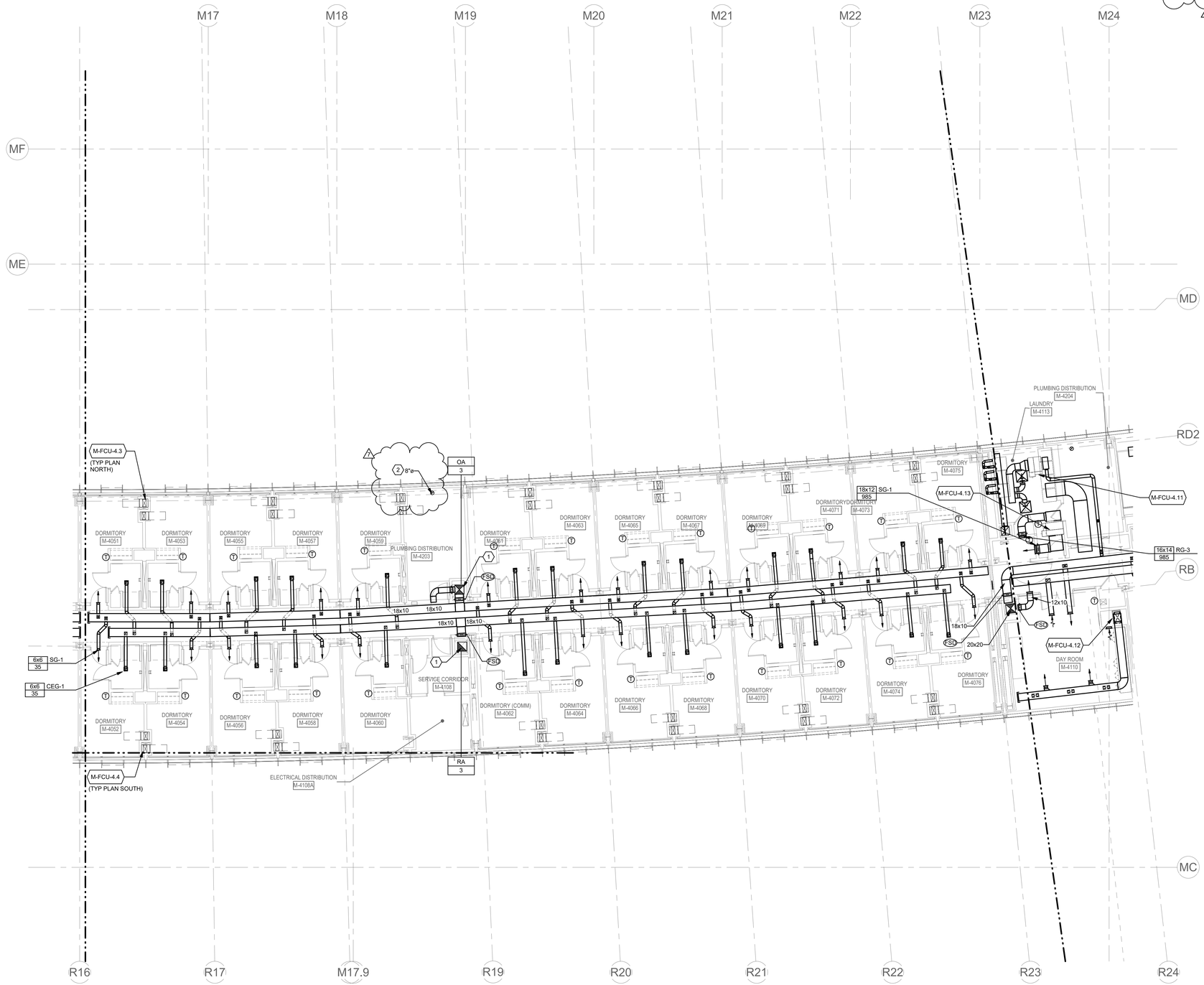

1 FLOOR PART PLAN C - LEVEL 4 - MECHANICAL

0' 4' 8' 16'
1/8" = 1'-0"

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Tactical Design North, Inc.
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LOCAL ARCHITECT
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250 Greenwich St, New York, NY 10007

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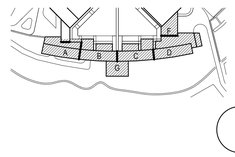

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07/21/2023
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HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 6

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FLOOR PART PLAN C - LEVEL 4 - MECHANICAL

SHEET No. MAQ-M-152

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SHEET KEYNOTES

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2. TYPE 2 EXHAUST UP AND DOWN.
3. TYPE 1 EXHAUST UP AND DOWN.
4. PROVIDE SNBDUCT FOR DRYER EXHAUSTS INTO SHAFT.
5. PROVIDE CLEANOUT FOR LINT REMOVAL AYEND OF DUCT.
6. CONCENTRIC FLUE VENT DUCT CONNECTION TO BOILER REFER TO PLUMBING PLANS FOR BOILER LOCATION.

1 FLOOR PART PLAN D - LEVEL 4 - MECHANICAL

0' 4' 8' 16'
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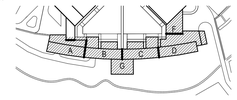

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PE088450
PENNSYLVANIA

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FLOOR PART PLAN D - LEVEL 4 - MECHANICAL

SHEET No. MAQ-M-153

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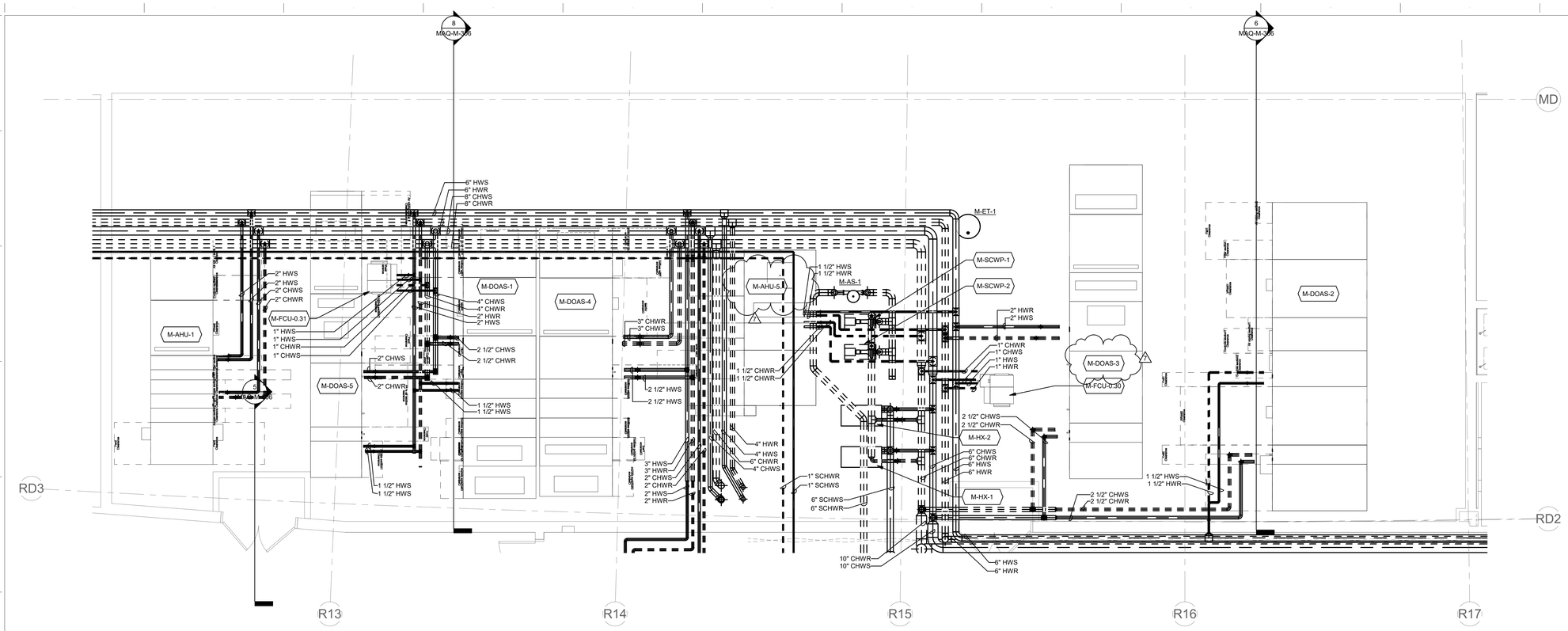
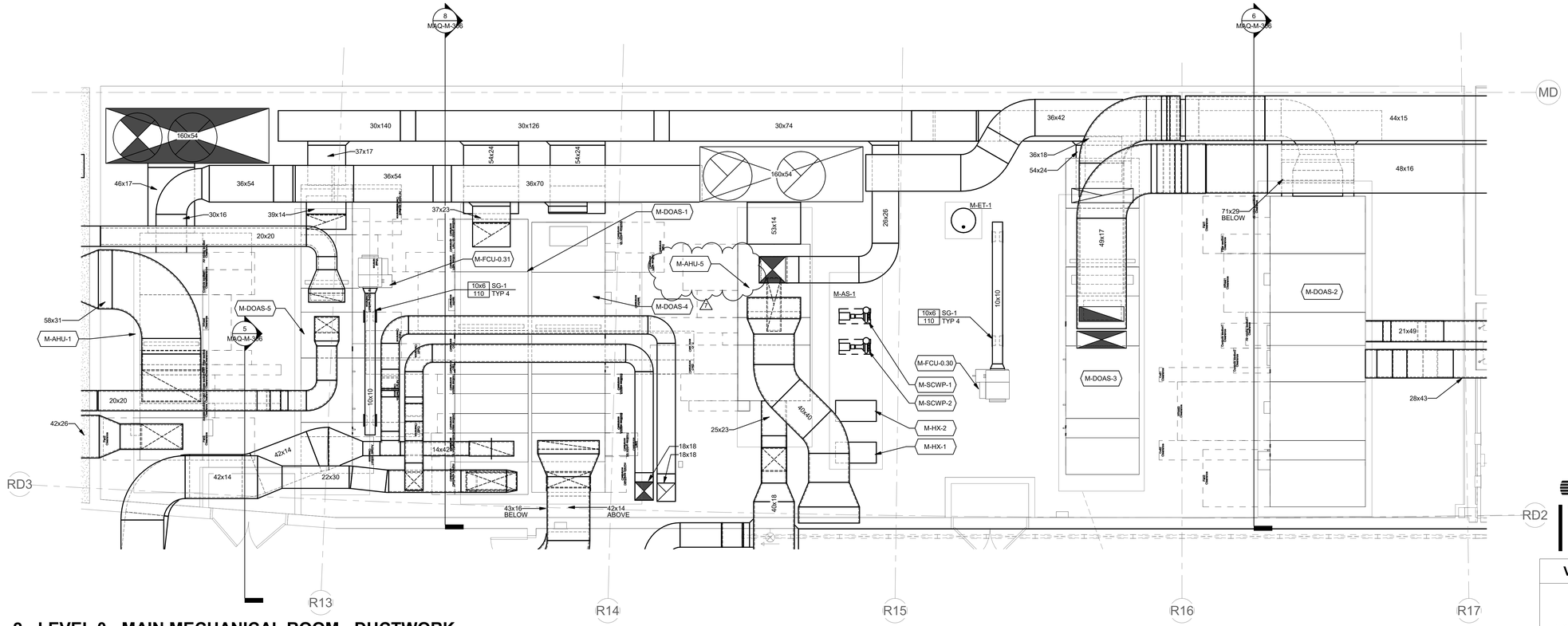


1 LEVEL 0 - MAIN MECHANICAL ROOM - PIPING

0' 2' 4' 8'
1/4" = 1'-0"



2 LEVEL 0 - MAIN MECHANICAL ROOM - DUCTWORK

0' 2' 4' 8'
1/4" = 1'-0"

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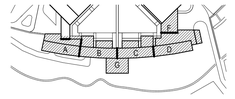
POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
7	21 JUL 23	ADDENDUM 34			
2	19 MAY 2023	ISSUED FOR BID			
1	18 FEB 2022	ISSUED TO L&I			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ANDREW J. FLANAGAN ENGINEER PE088450

07/21/2023
SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 6

Pennsylvania State Police Academy
Outbuildings, Tactical Villages & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

INTERFACE ENGINEERING
PROJECT 2021-0159
CONTACT Keith Pasma
2000 M Street NW, Suite 270
Washington, DC 20036
TEL 202.370.9555
www.interfaceengineering.com

VERIFY SCALE

BAR IS ONE (1) INCH LONG
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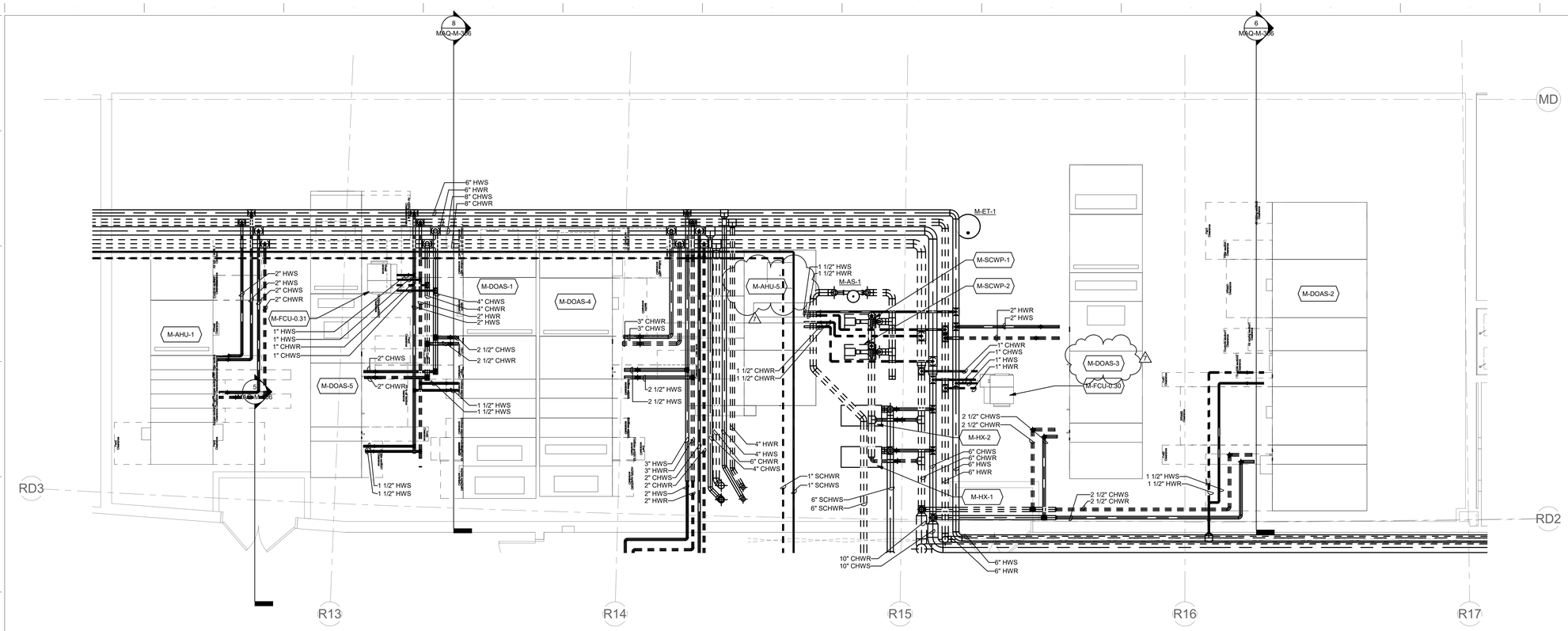
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

ENLARGED PLANS - MECHANICAL

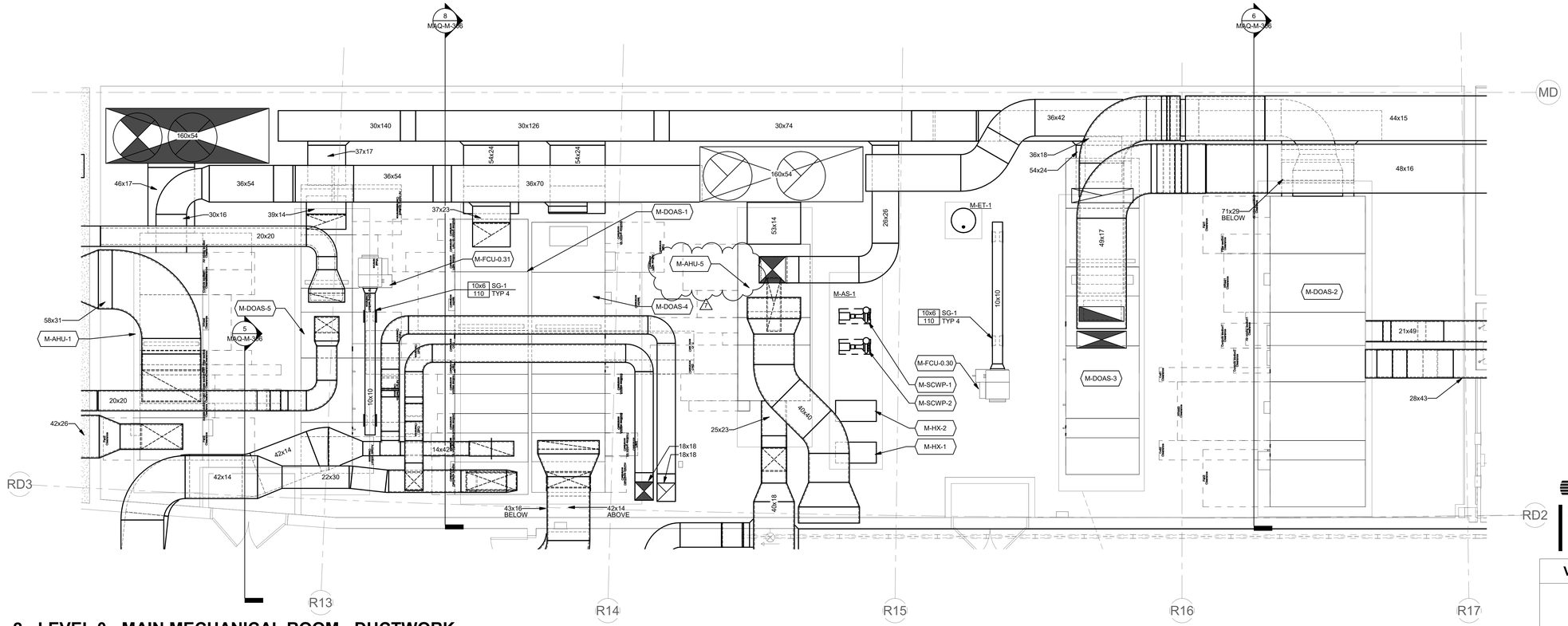
SHEET No.
MAQ-M-300

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED



1 LEVEL 0 - MAIN MECHANICAL ROOM - PIPING

0' 2' 4' 8'
1/4" = 1'-0"



2 LEVEL 0 - MAIN MECHANICAL ROOM - DUCTWORK

0' 2' 4' 8'
1/4" = 1'-0"

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER
Interface Engineering, Inc.
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Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING
CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER
Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT
Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT
Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE
Lee and Associates, Inc.
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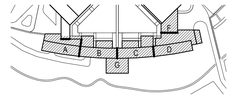

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D.G.S. PROJECT No.
C-0211-0005 PHASE 6

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ENLARGED PLANS - MECHANICAL

SHEET No.
MAQ-M-300

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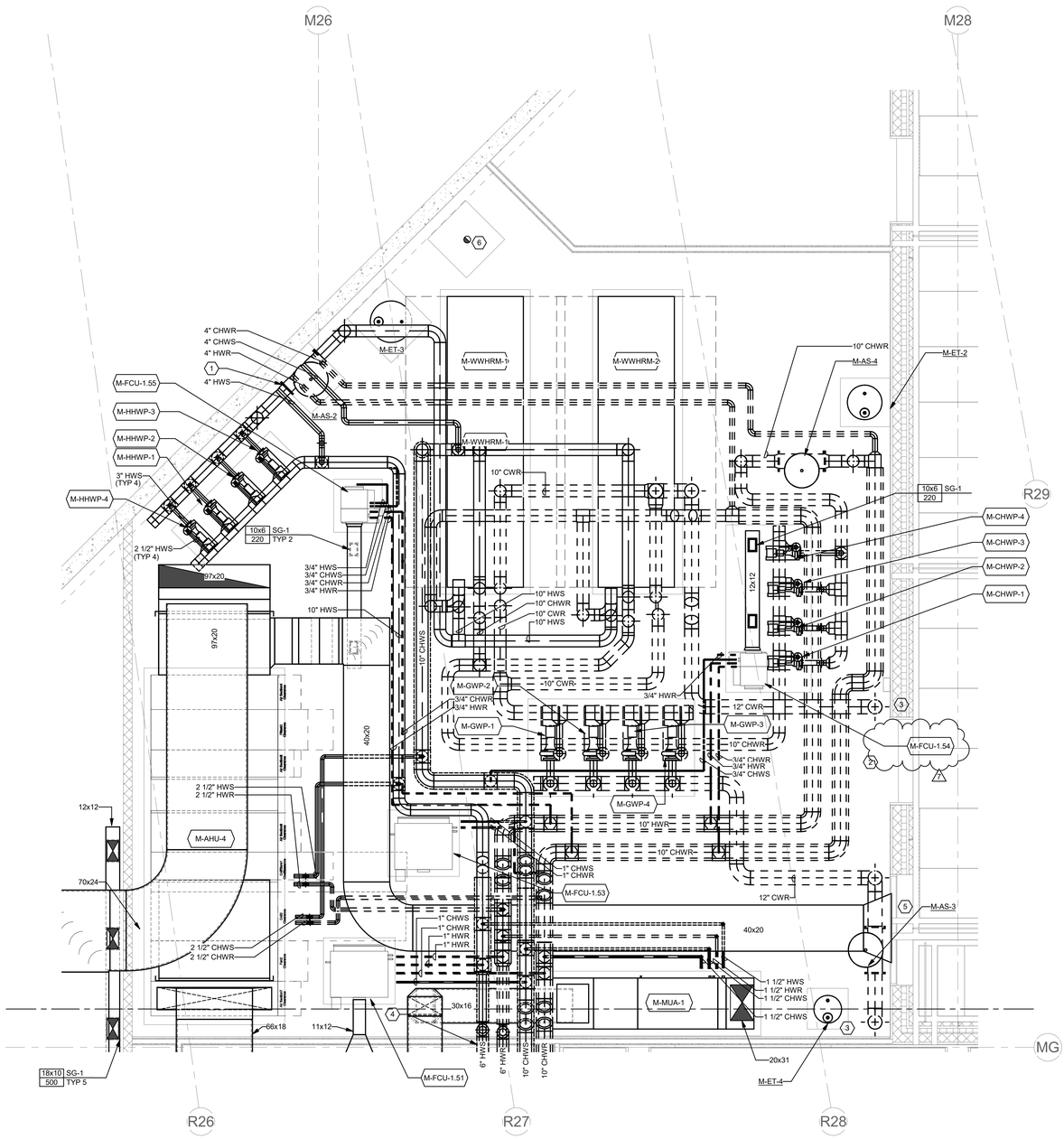
Author	Checker		AS NOTED



1 LEVEL 1 - CENTRAL UTILITY PLANT

0' 2' 4' 8'

1/4" = 1'-0"

GENERAL SHEET NOTES

A. N/A

SHEET KEYNOTES

1. 4" CHWS/R AND 4" HWS/R TO GYM. SEE GYM-M DRAWINGS FOR CONTINUATION.
2. HATCHED AREA DENOTES ACCESS PATHWAY THROUGH MECHANICAL ROOM
3. PIPE DOWN TO BELOW GRADE TO CONNECT TO WELLFIELD.
4. 10" CHWS/R AND 10" HWS/R TO MARQUEE AND FIREARMS.
5. PROVIDE 14 SF LOUVER. SEE ARCH PLANS FOR DETAILS.
6. PROVIDE VERTICAL CONCENTRIC EXHAUST/INTAKE VENT KIT FOR BOILER FLUE.

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
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ENLARGED PLANS - MECHANICAL

SHEET No.
MAQ-M-301

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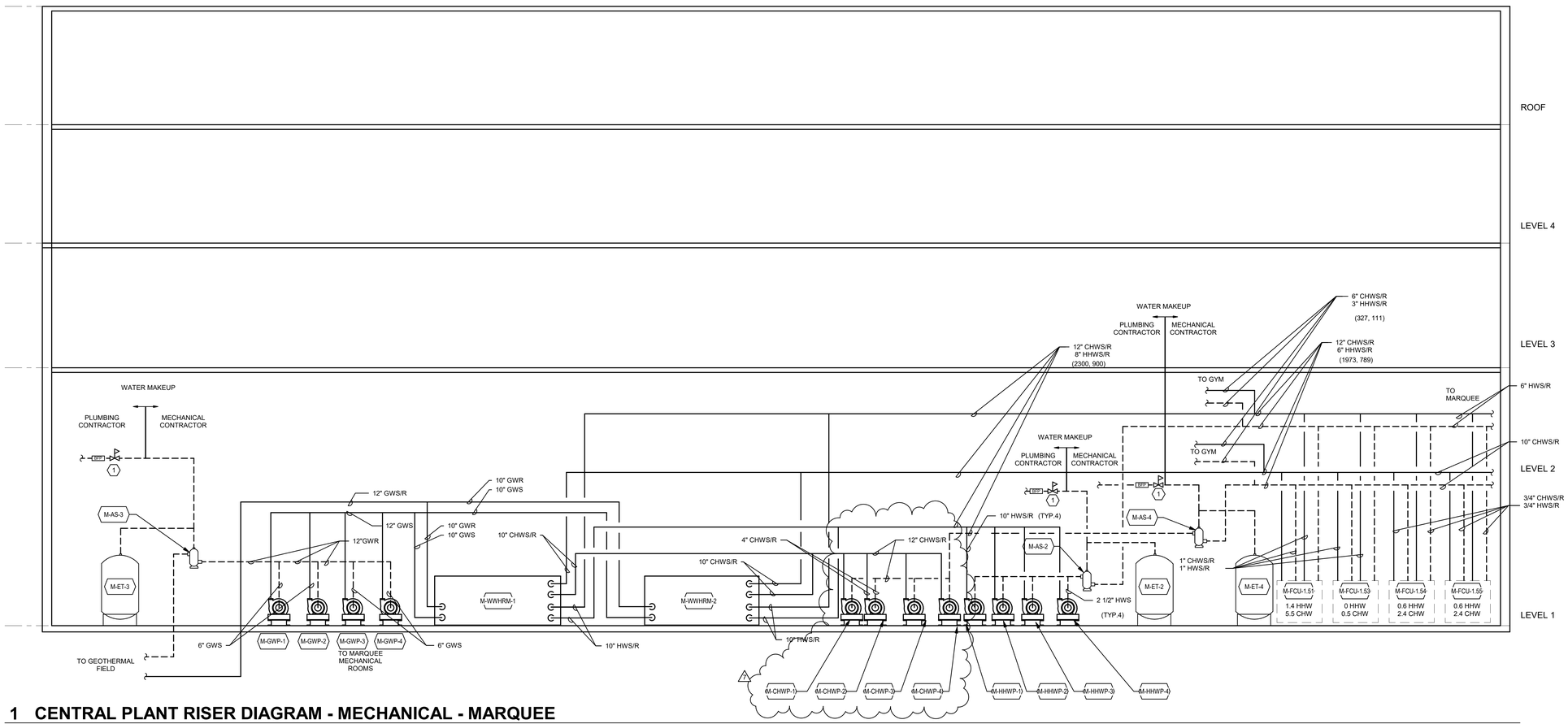
Author	Checker		AS NOTED

SHEET KEYNOTES

1. PLUMBING CONTRACTOR TO PROVIDE PRV SET TO PROVIDE FILL PRESSURE OF 5PSI AT HIGHEST POINT OF SYSTEM.



1 CENTRAL PLANT RISER DIAGRAM - MECHANICAL - MARQUEE

NOT TO SCALE

TACTICAL TRAINING DESIGN

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WATER RISER - MECHANICAL

SHEET No. MAQ-M-403

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED

DOAS - COILS + HR

			BASIS OF DESIGN		CHILLED WATER COOLING COIL												HOT WATER HEATING COIL										HEAT RECOVERY								SENSIBLE HEAT RECOVERY				
																											WINTER				SUMMER							
SYMBOL	LOCATION	AREA SERVED	MFR	MODEL	TOTAL CAP (MBH)	SENS CAP (MBH)	# ROWS	WATER FLOW GPM	EWT (°F)	LWT (°F)	EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	FACE VELOCITY (FPM)	APD (IN H2O)	WPD (FT H2O)	MIN CAP (MBH)	# ROWS	WATER FLOW (GPM)	EWT (°F)	LWT (°F)	EDB (°F)	LDB (°F)	FACE VELOCITY (FPM)	APD (IN H2O)	WPD (FT H2O)	TYPE	SA EAT (°F)	SA LAT (°F)	EA EAT (°F)	EA LAT (°F)	SA EAT (°F)	SA LAT (°F)	EA EAT (°F)	EA LAT (°F)	TYPE	SA EAT	SA LAT	EA EAT	EA LAT
M-DOAS-1	LEVEL 0	CLASSROOMS	TRANE	CSIA017	225.1	133.6	6	30	42	57	69	63	53	53	544	0.87	6.61	155.6	2	10	120	90	51	70	595	0.17	0.50	WHEEL	6	50.6	70	19.7	92/75	69/63	60.60/57.20	84.7/71.2	HEAT EXCHANGER	51.4/51	64.21/56.29	75.6|2.5	60.79/57.3
M-DOAS-2	LEVEL 0	CLASSROOMS/OFFICES	TRANE	CSIA030	549.6	311.8	8	73	42	57	77	61	52	49	417	0.63	2.98	232.8	1	16	120	90	52	70	398	0.09	0.54	WHEEL	6	52	70	18.9	92/75	79.6/66.54	75/62.5	88.40/72.43	DESICANT WHEEL	52.12/48.9	56.11/48.0	80/66	75.6/67.1
M-DOAS-3	LEVEL 0	DORMS	TRANE	CSIA014	190.9	113.4	6	25	42	57	69	63	53	53	481	0.68	5.02	130.5	2	9	120	90	52	70	525	0.13	0.46	WHEEL	6	52	70	18.46	92/75	68.7/62.79	60.60/57.20	85.4/71.56	HEAT EXCHANGER	51.4/51	64.3/56.3	75/62.5	60.6/57.22
M-DOAS-4	LEVEL 0	DORMS	TRANE	CSIA014	187.0	113.0	6	25	42	57	69	62	53	53	463	0.63	4.86	126.5	2	9	120	90	52	70	505	0.12	0.45	WHEEL	6	52.4	70	18.08	92/75	69.2/62.9	61.6/57.6	85.8/71.73	HEAT EXCHANGER	53/52.7	65.1/57.5	75/62.5	61.56/57.60
M-DOAS-5	LEVEL 0	ITV	TRANE	CSIA008	109.4	63.6	6	15	42	57	70	63	52	51	406	0.61	1.83	70.9	2	5	120	90	50	70	446	0.11	0.38	WHEEL	6	49.9	70	40.56	92/75	69.7/63.42	60.6/57.2	84.1/70.9	HEAT EXCHANGER	51.4/51	63.6/56.0	75/62.5	61.5/57.6

DOAS - FANS + FILTERS

			BASIS OF DESIGN		SUPPLY FAN										EXHAUST FAN									PRE-FILTER		FINAL FILTER		ELECTRICAL					
SYMBOL	LOCATION	AREA SERVED	MFR	MODEL	TOTAL CFM	MIN OSA CFM	DCV OSA CFM	ESP (IN H2O)	FAN TYPE	# OF FANS	BHP	HP	FRPM	VFD (Y/N)	TOTAL CFM	ESP (IN H2O)	FAN TYPE	# OF FANS	BHP	MHP	FRPM	VFD (Y/N)	EFF MERV	FACE VEL (FPM)	EFF MERV	FACE VEL (FPM)	VOLTS	PH	FLA	MCA	MOCP	MAX WT (LBS)	NOTES
M-DOAS-1	LEVEL 0	CLASSROOMS	TRANE	CSIA017	7432	7432	2000	2.25	PLENUM	1	9.6	10	2630	Y	6990	1.6	PLENUM	1	6.06	7.5	2100	Y	8	372	14	520	460	3	27.3	30.7	40	7000	1,2,3,4,5
M-DOAS-2	LEVEL 0	CLASSROOMS/OFFICES	TRANE	CSIA030	11965	11965	2000	2	PLENUM	1	17.7	20	2000	Y	10580	1.6	PLENUM	1	7.2	7.5	1245	Y	8	384	14	384	460	3	40.2	47.0	70	13000	1,2,3,4,5
M-DOAS-3	LEVEL 0	DORMS	TRANE	CSIA014	6570	6570	6570	1.75	PLENUM	1	8.7	10	2560	Y	6300	1.75	PLENUM	1	5.7	7.5	2200	Y	8	329	14	460	460	3	26.5	30.0	40	6500	1,2,3,4,5
M-DOAS-4	LEVEL 0	DORMS	TRANE	CSIA014	6320	6320	6320	1.75	PLENUM	1	8.9	10	2560	Y	6060	1.75	PLENUM	1	6.3	7.5	2120	Y	8	329	14	390	460	3	27.2	30.7	40	6500	1,2,3,4,5
M-DOAS-5	LEVEL 0	ITV	TRANE	CSIA008	3265	3265	3265	2	PLENUM	1	3.9	5	2730	Y	3000	2	PLENUM	1	2.06	3	2050	Y	8	330	14	400	460	3	13.7	15.7	20	4810	1,2,3,4,5

NOTES:
1. CONTROLS TO BE PROVIDED BY CONTROLS CONTRACTOR
2. PROVIDE WITH NON-FUSED DISCONNECT
3. PROVIDE WITH DIRECT DRIVE FANS WITH FACTORY INSTALLED VFD
4. PROVIDE WITH PHASE AND BROWNOUT PROTECTION
5. SINGLE POINT POWER CONNECTION. FIELD PROVIDED UNIT DISCONNECT.

CW/HW AHU (W/ERV) - COILS + HR

			BASIS OF DESIGN		CHILLED WATER COOLING COIL												HOT WATER HEATING COIL										HEAT RECOVERY								
																											WINTER				SUMMER				
SYMBOL	LOCATION	AREA SERVED	MFR	MODEL	TOTAL CAP (MBH)	SENS CAP (MBH)	# ROWS	WATER FLOW GPM	EWT (°F)	LWT (°F)	EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	FACE VELOCITY (FPM)	APD (IN H2O)	WPD (FT H2O)	MIN CAP (MBH)	# ROWS	WATER FLOW (GPM)	EWT (°F)	LWT (°F)	EDB (°F)	LDB (°F)	FACE VELOCITY (FPM)	APD (IN H2O)	WPD (FT H2O)	TYPE	SA EAT (°F)	SA LAT (°F)	EA EAT (°F)	EA LAT (°F)	SA EAT (°F)	SA LAT (°F)	EA EAT (°F)	EA LAT (°F)
M-AHU-1	LEVEL 0	ITV DRIVE ISLE	TRANE	CSIA010	180.0	133.0	8	24	42	57	77	64	51	51	471	0.73	6.14	125.0	1	9	120	90	60	85	471	0.73	6.14	WHEEL	6	60	70	27	82/75	77/64	75/62.5	86.3/70
M-AHU-2	LEVEL 0	AUDITORIUM	TRANE	CSAA017	242.1	198.1	4	32	42	57	76	64	55	54	494	0.49	3.85	110.0	1	8	120	90	62	75	494	0.10	1.51	WHEEL	6	62	70	17	92/75	76.7/64	75/62.5	88.9/72.8
M-AHU-3	LEVEL 0	AUDITORIUM	TRANE	CSAA017	242.1	198.1	4	32	42	57	76	64	55	54	494	0.49	3.85	110.0	1	8	120	90	62	75	494	0.10	1.51	WHEEL	6	62	70	17	92/75	76.7/64	75/62.5	88.9/72.8
M-AHU-4	LEVEL 1	CAFETERIA	TRANE	TCFS	486.1	386.0	4	65	42	57	76	64	53	52	512	0.58	6.95	419.0	2	28	120	90	55	80	536	0.20	1.95	WHEEL	6	64.85	70	20	92/75	76.25/63.65	75/62.5	88/72

CW/HW AHU (W/ERV) - FANS + FILTERS

			BASIS OF DESIGN		SUPPLY FAN										EXHAUST FAN									PRE-FILTER		FINAL FILTER		ELECTRICAL					
SYMBOL	LOCATION	AREA SERVED	MFR	MODEL	TOTAL CFM	MIN OSA CFM	DCV OSA CFM	ESP (IN H2O)	FAN TYPE	# OF FANS	BHP	HP	FRPM	VFD (Y/N)	TOTAL CFM	ESP (IN H2O)	FAN TYPE	# OF FANS	BHP	MHP	FRPM	VFD (Y/N)	EFF MERV	FACE VEL (FPM)	EFF MERV	FACE VEL (FPM)	VOLTS	PH	FLA	MCA	MOCP	MAX WT (LBS)	NOTES
M-AHU-1	LEVEL 0	ITV DRIVE ISLE	TRANE	CSIA010	4700	2000	500	0.9	PLENUM	1	4.9	5	Y		4700	0.75	PLENUM	1	2.9	3	Y		8	484	14	484	460	3				3700	1,2,3,4,5,6,7,8,9,10
M-AHU-2	LEVEL 0	AUDITORIUM	TRANE	CSAA017	8300	3240	200	0.6	PLENUM	2	3.38	5	Y		7500	0.45	PLENUM	1	4.8	5	Y		8	192	14	192	460	3				4600	1,2,3,4,5,6,7,8,11,13
M-AHU-3	LEVEL 0	AUDITORIUM	TRANE	CSAA017	8300	3240	200	0.6	PLENUM	2	3.38	5	Y		7500	0.45	PLENUM	1	4.8	5	Y		8	192	14	192	460	3				4600	1,2,3,4,5,6,7,8,11,13
M-AHU-4	LEVEL 1	CAFETERIA	TRANE	TCFS	15200	5060	2000	1.7	PLENUM	6	18.2	4	Y		5060	0.6	PLENUM	3	9.1	8	Y		8	484	14	484	460	3				12200	1,2,3,4,5,6,7,8,12

NOTES:
1. CONTROLS TO BE PROVIDED BY CONTROLS CONTRACTOR
2. PROVIDE WITH DOUBLE WALL CONSTRUCTION.
3. PROVIDE WITH INTERNALLY FED SERVICE RECEPTACLE.
4. PROVIDE WITH SINGLE POINT POWER CONNECTION
5. PROVIDE WITH PHASE AND BROWNOUT PROTECTION.
6. PROVIDE WITH SHORT CIRCUIT CURRENT RATING (SCCR) >= 5 kA
7. PROVIDE WITH DIRECT DRIVE PLENUM FANS
8. PROVIDE VFD PER SUPPLY AND RETURN/EXHAUST FANS
9. PROVIDE WITH AIRSIDE ECONOMIZER
10. THREE POINTS OF ELECTRICAL CONNECTION : SUPPLY FAN - (8.85 A FLA, 10.9 A MCA, 15 A MOCP), EXHAUST FAN - (4.8 A FLA, 6 A MCA, 15 A MOCP), ENERGY WHEEL - (.66 A FLA, .8 A MCA, 15 A MOCP)
11. SINGLE POINT OF ELECTRICAL CONNECTION : 26.12 A FLA, 28.2 A MCA, 35 A MOCP
12. THREE POINTS OF ELECTRICAL CONNECTION : SUPPLY FAN - (25.9 A FLA, 27 A MCA, 30 A MOCP), EXHAUST FAN - (21.9 A FLA, 23.7 A MCA, 30 A MOCP), ENERGY WHEEL - (1.1 A FLA, 1.4 A MCA, 15 A MOCP)
13. INTERLOCK OPERATION OF ASSOCIATED DUCT COIL WITH AHU.

CW/HW AHU (NO ERV) - COILS

			BASIS OF DESIGN		CHILLED WATER COOLING COIL													HOT WATER HEATING COIL								
SYMBOL	LOCATION	AREA SERVED	MFR	MODEL	TOTAL CAP (MBH)	SENS CAP (MBH)	# ROWS	WATER FLOW GPM	EWT (°F)	LWT (°F)	EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	FACE VELOCITY (FPM)	APD (IN H2O)	WPD (FT H2O)	MIN CAP (MBH)	# ROWS	WATER FLOW (GPM)	EWT (°F)	LWT (°F)	EDB (°F)	LDB (°F)	FACE VELOCITY (FPM)	APD (IN H2O)	WPD (FT H2O)
M-AHU-5	LEVEL 0	PREFUNCTION	TRANE	UCCAG12	164.3	135.3	6	23	42	56	77	64	54	53	440	0.69	1.51	180.6	2	18	120	100	60	91	440	0.23	1.02
M-AHU-6	LEVEL 0	ENTRY LOBBY	TRANE	CSIA012	93.9	80.0	4	13	42	57	78	64	64	59	492	0.36	0.39	196.8	2	13	120	90	45	75	492	0.18	0.82

CW/HW AHU (NO ERV) - FANS + FILTERS

			BASIS OF DESIGN		SUPPLY FAN										FINAL FILTER	ELECTRICAL						
WT	LOCATION	AREA SERVED	MFR	MODEL	TOTAL CFM	MIN OSA CFM	DCV OSA CFM	ESP (IN H2O)	FAN TYPE	# OF FANS	BHP	HP	FRPM	VFD (Y/N)	EFF MERV	FACE VEL (FPM)	VOLTS	PH	FLA	MCA	MOCP	MAX WT (LBS)	NOTES
M-AHU-5	LEVEL 0	PREFUNCTION	TRANE	UCCAG12	5395	800	200	1.5	PLENUM	1	4.6	7.5	0	Y	13	500	460	3	15.2	18.0	25	1950	1,2,3,4,5,6,7,8,9
M-AHU-6	LEVEL 0	ENTRY LOBBY	TRANE	CSIA012	6050	440	440	0.6	PLENUM	1	4.2	5	0	Y	8	454	460	3	9.8	12.3	15	1770	1,2,3,4,5,6,7,8,9

NOTES:
1. CONTROLS TO BE PROVIDED BY CONTROLS CONTRACTOR
2. PROVIDE WITH DOUBLE WALL CONSTRUCTION.
3. PROVIDE WITH INTERNALLY FED SERVICE RECEPTACLE.
4. PROVIDE WITH SINGLE POINT POWER CONNECTION
5. PROVIDE WITH PHASE AND BROWNOUT PROTECTION.
6. PROVIDE WITH SHORT CIRCUIT CURRENT RATING (SCCR) >= 5 kA
7. PROVIDE WITH DIRECT DRIVE PLENUM FANS
8. PROVIDE VFD ON SUPPLY FANS
9. PROVIDE WITH AIRSIDE ECONOMIZER

EVAV BOX UNIT SCHEDULE

	BASIS OF DESIGN		AIR FLOW			
SYMBOL	MFR	MODEL	INLET SIZE	MAX CFM	MIN CFM	NOTES
M-EVAV-0.1	TITUS	DESV	4	325	0	1
M-EVAV-0.2	TITUS	DESV	4	260	0	1
M-EVAV-0.3	TITUS	DESV	4	325	0	1
M-EVAV-0.4	TITUS	DESV	4	325	0	1
M-EVAV-0.5	TITUS	DESV	8	350	0	1
M-EVAV-0.6	TITUS	DESV	8	760	0	1
M-EVAV-0.7	TITUS	DESV	8	260	0	1
M-EVAV-0.8	TITUS	DESV	8	350	0	1
M-EVAV-1.1	TITUS	DESV	8	300	0	1
M-EVAV-1.2	Titus	DESV-6	6	500	0	1
M-EVAV-1.3	Titus	DESV-6	6	420	0	1

NOTES:
1. 24DCV CONTROL POWER AND CONTROLS PROVIDED BY CONTROLS CONTRACTOR

AIR CURTAIN SCHEDULE

SYMBOL	MFR	MODEL	TYPE	CFM	VELOCITY (FPM)	MAX MOUNTING HEIGHT (FT)	VOLTS	PH	FLA (A)	WT (LBS)	NOTES
M-AC-1	MARS	STD2120-3U	UNHEATED	4341	2084	12'	460	3	2.4	185	1,2
M-AC-2	MARS	STD2120-3U	UNHEATED	4341	2084	12"	460	3	2.4	185	1,2

NOTES:
1. INCLUDE AUTOMATIC DOOR SWITCH FOR CONTROL OF AIR CURTAIN
2. PROVIDE REMOTE MOUNTED CONTROL PANEL

DIFFUSER, REGISTER AND GRILLE SCHEDULE

	BASIS OF DESIGN						AIRFLOW		
SYMBOL	MFR.	MODEL	TYPE	FACE SIZE (IN)	NECK SIZE (IN)	MIN (CFM)	MAX (CFM)	THROW (FT.)	PRESSURE DROP	NOTES
CD-2	TITUS	R- OMNI	CEILING SUPPLY DIFFUSER	18	8	0	280	11	0.06	
CEG-1	TITUS	PAR	CEILING EXHAUST GRILLE	24x24	8	-	-	-	0.07	
CRG-1	TITUS	PAR	CEILING RETURN GRILLE	24x24	6	-	-	-	0.06	
CTG-1	TITUS	PAR	CEILING TRANSFER GRILLE	24x24	14x14	0	700	-	0.09	
FD-1	TITUS	TAF-R	FLOOR DIFFUSER	8"	8"	0	75	6	0.06	
LS-2	TITUS	FL-25	FLOOR SUPPLY GRILLE	48x2.5	10	0	340	16	0.12	2
CEG-1	TITUS	PAR	CEILING EXHAUST GRILLE	24x24	8	-	-	-	0.08	
CD-1	TITUS	TMS	CEILING SUPPLY DIFFUSER	24x24	SEE PLANS	SEE NOTES	SEE NOTES	8	0.07	1
CRG-2	TITUS	PAR	CEILING RETURN GRILLE	24x24	8	-	-	-	0.04	
CRG-3	TITUS	PAR	CEILING RETURN GRILLE	24x24	10	-	-	-	0.05	
CRG-4	TITUS	PAR	CEILING RETURN GRILLE	24x24	12	-	-	-	0.06	
EG-1	TITUS	350RL							0.10	
LD-1	TITUS	FL-10	LINEAR SUPPLY DIFFUSER	48x1x1	8	0	150	10	0.06	2
LD-2	TITUS	FL-20	LINEAR SUPPLY DIFFUSER	48x2x1	8"	0	210	10	0.06	2
LD-3	TITUS	FL-20	LINEAR SUPPLY DIFFUSER	48x2x1	12"	300	400	10	0.09	2
LD-4	TITUS	FL-10	LINEAR SUPPLY DIFFUSER	48x1x1	8"	0	260	10	0.07	2,3
LRD-2	TITUS	M;-39	LINEAR RETURN DIFFUSER	48x1x1	-	0	240	-	0.09	2
LED-1	TITUS	FL-10	LINEAR EXHAUST DIFFUSER	48x1x1	8	0	190	-	0.06	2
RG-1	TITUS	350RL							0.04	
RG-2	TITUS	350RL	WALL RETURN GRILLE	18x12	18x12	SEE PLANS	SEE PLANS	-	0.04	
RG-3	TITUS	350RL	WALL RETURN GRILLE	18x12	18x12	SEE PLANS	SEE PLANS	-	0.04	
RG-4	TITUS	350RL	WALL RETURN GRILLE	24x12	24x12				0.04	
TG-1	TITUS	350RL	WALL TRANSFER GRILLE	SEE PLANS	SEE PLANS	-	-	-	0.04	
SG-1	TITUS	300FL							0.10	1

NOTES

1. FOR CD-1 NECK SIZES ON PLANS, FOLLOWING CFM RANGES APPLY:
   A. 4" ROUND: 0 TO 75 CFM
   B. 6" ROUND: 80 TO 155 CFM
   C. 8" ROUND: 160 TO 275 CFM
   D. 10" ROUND: 280 TO 380 CFM
   E. 12" ROUND: 385 TO 625 CFM
2. FOR LINEAR DIFFUSERS FACE SIZE, 1ST NUMBER IS FACE LENGTH, 2ND IS SLOT WIDTH, 3RD IS NUMBER OF SLOTS.
3. PROVIDE JET THROW SLOT ARRANGEMENT.

EXPANSION TANK SCHEDULE

		BASIS OF DESIGN		MIN ACCEPT. VOLUME (GAL)	MIN TOTAL VOLUME (GAL)	FILL PRESSURE (PSIG)	MAX PRESSURE (PSIG)	MIN TEMP (°F)	MAX TEMP (°F)	MAX WT (LBS)	NOTES
SYMBOL	AREA SERVED	MFR	MODEL								
M-ET-1	HIGH TEMP CHILLED WATER	BELL & GOSSETT	B800	80	159	12	125	40	95	2,675	
M-ET-2	HEATING HOT WATER	BELL & GOSSETT	B1200	158	317	12	125	50	150	3,335	
M-ET-3	GEOTHERMAL WATER	BELL & GOSSETT	B1200	158	317	12	125	50	150	3,335	
M-ET-4	CHILLED WATER	BELL & GOSSETT	B800	80	159	12	125	40	95	2,675	

NOTES:
1. PRELIMIARY SIZING TO BE CONFIRMED BY GEOTHERMAL CONTRACTOR

LOUVERED PENTHOUSE SCHEDULE

		BASIS OF DESIGN			THROAT SIZE LxW	AIR FLOW (CFM)	DIMENSIONS LxWxH	NO. OF LOUVERS	NOTES
SYMBOL	AREA SERVED	MFR	MODEL	TYPE					
M-IH-1	CENTRAL PLANT M-1300	GREENHECK	WIH	INTAKE	28x56	8,720	42x70x23.5	6	1
M-IH-2	CENTRAL PLANT M-1300	GREENHECK	WIH	INTAKE	48x64	8,720	42x70x23.5	6	1

NOTES:
1. PROVIDE WITH ROOF CURB AND BIRDSCREEN.

AIR SEPARATOR SCHEDULE

		BASIS OF DESIGN		WATER FLOW (GPM)	INLET SIZE (IN)	MAX WPD (FT H2O)	MAX WT (LBS)	NOTES
SYMBOL	SYSTEM SERVED	MFR	MODEL					
M-AS-1	HIGH TEMP CHILLED WATER	BELL & GOSSETT	R-3FB	240	3	2	1160	
M-AS-2	CHILLED WATER	BELL & GOSSETT	R-12FB	2000	12	2	1160	
M-AS-3	HEATING HOT WATER	BELL & GOSSETT	R-8FB	800	8	2	1160	1
M-AS-4	GEOTHERMAL WATER	BELL & GOSSETT	R-12FB	2750	12	2	1160	

NOTES:
1. PRELIMINARY SIZING TO BE CONFIRMED BY GEOTHERMAL CONTRACTOR

INTERFACE ENGINEERING
PROJECT 2021-0159
CONTACT Keith Pasma
2000 M Street NW, Suite 270
Washington, DC 20036
TEL 202.370.9555
www.interfaceengineering.com

VERIFY SCALE

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TACTICAL TRAINING DESIGN
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250 Greenwich St, New York, NY 10007

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POOL DESIGN
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7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN

NO.	DATE	DESCRIPTION
7	21 JUL 23	ADDENDUM 34
2	19 MAY 2023	ISSUED FOR BID
1	15 FEB 2022	ISSUED TO L&I

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
ANDREW J. FLANAGAN
ENGINEER
PE088450
PENNSYLVANIA

07/21/2023
SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

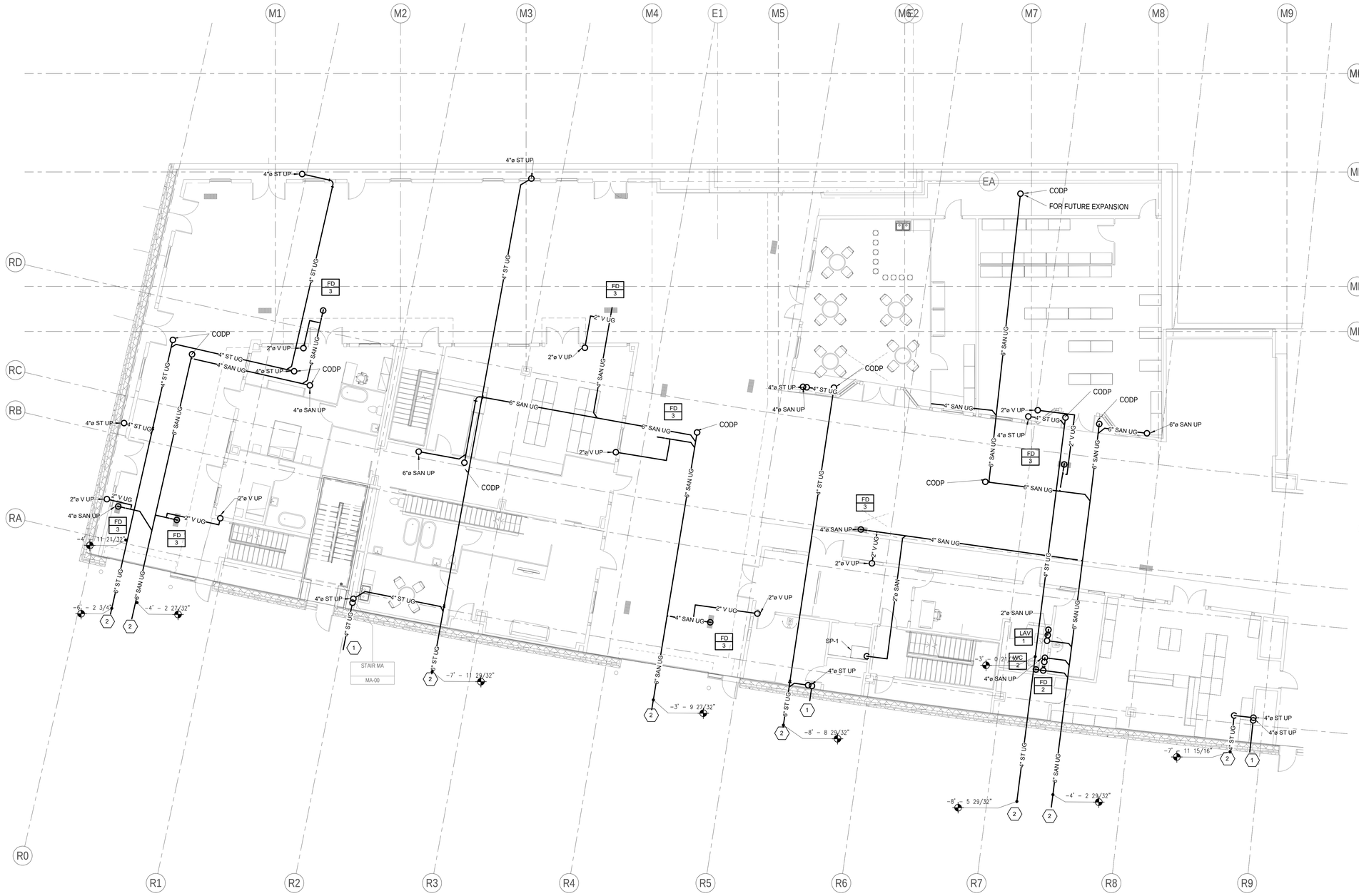
D.G.S. PROJECT No.
C-0211-0005 PHASE 6

Pennsylvania State Police Academy
Outbuildings, Tactical Villages & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

SCHEDULES- MECHANICAL

SHEET No.
MAQ-M-500

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED



1 MARQUEE - BELOWSLAB FLOOR PART PLAN A - SAN & VENT - LEVEL 0 - PLUMBING

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

GENERAL NOTES:

1. ALL UNDERGROUND STORM WATER PIPING SHALL HAVE MINIMUM OF ½" PER FOOT OF SLOPE.

2. ALL UNDERGROUND SANITARY PIPING SHALL HAVE MINIMUM OF ¼" PER FOOT OF SLOPE.

3. ALL PENETRATIONS THROUGH FOUNDATION WALLS SHALL BE PROVIDED WITH LINK-SEAL TYPE PIPE SEAL FOR HYDROSTATIC SEAL.

4. ALL BENDS, CROSS CONNECTIONS UNDERGROUND SHALL BE MADE USING LONG SWEEP ELBOWS AND WYE FITTINGS.

5. REFER TO STRUCTURAL AND SITE/CIVIL DRAWINGS FOR UNDERGROUND PIPE TRENCH BACKFILL MATERIAL AND COMPACTION DETAILS.

6. ALL UNDERGROUND JOINTS SHALL BE BELL AND SPIGOT WITH COMPRESSION GASKET.

7. ELEVATIONS AND INVERTS SHOWN HERE ARE APPROXIMATE FOR PRILIMINARY COORDINATION ONLY.

8.CONTRACTOR SHALL SUBMIT SHOP-DRAWING FOR AEOR REVIEW AFTER COORDINATING WITH OTHER TRADES AND PRIOR TO COMMENCING ANY WORK.

9.ALL INSTALLATION ARE SUBJECT TO GETTING APPROVED BY AUTHRITY HAVING JURISDICTION (AHJ).

10.ALL WALL AND FLOOR CLEANOUTS, SERVING 4" AND SMALLER, SHALL BE THE SAME SIZE AS THE PIPING SYSTEM THEY SERVE. CLEANOUTS SERVING 5" AND 6" PIPE SYSTEM SHALL BE 4". CLEANOUTS SERVING 8" PIPING SYSTEM SHALL BE 6".

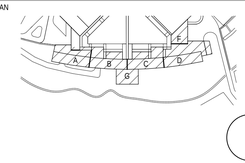
11.PROVIDE ACCESS PANELS IN HARD CEILINGS AND WALL FOR ACCESS TO ALL PLUMBING EQUIPMENT, ISOLATION VALVES, ETC. THE ACCESS PANELS AHLL BE 24" X 24" MINIMUM. PAINT THE PANELS WITH COLOR MATCHING WALL OR CEILING PAINT COLOR SURROUNDING.

SHEET NOTES:

1. TERMINATE SECONDARY ROOF DRAIN ABOVE GRADE USING WALL DOWNSPOUT NOZZLE. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR DOWNSPOUT INSTALLATION DETAIL. DOWNSPOUT NOZZLE SHALL HAVE INTEGRAL BIRD SCREEN.

2. REFER TO SITE/CIVIL DRAWINGS FOR CONTINUATION.

KEYPLAN



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COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E
PENNSYLVANIA

2023-07-21
SIGNATURE DATE

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HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
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0 1

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MARQUEE - BELOWSLAB FLOOR PART PLAN A - SAN & VENT - LEVEL 0 - PLUMBING

SHEET No. MAQ-P-101.2

DRAWN BY	CHECKED BY	DATE	SCALE
JG/HP	HS/JKA		AS NOTED

1 MARQUEE - OVERHEAD FLOOR PART PLAN B - SAN & VENT - LEVEL 0 - PLUMBING

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4. ALL BENDS, CROSS CONNECTIONS UNDERGROUND SHALL BE MADE USING LONG SWEEP ELBOWS AND WYE FITTINGS.

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2 REFER TO SITE/CIVIL DRAWINGS FOR CONTINUATION.

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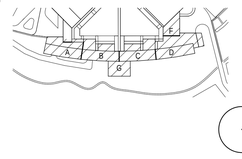

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	19 MAY 2023	ISSUED FOR BID			

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COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033176E
PENNSYLVANIA

2023-07-21
SIGNATURE DATE

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250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
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HARRISBURG, PENNSYLVANIA

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MARQUEE - OVERHEAD FLOOR PART PLAN B - SAN & VENT - LEVEL 0 - PLUMBING

SHEET No. MAQ-P-102.1

DRAWN BY	CHECKED BY	DATE	SCALE
NV/KT	HS/JKA		AS NOTED

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1. ALL UNDERGROUND STORM WATER PIPING SHALL HAVE MINIMUM OF ½" PER FOOT OF SLOPE.

2. ALL UNDERGROUND SANITARY PIPING SHALL HAVE MINIMUM OF ¼" PER FOOT OF SLOPE.

3. ALL PENETRATIONS THROUGH FOUNDATION WALLS SHALL BE PROVIDED WITH LINK-SEAL TYPE PIPE SEAL FOR HYDROSTATIC SEAL.

4. ALL BENDS, CROSS CONNECTIONS UNDERGROUND SHALL BE MADE USING LONG SWEEP ELBOWS AND WYE FITTINGS.

5. REFER TO STRUCTURAL AND SITE/CIVIL DRAWINGS FOR UNDERGROUND PIPE TRENCH BACKFILL MATERIAL AND COMPACTION DETAILS.

6. ALL UNDERGROUND JOINTS SHALL BE BELL AND SPIGOT COMPRESSION GASKET.

7. ELEVATIONS AND INVERTS SHOWN HERE ARE APPROXIMATE FOR PRILIMINARY COORDINATION ONLY.

8.CONTRACTOR SHALL SUBMIT SHOP-DRAWING FOR AEOR REVIEW AFTER COORDINATING WITH OTHER TRADES AND PRIOR TO COMMENCING ANY WORK.

9.ALL INSTALLATION ARE SUBJECT TO GETTING APPROVED BY AUTHRITY HAVING JURISDICTION (AHJ).

10.ALL WALL AND FLOOR CLEANOUTS, SERVING 4" AND SMALLER, SHALL BE THE SAME SIZE AS THE PIPING SYSTEM THEY SERVE. CLEANOUTS SERVING 5" AND 6" PIPE SYSTEM SHALL BE 4". CLEANOUTS SERVING 8" PIPING SYSTEM SHALL BE 6".

11.PROVIDE ACCESS PANELS IN HARD CEILINGS AND WALL FOR ACCESS TO ALL PLUMBING EQUIPMENT, ISOLATION VALVES, ETC. THE ACCESS PANELS AHLL BE 24" X 24" MINIMUM. PAINT THE PANELS WITH COLOR MATCHING WALL OR CEILING PAINT COLOR SURROUNDING.

SHEET NOTES:

1 TERMINATE SECONDARY ROOF DRAIN ABOVE GRADE USING WALL DOWNSPOUT NOZZLE. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR DOWNSPOUT INSTALLATION DETAIL. DOWNSPOUT NOZZLE SHALL HAVE INTEGRAL BIRD SCREEN.

2 REFER TO SITE/CIVIL DRAWINGS FOR CONTINUATION.

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250 Greenwich St, New York, NY 10007

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7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
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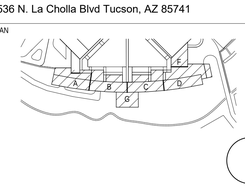
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	21 JULY 2023	ADDENDUM 04			
	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER
PE033176E
PENNSYLVANIA

2023-07-21
SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1

IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

MARQUEE - BELOWSLAB FLOOR PART PLAN B - SAN & VENT - LEVEL 0 - PLUMBING

SHEET No. MAQ-P-102.2

DRAWN BY	CHECKED BY	DATE	SCALE
NV/KT	HS/JKA		AS NOTED

1 MARQUEE - BELOWSLAB FLOOR PART PLAN C - SAN & VENT - LEVEL 0 - PLUMBING

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

GENERAL NOTES:

1. ALL UNDERGROUND STORM WATER PIPING SHALL HAVE MINIMUM OF ½" PER FOOT OF SLOPE.

2. ALL UNDERGROUND SANITARY PIPING SHALL HAVE MINIMUM OF ¼" PER FOOT OF SLOPE.

3. ALL PENETRATIONS THROUGH FOUNDATION WALLS SHALL BE PROVIDED WITH LINK-SEAL TYPE PIPE SEAL FOR HYDROSTATIC SEAL.

4. ALL BENDS, CROSS CONNECTIONS UNDERGROUND SHALL BE MADE USING LONG SWEEP ELBOWS AND WYE FITTINGS.

5. REFER TO STRUCTURAL AND SITE/CIVIL DRAWINGS FOR UNDERGROUND PIPE TRENCH BACKFILL MATERIAL AND COMPACTION DETAILS.

6. ALL UNDERGROUND JOINTS SHALL BE BELL AND SPIGOT WITH COMPRESSION GASKET.

7. ELEVATIONS AND INVERTS SHOWN HERE ARE APPROXIMATE FOR PRILIMINARY COORDINATION ONLY.

8.CONTRACTOR SHALL SUBMIT SHOP-DRAWING FOR AEOR REVIEW AFTER COORDINATING WITH OTHER TRADES AND PRIOR TO COMMENCING ANY WORK.

9.ALL INSTALLATION ARE SUBJECT TO GETTING APPROVED BY AUTHRITY HAVING JURISDICTION (AHJ).

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11.PROVIDE ACCESS PANELS IN HARD CEILINGS AND WALL FOR ACCESS TO ALL PLUMBING EQUIPMENT, ISOLATION VALVES, ETC. THE ACCESS PANELS AHLL BE 24" X 24" MINIMUM. PAINT THE PANELS WITH COLOR MATCHING WALL OR CEILING PAINT COLOR SURROUNDING.

SHEET NOTES:

1. TERMINATE SECONDARY ROOF DRAIN ABOVE GRADE USING WALL DOWNSPOUT NOZZLE. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR DOWNSPOUT INSTALLATION DETAIL. DOWNSPOUT NOZZLE SHALL HAVE INTEGRAL BIRD SCREEN.
2. REFER TO SITE/CIVIL DRAWINGS FOR CONTINUATION. (1)

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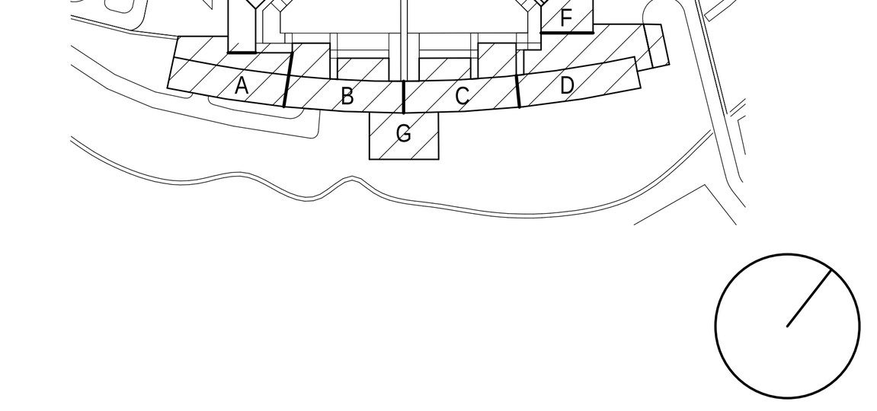

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	21 JULY 2023	ADDENDUM 34			
	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
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ENGINEER PE033176E

SIGNATURE 2023-07-21 DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

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MARQUEE - BELOWSLAB FLOOR PART PLAN C - SAN & VENT - LEVEL 0 - PLUMBING

SHEET No. MAQ-P-103.2

DRAWN BY	CHECKED BY	DATE	SCALE
NV/KT	HS/JKA		AS NOTED

1 MARQUEE - BELOWSLAB FLOOR PART PLAN D - SAN & VENT - LEVEL 0 - PLUMBING

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

GENERAL NOTES:

1. ALL UNDERGROUND STORM WATER PIPING SHALL HAVE MINIMUM OF ½" PER FOOT OF SLOPE.

2. ALL UNDERGROUND SANITARY PIPING SHALL HAVE MINIMUM OF ¼" PER FOOT OF SLOPE.

3. ALL PENETRATIONS THROUGH FOUNDATION WALLS SHALL BE PROVIDED WITH LINK-SEAL TYPE PIPE SEAL FOR HYDROSTATIC SEAL.

4. ALL BENDS, CROSS CONNECTIONS UNDERGROUND SHALL BE MADE USING LONG SWEEP ELBOWS AND WYE FITTINGS.

5. REFER TO STRUCTURAL AND SITE/CIVIL DRAWINGS FOR UNDERGROUND PIPE TRENCH BACKFILL MATERIAL AND COMPACTION DETAILS.

6. ALL UNDERGROUND JOINTS SHALL BE BELL AND SPIGOT WITH LEAD AND OKUM TYPE.

7. ELEVATIONS AND INVERTS SHOWN HERE ARE APPROXIMATE FOR PRILIMINARY COORDINATION ONLY.

8.CONTRACTOR SHALL SUBMIT SHOP-DRAWING FOR AEOR REVIEW AFTER COORDINATING WITH OTHER TRADES AND PRIOR TO COMMENCING ANY WORK.

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11.PROVIDE ACCESS PANELS IN HARD CEILINGS AND WALL FOR ACCESS TO ALL PLUMBING EQUIPMENT, ISOLATION VALVES, ETC. THE ACCESS PANELS AHLL BE 24" X 24" MINIMUM. PAINT THE PANELS WITH COLOR MATCHING WALL OR CEILING PAINT COLOR SURROUNDING.

SHEET NOTES:

1. TERMINATE SECONDARY ROOF DRAIN ABOVE GRADE USING WALL DOWNSPOUT NOZZLE. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR DOWNSPOUT INSTALLATION DETAIL. DOWNSPOUT NOZZLE SHALL HAVE INTEGRAL BIRD SCREEN.
2. REFER TO SITE/CIVIL DRAWINGS FOR CONTINUATION.

VERIFY SCALE

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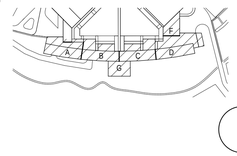
KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	21 JULY 2023	ADDENDUM 34			
	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
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JITENDRA K AGARWAL
ENGINEER
PE033176E
PENNSYLVANIA

SIGNATURE 2023-07-21 DATE

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250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

MARQUEE - BELOWSLAB FLOOR PART PLAN D - SAN & VENT - LEVEL 0 - PLUMBING

SHEET No. MAQ-P-104.2

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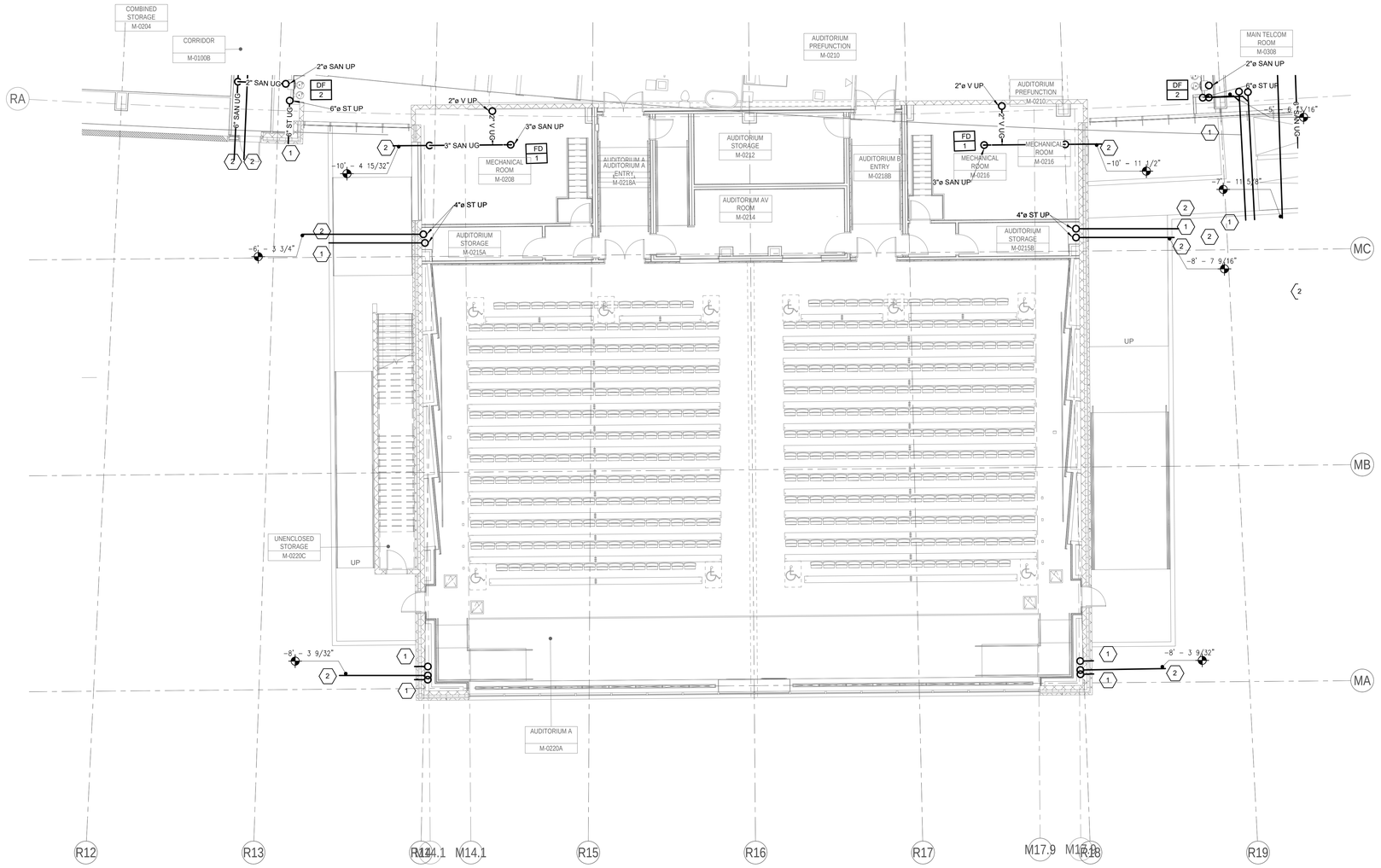
NV/KT	HS/JKA		AS NOTED



1 MARQUEE - BELOW SLAB FLOOR PART PLAN G - SAN & VENT - LEVEL 0 - PLUMBING

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

GENERAL NOTES:

1. ALL UNDERGROUND STORM WATER PIPING SHALL HAVE MINIMUM OF ½" PER FOOT OF SLOPE.

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3. ALL PENETRATIONS THROUGH FOUNDATION WALLS SHALL BE PROVIDED WITH LINK-SEAL TYPE PIPE SEAL FOR HYDROSTATIC SEAL.

4. ALL BENDS, CROSS CONNECTIONS UNDERGROUND SHALL BE MADE USING LONG SWEEP ELBOWS AND WYE FITTINGS.

5. REFER TO STRUCTURAL AND SITE/CIVIL DRAWINGS FOR UNDERGROUND PIPE TRENCH BACKFILL MATERIAL AND COMPACTION DETAILS.

6. ALL UNDERGROUND JOINTS SHALL BE BELL AND SPIGOT WITH LEAD AND OKUM TYPE.

7. ELEVATIONS AND INVERTS SHOWN HERE ARE APPROXIMATE FOR PRILIMINARY COORDINATION ONLY.

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LOCAL ARCHITECT

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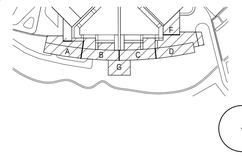

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1	21 JULY 2023	ADDENDUM 34			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
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VERIFY SCALE

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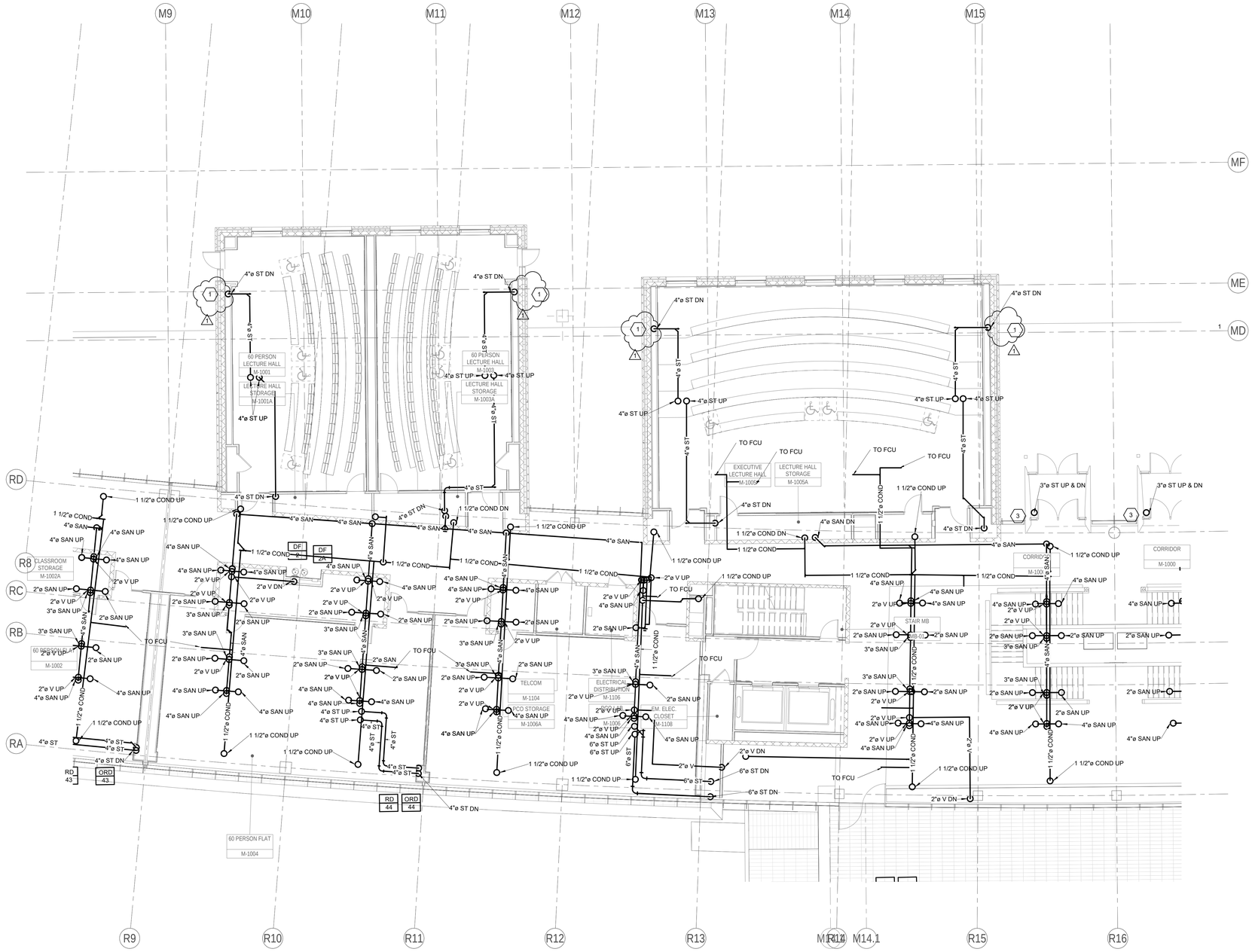
MARQUEE - BELOW SLAB FLOOR PART PLAN G - SAN & VENT - LEVEL 0 - PLUMBING

SHEET No.
MAQ-P-104.4

DRAWN BY	CHECKED BY	DATE	SCALE
NV/KT	HS/JKA		AS NOTED



1 MARQUEE - OVERHEAD FLOOR PART PLAN B - SAN & VENT - LEVEL 1 - PLUMBING

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

GENERAL NOTES:

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SHEET NOTES:

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2. PROVIDE HOUSE TRAP OUTSIDE BUILDING. COORDINATE WITH SITE/CIVIL DRAWINGS FOR LOCATION.
3. PROVIDE BW/LF OF HEAT TRACING ON DOWNSPOUT. REFER TO GEN-P-503 FOR HEAT TRACING DETAILS.

VERIFY SCALE

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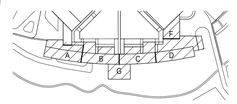
KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	21 JULY 2023	ADDENDUM 34			
	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL JITENDRA K AGARWAL ENGINEER PE033176E PENNSYLVANIA

JKAgarwal 2023-07-21

SIGNATURE DATE

ARCHITECT

SOM

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

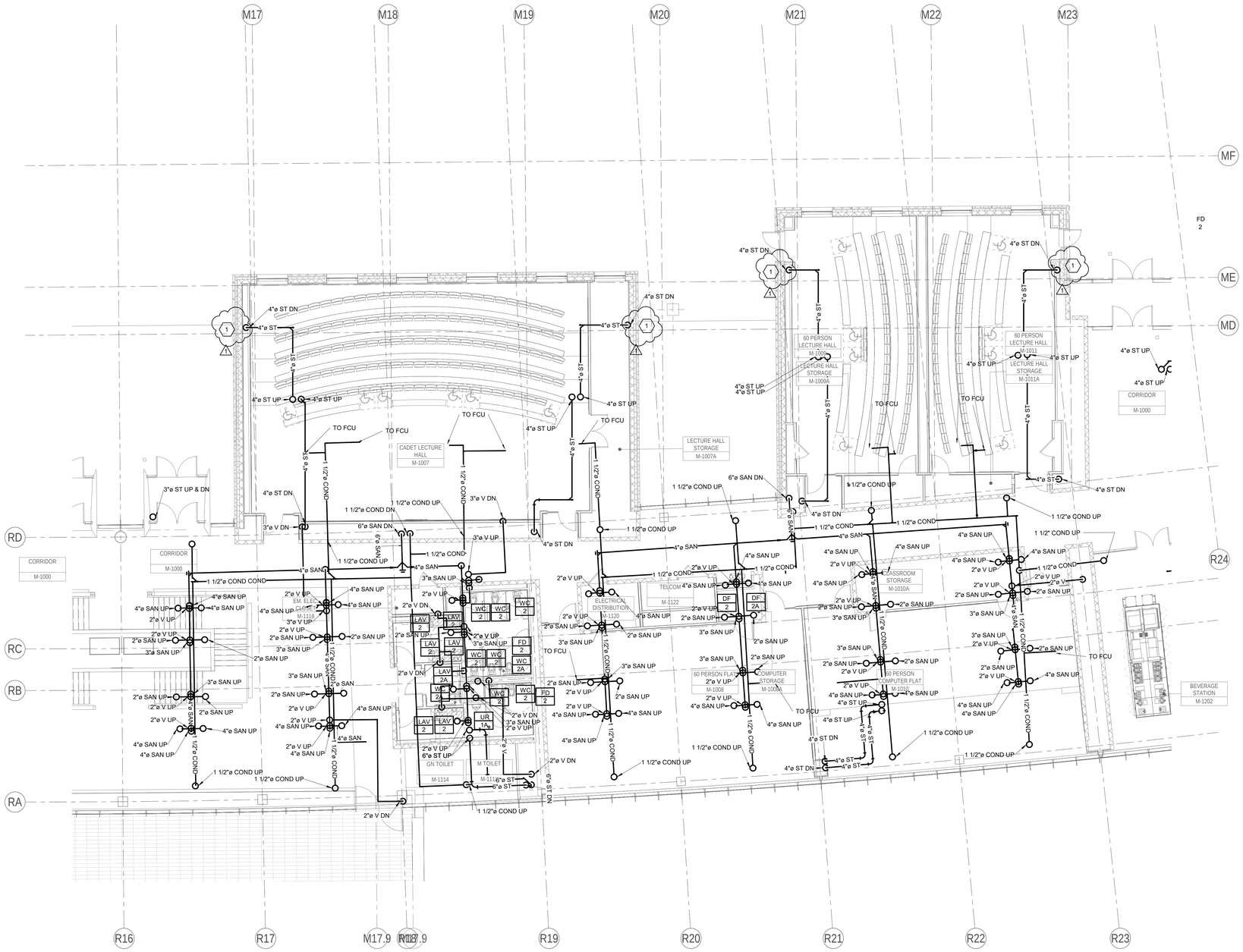
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

MARQUEE - OVERHEAD FLOOR PART PLAN B - SAN & VENT - LEVEL 1 - PLUMBING

SHEET No. MAQ-P-112.1

DRAWN BY	CHECKED BY	DATE	SCALE
NV/KT	HS/JKA		AS NOTED



1 MARQUEE - OVERHEAD FLOOR PART PLAN C - SAN & VENT - LEVEL 1 - PLUMBING

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0" 32'-0"

GENERAL NOTES:

1. ALL UNDERGROUND STORM WATER PIPING SHALL HAVE MINIMUM OF ½" PER FOOT OF SLOPE.

2. ALL UNDERGROUND SANITARY PIPING SHALL HAVE MINIMUM OF ¼" PER FOOT OF SLOPE.

3. ALL PENETRATIONS THROUGH FOUNDATION WALLS SHALL BE PROVIDED WITH LINK-SEAL TYPE PIPE SEAL FOR HYDROSTATIC SEAL.

4. ALL BENDS, CROSS CONNECTIONS UNDERGROUND SHALL BE MADE USING LONG SWEEP ELBOWS AND WYE FITTINGS.

5. REFER TO STRUCTURAL AND SITE/CIVIL DRAWINGS FOR UNDERGROUND PIPE TRENCH BACKFILL MATERIAL AND COMPACTION DETAILS.

6. ALL UNDERGROUND JOINTS SHALL BE BELL AND SPIGOT WITH COMPRESSION GASKET.

7. ELEVATIONS AND INVERTS SHOWN HERE ARE APPROXIMATE FOR PRILIMINARY COORDINATION ONLY.

8.CONTRACTOR SHALL SUBMIT SHOP-DRAWING FOR AEOR REVIEW AFTER COORDINATING WITH OTHER TRADES AND PRIOR TO COMMENCING ANY WORK.

9.ALL INSTALLATION ARE SUBJECT TO GETTING APPROVED BY AUTHRITY HAVING JURISDICTION (AHJ).

10.ALL WALL AND FLOOR CLEANOUTS, SERVING 4" AND SMALLER, SHALL BE THE SAME SIZE AS THE PIPING SYSTEM THEY SERVE. CLEANOUTS SERVING 5" AND 6" PIPE SYSTEM SHALL BE 4". CLEANOUTS SERVING 8" PIPING SYSTEM SHALL BE 6".

11.PROVIDE ACCESS PANELS IN HARD CEILINGS AND WALL FOR ACCESS TO ALL PLUMBING EQUIPMENT, ISOLATION VALVES, ETC. THE ACCESS PANELS AHLL BE 24" X 24" MINIMUM. PAINT THE PANELS WITH COLOR MATCHING WALL OR CEILING PAINT COLOR SURROUNDING.

SHEET NOTES:

1. TERMINATE SECONDARY ROOF DRAIN ABOVE GRADE USING WALL DOWNSPOUT NOZZLE. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR DOWNSPOUT INSTALLATION DETAIL. DOWNSPOUT NOZZLE SHALL HAVE INTEGRAL BIRD SCREEN.

2. PROVIDE HOUSE TRAP OUTSIDE BUILDING. COORDINATE WITH SITE/CIVIL DRAWINGS FOR LOCATION.

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1

IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
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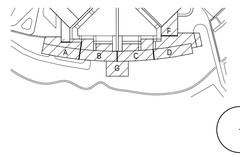

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D.G.S. PROJECT No.
C-0211-0005 PHASE 5

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Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

MARQUEE -OVERHEAD FLOOR PART PLAN C - SAN & VENT - LEVEL 1 - PLUMBING

SHEET No. MAQ-P-113.1

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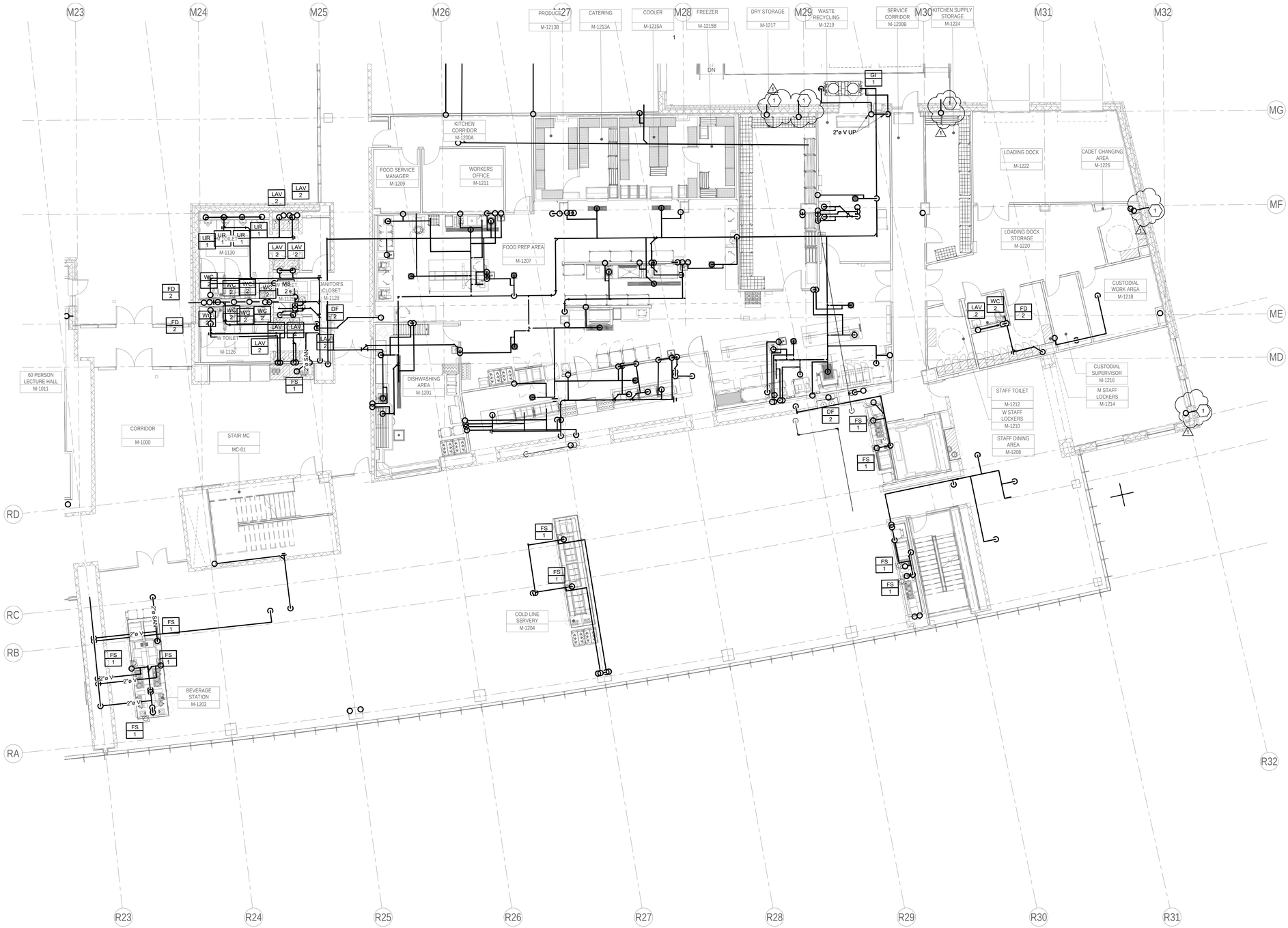

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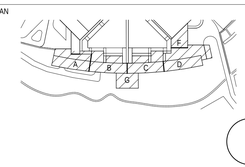

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2023-07-21
SIGNATURE DATE

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DEPARTMENT OF GENERAL SERVICES
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D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

MARQUEE - BELOWSLAB FLOOR PART PLAN D - SAN & VENT - LEVEL 1 - PLUMBING

SHEET No.
MAQ-P-114.2

DRAWN BY	CHECKED BY	DATE	SCALE
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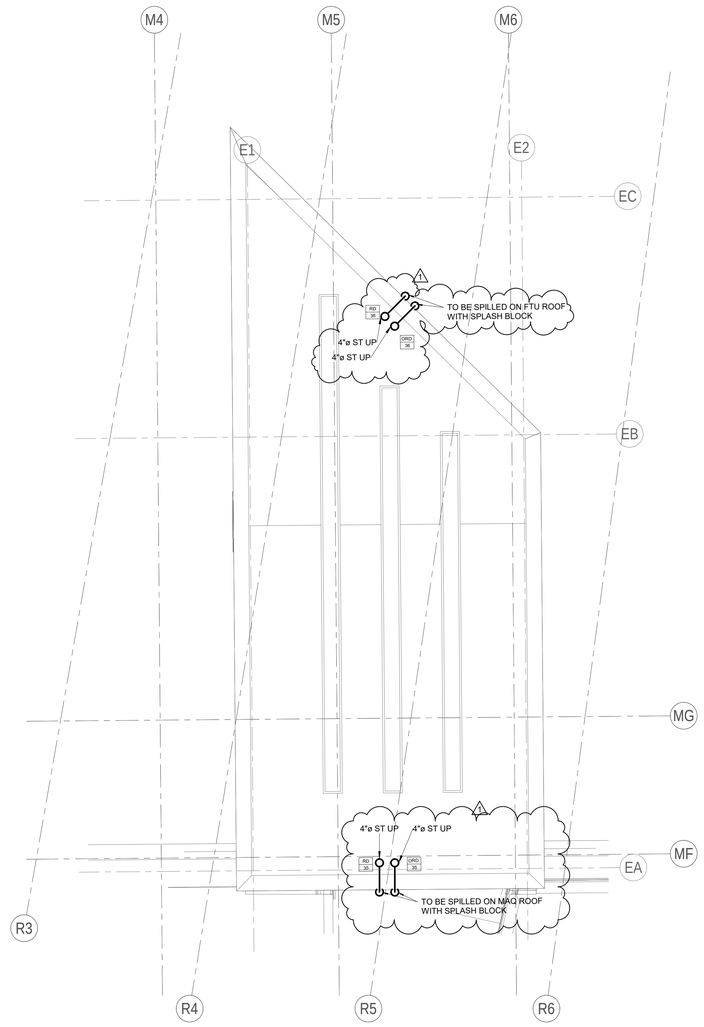

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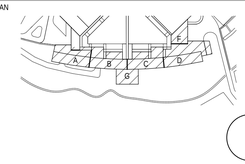

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D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

MARQUEE - FLOOR PART PLAN E - SAN & VENT - LEVEL 3 - PLUMBING

SHEET No.
MAQ-P-135

DRAWN BY	CHECKED BY	DATE	SCALE
NV/KT	HS/JKA		AS NOTED

SCHEDULE KEY:
OFOI=OPERATOR FURNISHED OPERATOR INSTALLED
CFCI=CONTRACTOR FURNISHED/CONTRACTOR INSTALLED

FOOD SERVICE EQUIPMENT SCHEDULE

ITEM NO.	QTY.	DESCRIPTION	COMMENTS	CFCI	OFOI
1	1	AIR CURTAIN - HEATED		X	
2	2	HOSE REEL		X	
3	2	HOSE REEL CABINET		X	
4	1	MOP SINK		X	
5	5	AIR TREATMENT SYSTEM		X	
6	4	FLY CONTROL UNIT		X	
7	1	HOSE BIBB		X	
9	9	FLOOR TROUGH - AREA		X	
10	16	MOBILE DRY/NON-FOOD STORAGE SHELVING UNIT		X	
13	10	DUNNAGE RACK			X
14	1	CENTRAL WATER FILTER ASSEMBLY		X	
15	1	AIR CURTAIN-HEATED		X	
16	9	CEILING HUNG CORD REEL	SEE ELECTRICAL DRAWINGS	X	
17	1	PRODUCE WASH SINK		X	
18	1	FOOD PROCESSOR - COUNTER TOP			X
19	4	WALL GRID STORAGE SYSTEM		X	
20	3	PRE-RINSE FAUCET WITH ADD-ON FAUCET		X	
22	1	ROLL DOWN SHUTTER		X	
23	3	DISPOSER		X	
23.1	3	DISPOSER CONTROL PANEL		X	
25	1	FLOOR TROUGH - PREP		X	
26	6	HAND SINK		X	
26.1	6	SOAP AND TOWEL DISPENSER	SEE ARCHITECTURAL DRAWINGS	X	
27	3	MOBILE INGREDIENT BIN			X
28	1	WORK TABLE W/ SINK		X	
29	1	MOBILE MIXER ACCESORY SHELF			X
30	1	60QT MIXER		X	
33	2	MOBILE UTILITY CART			X
34	1	WORK TABLE W/ SINK		X	
35	1	WORK TABLE			X
36	1	CEILING HUNG POT RACK & OVERSHELF	INTEGRAL W/ #34 AND #35	X	
37	1	CAN OPENER			X
38	8	TRASH CAN			X
39	2	WORK TABLE			X
40	3	ICED TEA BREWER	BY VENDOR		X
41	2	SLICER			X
42	4	COFFEE GRINDER	BY VENDOR		X
43	10	ICED TEA DISPENSER	BY VENDOR		X
44	1	WORK TABLE		X	
45	4	COFFEE BREWER			X
46	18	COFFEE DISPENSER			X
46.1	5	DUAL COFFEE DISPENSER HEATED STAND	BY VENDOR		X
47	1	REACH-IN BLAST CHILLER		X	
48	1	ICE MAKER		X	
49	1	ICE BIN		X	
50	1	DRAIN TROUGH & PAN (ICE MAKER)		X	
52	2	ROLL-UP WALK-IN DOOR	INTEGRAL TO #53	X	
53	1	WALK-IN COOLER/FREEZER		X	
54	2	FLOOR TROUGH - WALK-IN		X	
55	2	AIR CURTAIN-UNHEATED	INTEGRAL TO #53	X	
57	8	MOBILE WALK-IN PAN RACK			X
58	28	MOBILE WALK-IN SHELVING UNIT			X
59	1	EVAPORATOR 35'F (PRODUCE COOLER)		X	
60	1	REMOTE CONDENSER 35'F (PRODUCE COOLER)		X	
62	1	WALL-HUNG EQUIPMENT PLATFORM	SEE ARCHITECTURAL DRAWINGS	X	
63	1	EVAPORATOR 35'F (CATERING COOLER)		X	
64	1	REMOTE CONDENSER, 35'F (CATERING COOLER)		X	
65	1	EVAPORATOR 35'F (COOLER)		X	
66	1	REMOTE CONDENSER 35'F (COOLER)		X	
67	1	EVAPORATOR -10'F (FREEZER)		X	
68	1	REMOTE CONDENSER -10'F (FREEZER)		X	
69	2	CAN RACK			X
70	5	PORTABLE DUNNAGE RACK			X
72	1	BAG IN BOX RACK	BY VENDOR		X
74	1	HAND SINK W/ EYE WASH ATTACHMENT		X	
74.1	1	SOAP AND TOWEL DISPENSER	SEE ARCHITECTURAL DRAWINGS	X	
75	1	SOILED DISHTABLE W/ PRE RINSE SINK & DISH CONVEYOR		X	
76	1	GLASS RACK OVERSHELF		X	
77	1	CONVEYOR DISHWASHER & POWER SCRAPPER		X	
77.1	1	BLOWER DRYER		X	
77.2	1	BOOSTER HEATER		X	
78	1	CLEAN DISHTABLE		X	
79	1	MOBILE DISHTABLE SORTING TABLE			X
80	3	MOBILE CUP/GLASS RACK DOLLY			X
81A	1	DISHWASHER PANT LEG VENT - LOAD		X	
81B	1	DISHWASHER PANT LEG VENT - EXIT		X	
83	6	MOBILE DISH CARRIER			X
84	4	MOBILE TRAY & FLATWARE CART			X
85	1	HAND SINK/ABAAS		X	
85.1	1	SOAP AND TOWEL DISPENSER	SEE ARCHITECTURAL DRAWINGS	X	
86	9	MOBILE POT/PAN SHELVING RACK			X
87	1	THREE COMPARTMENT POWERWASH SINK		X	
88	2	FLOOR TROUGH -DISHWASH/POTWASH		X	
89	2	MOBILE WORK TABLE			X
90	12	CORNER GUARD		X	
91	1	FOOD CUTTER			X
93	3	MOBILE HEATED CABINET			X
94	2	MOBILE COOK/HOLD CABINET			X
95	2	WORK TABLE W/ SINK		X	
96	2	WORK TABLE W/ POT RACK		X	
97A	1	EXHAUST HOOD - LEFT		X	
97B	1	EXHAUST HOOD - CENTER		X	
97C	1	EXHAUST HOOD - RIGHT		X	
98	1	FIRE SUPPRESSION SYTEM		X	
98.1	1	EXHAUST HOOD CONTROL PANEL		X	
99	1	EXHAUST HOOD VFD FAN CONTROLLER		X	
100	1	EXHAUST HOOD VFD FAN THERMOSTAT		X	
101	4	REMOTE EXHAUST HOOD FAN OVERRIDE SWITCH		X	
102.1	1	MOBILE 6 PAN CONVECTION STEAMER (TOP)		X	
102.2	1	MOBILE 6 PAN CONVECTION STEAMER (BOTTOM) W/ STAND		X	

FOOD SERVICE EQUIPMENT SCHEDULE

ITEM NO.	QTY.	DESCRIPTION	COMMENTS	CFCI	OFOI
103	1	S/S WALL PANEL W/ GASKET		X	
104	4	MOBILE FRYER W/ FILTER		X	
106	1	PORTABLE OIL CADDY			X
107	1	40 GAL - TILT SKILLET		X	
108	1	FLOOR TROUGH - BRAISING PAN		X	
109.1	2	COMBI OVEN, ELECTRIC - UPPER		X	
109.2	2	COMBI OVEN, ELECTRIC - LOWER		X	
109.2B	2	COMBI OVEN STAND		X	
110	4	COMBI OVEN WATER FILTER		X	
112	1	CONVEYOR TOASTER			X
113	1	GRIDDLE		X	
114	2	MOBILE REFRIGERATED EQUIPMENT STAND			X
115	1	CHARBROILER		X	
116	7	TRASH CONTAINER - UNDERCOUNTER	BY OWNER		X
117	2	HAND SINK W/ PULL OUT DRAWER AND SOAP & TOWEL DISPENSER		X	
118	2	SERVICE COUNTER W/ LOAD CENTER		X	
119	2	FOOD GUARD WITH LIGHTS AND HEAT LAMP		X	
120	2	FOOD GUARD W/ LIGHTS		X	
121	1	MOBILE REACH-IN PASS THROUGH FREEZER		X	
122	1	PASS THROUGH TWO-DOOR ROLL-IN REFRIGERATOR		X	
123	2	FOOD GUARD WITH LIGHTS		X	
124	2	DROP-IN FOUR WELL HOT/COLD FOOD UNIT		X	
125	2	DROP-IN THREE-WELL COLD PAN		X	
126	2	DROP-IN FROST TOP		X	
127	1	DROP-IN REFRIGERATED MERCHANDISER		X	
127.1	1	MERCHANDISER COUNTER		X	
128	2	BEVERAGE COUNTER W/ LOAD CENTER		X	
128.1	1	ISLAND BEVERAGE COUNTER W/ LOAD CENTER		X	
129	4	DROP-IN DRIP TRAY		X	
130	1	CUP DISPENSER			X
130.1	2	CUP DISPENSER			X
130.2	2	CUP DISPENSER			X
131	4	JUICE DISPENSER		X	
133	4	ICE & BEVERAGE DISPENSER		X	
134	4	ICE MAKER		X	
137	1	SALAD/TOPPINGS/ISLAND W/ LOAD CENTER		X	
138	1	DROP-IN TWO-WELL COLD UNIT		X	
139	1	DOUBLE SIDED FOOD GUARD WITH LIGHTS		X	
140	3	DROP-IN FOUR WELL COLD UNIT		X	
141	6	MOBILE CUP DOLLY			X
143	1	DROP-IN SOUP WELL		X	
144	2	FLATWARE HOLDER			X
145	1	MOBILE SOAK SINK			X
146	7	COUNTERTOP REFRIGERATOR			X
147	5	DROP-IN UTILITY SINK		X	
148	1	EXHAUST HOOD-RANGE		X	
149	1	MOBILE 4-BURNER RANGE		X	
150	1	S/S WALL PANEL W/ GASKET		X	
152	1	DROP-IN DRIP TRAY		X	
153	1	COFFEE COUNTER		X	

GENERAL HEALTH DEPARTMENT NOTES

ARCHITECT
1. ALL DOORS TO THE OUTSIDE WALL WILL BE SELF-CLOSING AND RODENT-PROOF.

2. ALL RESTROOM DOORS WILL BE SELF-CLOSING.

3. ALL PAINTING WILL BE LEAD-FREE, NONMETALLIC, EASILY CLEANABLE PAINT OR A HIGH QUALITY VARNISH.

4. THE OUTSIDE STORAGE OF REFUSE AND UNCONDITIONED GREASE WILL BE IN RODENT-PROOF CONTAINERS LOCATED ON A PAVED SURFACE. THE PAD SHALL BE FINISHED WITH A GREASE-RESISTANT SEALANT.

ENGINEER
5. FOR THE OUTSIDE STORAGE OF REFUSE AND UNCONDITIONED GREASE PROVIDE ELECTRICAL CONNECTION FOR ELECTRICAL PEST CONTROL DEVICE AND AREA DRAIN

6. A MINIMUM OF 50 FOOT CANDLES OF SHIELDED LIGHT WILL BE PROVIDED AT ALL WORK SURFACES IN STORAGE AREAS, FOOD PREPARATION AREAS, UTENSIL-WASHING AREAS, TOILET ROOMS, LOCKER ROOMS, AND IN GARBAGE AND RUBBISH AREAS.

7. ALL RESTROOMS WILL BE EQUIPPED WITH MECHANICAL EXHAUST VENTILATION SIZED AT A MINIMUM RATE OF TWO CUBIC FEET PER MINUTE PER SQUARE FOOT OF FLOOR AREA AND EXHAUSTING DIRECTLY TO THE OUTSIDE.

8. ALL EXHAUST SYSTEMS ABOVE ANY COOKING EQUIPMENT WILL BE UL LISTED AND CONSTRUCTED ACCORDING TO NFPA STANDARDS.

9. ALL SINK INSTALLATIONS WILL BE EQUIPPED WITH HOT AND COLD RUNNING WATER THROUGH A MIXING VALVE OR COMBINATION FAUCET.

10. WATER SUPPLY PIPING TO THE DISHWASHER WILL BE EQUIPPED WITH AN APPROVED PRESSURE GAUGE INSTALLED IMMEDIATELY UPSTREAM FROM THE FINAL RINSE CONTROL VALVE AND DOWNSTREAM FROM A LINE STRAINER. PRESSURE GAUGE MUST READ BETWEEN 15 P.S.I. AND 25 P.S.I.

GENERAL CONTRACTOR
11. ALL PIPING, CONDUIT BOX CABLE AND SIMILAR CONSTRUCTION WILL EITHER BE LOCATED INSIDE A WALL OR INSTALLED WITH A MINIMUM ¼ INCH SPACE FROM THE WALL OR SEALED TO THE WALL.

12. ALL FLOOR-MOUNTED EQUIPMENT WILL BE PLACED ON NATIONAL SANITATION FOUNDATION (NSF) APPROVED SIX INCH LEGS, OR THE EQUIVALENT, AND PROPERLY SPACED FROM ADJACENT WALLS; OR PLACED IN NSF APPROVED CASTERS, OR THE EQUIVALENT; OR PROPERLY SEALED TO ALL SURFACES.

13. ALL COUNTER-MOUNTED FOODSERVICE EQUIPMENT WEIGHING IN EXCESS OF SIXTY POUNDS WILL BE MOUNTED ON NSF APPROVED FOUR INCH LEGS.

14. ALL EXPOSED RAW WOOD WILL BE SEALED.

15. ALL ANNULAR OPENINGS IN CONSTRUCTION WILL BE SEALED TO WITHIN 1/32 OF AN INCH.

16. ALL SEALANTS MUST BE LISTED AS APPROVED BY THE NATIONAL SANITATION FOUNDATION (NSF) UNDER STANDARD 51. SEALANTS SHALL BE USED ONLY IN STRUCTURALLY SOUND JOINTS AND SEAMS. SEALANTS MAY BE USED TO FILL SPACES AND OPENINGS SUCH AS, BUT NOT LIMITED TO BLIND RIVET HEADS AND SLOT AND PHILLIPS HEAD SCREWS. SEALANTS MAY NOT BE UTILIZED IN FOOD AND SPLASH CONTACT SURFACES, TO FILL OPEN SPACES OR VOIDS WHICH RESULT DUE TO IMPROPER DESIGN OR FABRICATION. ANY OPENING IN EXCESS OF 1/8 INCH SHALL BE CONSIDERED EXCESSIVE AND MUST BE CLOSED UNDER PROPER FIELD JOINTS.

17. OPENINGS AROUND SERVICE AND UTILITY LINES SHOULD BE CLOSED INSOFAR AS PRACTICAL BY COLLARS OR GROMMETS OR FLEXIBLE FORM GASKETS.

TACTICAL TRAINING DESIGN
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POOL DESIGN
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7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
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1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

NOT FOR CONSTRUCTION

SIGNATURE DATE

ARCHITECT
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Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

PA State Police Academy -
New Construction of Three Core Buildings
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1

IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

FOOD SERVICE EQUIPMENT SCHEDULE

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SHEET No.
MAQ-QF-113

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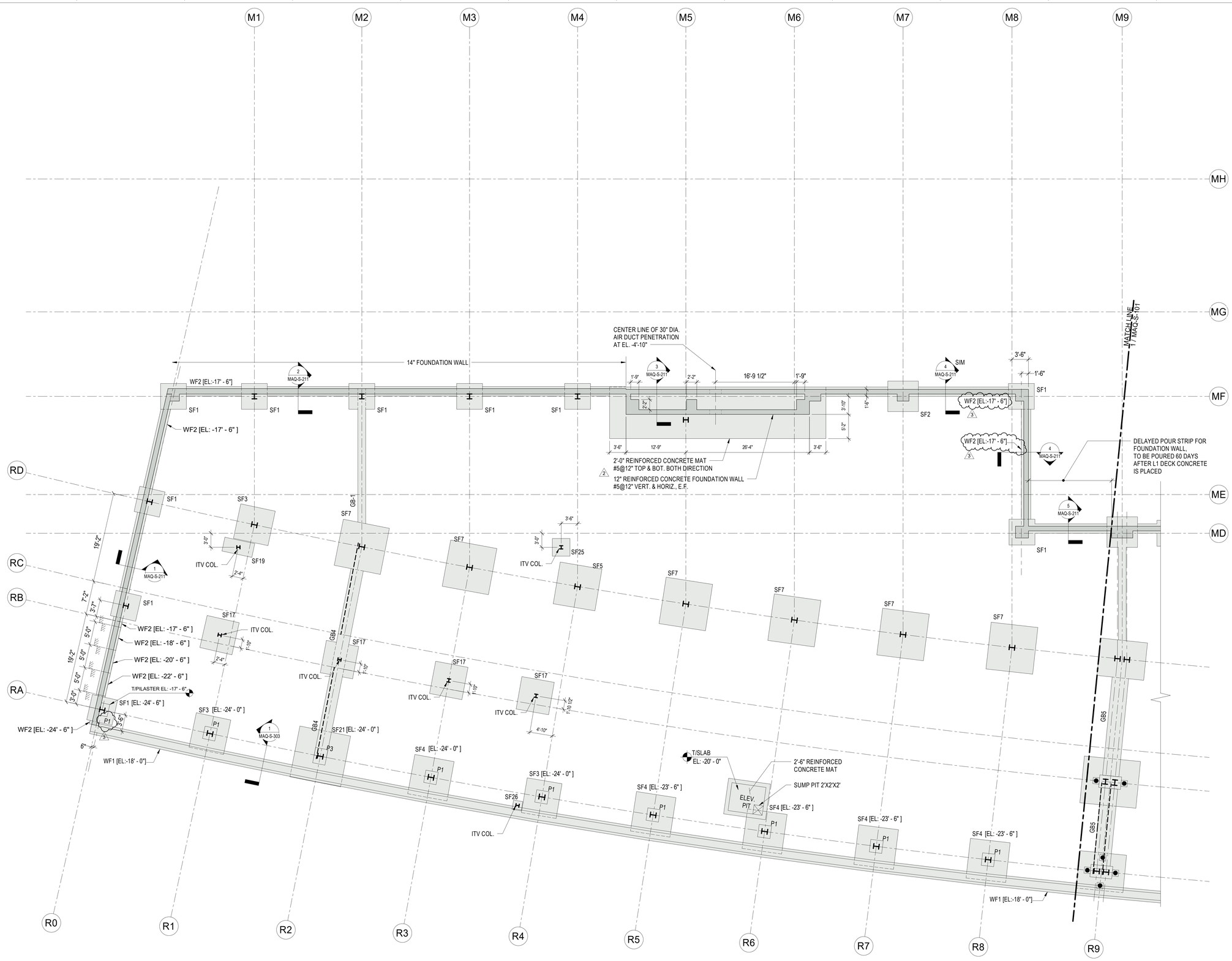

1 LEVEL 0 FRAMING PLAN A 1

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LOCAL ARCHITECT

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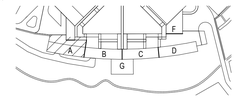

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RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
PROFESSIONAL
BONGHWAN KIM
ENGINEER No. PE087248
PENNSYLVANIA

SIGNATURE DATE

ARCHITECT

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

PA State Police Academy - New Construction of Three Core Buildings and BESO
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

FOUNDATION - PART PLAN A

SHEET No. MAQ-S-100

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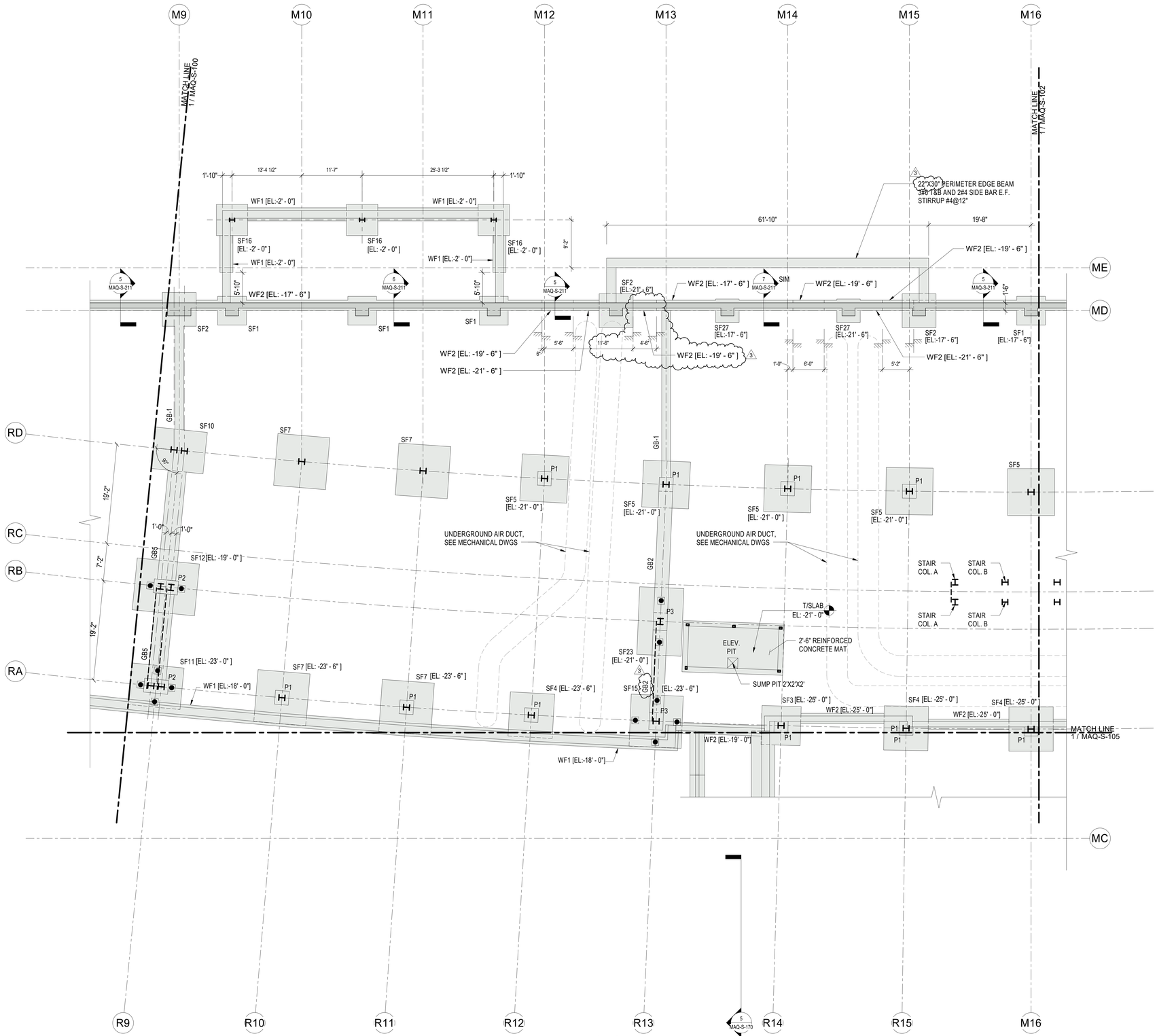

1 LEVEL 0 FRAMING PLAN B 1

SCALE: 1/8" = 1'-0"

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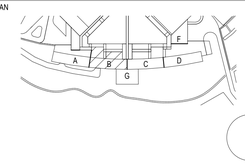

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RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
BONGHWAN KIM
ENGINEER
No. PE087243
PENNSYLVANIA

SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

PA State Police Academy - New Construction of Three Core Buildings and BESO
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

FOUNDATION - PART PLAN B

SHEET No. MAQ-S-101

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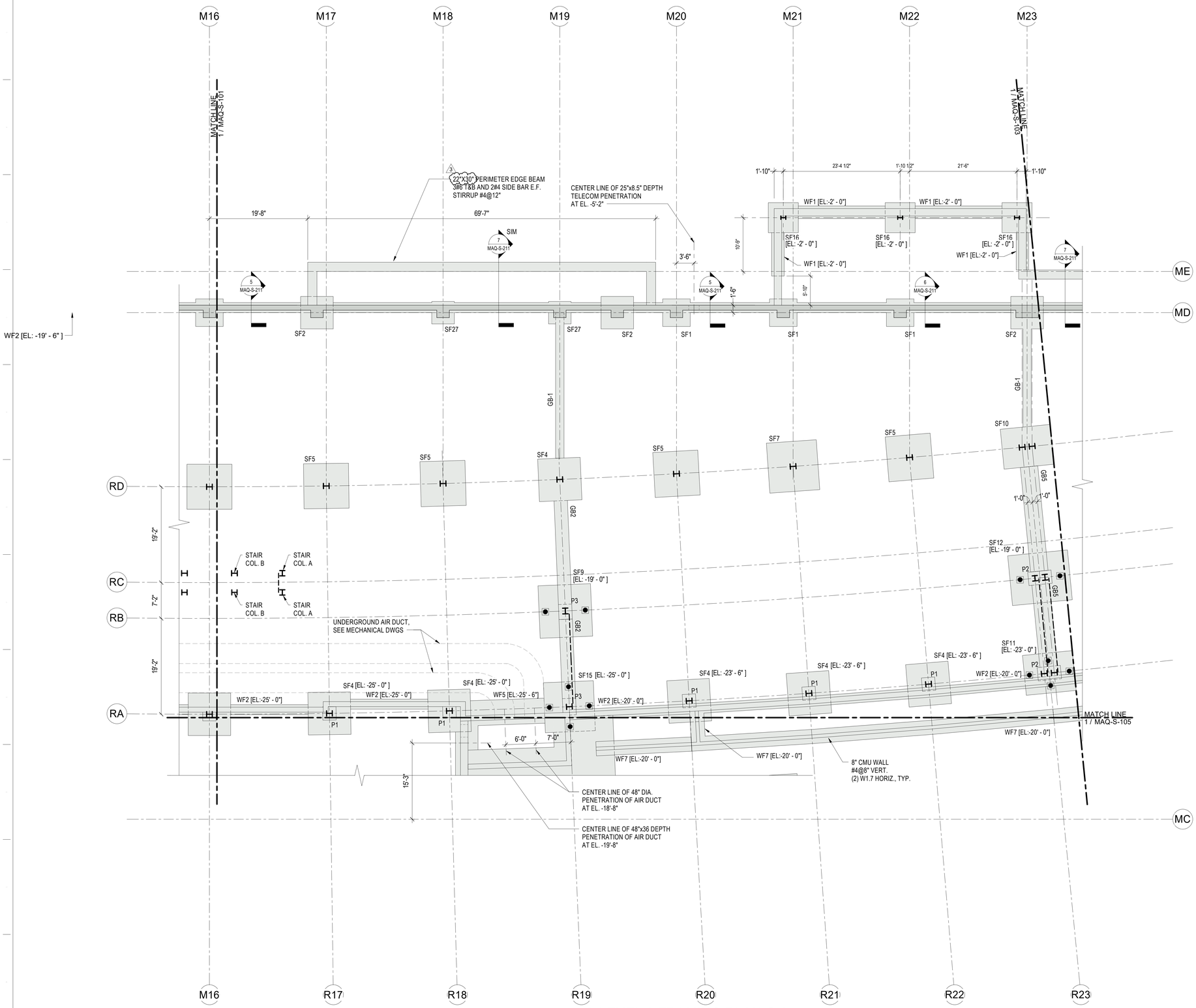

1 LEVEL 0 FRAMING PLAN C 1

SCALE: 1/8" = 1'-0"

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COMMONWEALTH OF PENNSYLVANIA — BONGHWAN KIM — ENGINEER — No. PE087243 — PROFESSIONAL

SIGNATURE DATE

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250 Greenwich St, New York, 10007

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HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

PA State Police Academy - New Construction of Three Core Buildings and BESO
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HERSHEY, DAUPHIN COUNTY, PA

FOUNDATION - PART PLAN C

SHEET No. MAQ-S-102

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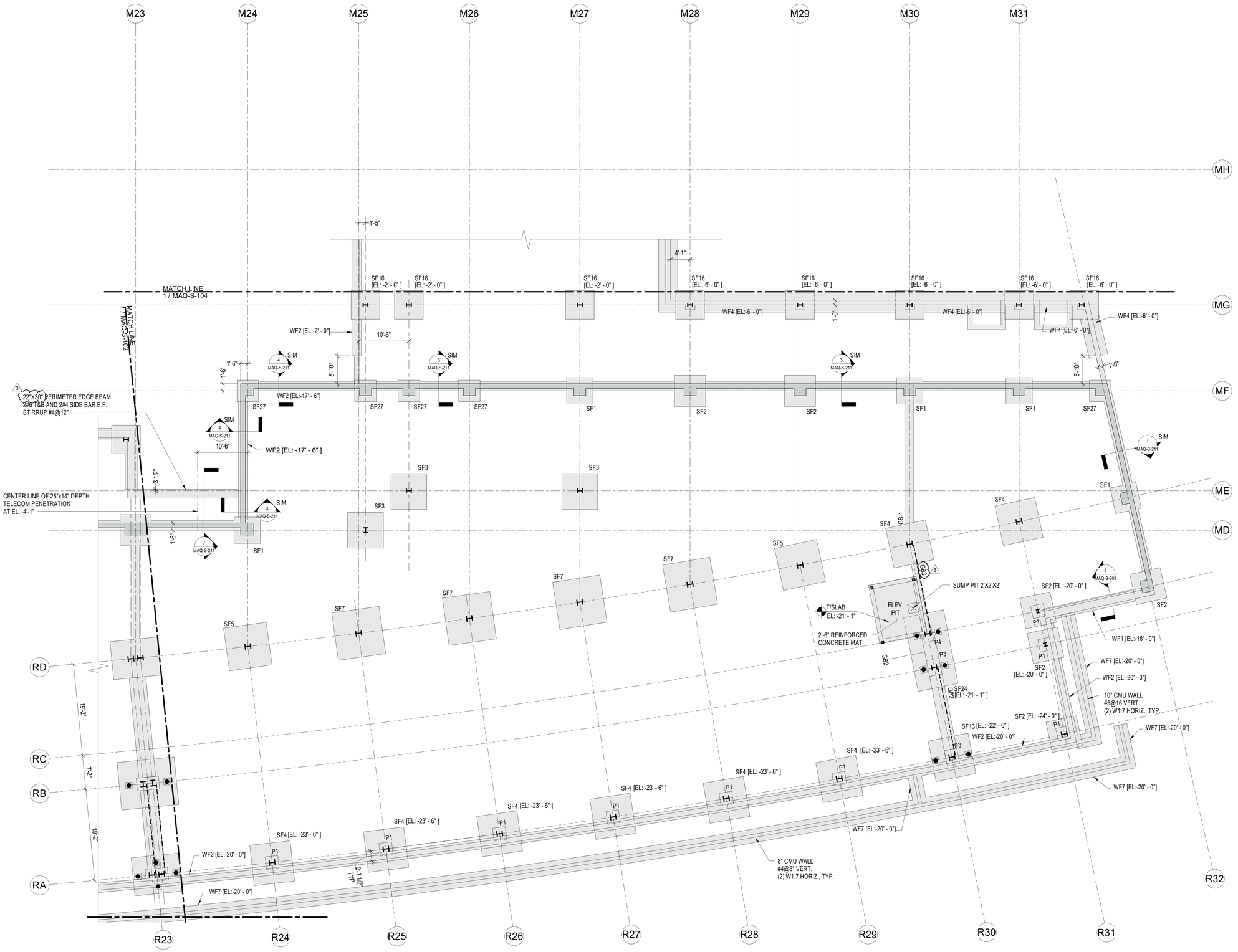

1 LEVEL 0 FRAMING PLAN D 1

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0"

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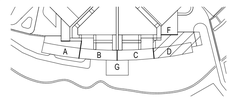
LANDSCAPE
Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING
MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
3	21 JUL 2023	ADDENDUM 34			
2	19 MAY 2023	ISSUED FOR BID			
1	18 FEB 2022	ISSUED TO L&I			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
BONGHWAN KIM
ENGINEER
No. PE087248
PENNSYLVANIA

SIGNATURE DATE

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250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

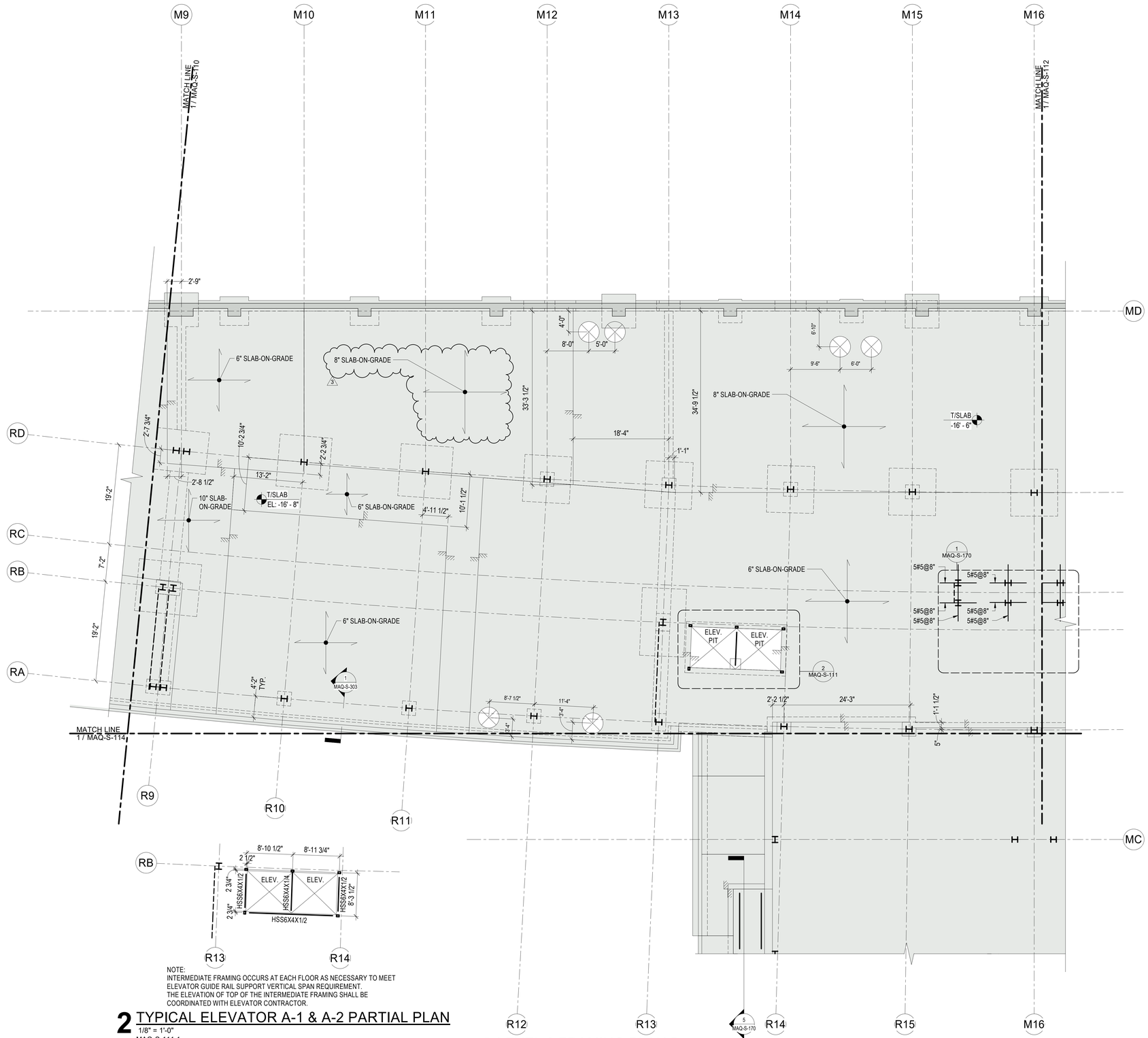
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

PA State Police Academy - New Construction of Three Core Buildings and BESO
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

FOUNDATION - PART PLAN D

SHEET No. MAQ-S-103

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED



NOTE:
INTERMEDIATE FRAMING OCCURS AT EACH FLOOR AS NECESSARY TO MEET ELEVATOR GUIDE RAIL SUPPORT VERTICAL SPAN REQUIREMENT. THE ELEVATION OF TOP OF THE INTERMEDIATE FRAMING SHALL BE COORDINATED WITH ELEVATOR CONTRACTOR.

2 TYPICAL ELEVATOR A-1 & A-2 PARTIAL PLAN

1/8" = 1'-0"
MAQ-S-111 1

1 LEVEL 0 FRAMING PLAN B

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0"

GENERAL SHEET NOTES:

1. ALL BUILDING ELEVATIONS ARE REFERENCED TO BUILDING REFERENCE DATUM, EL. +0' = NAVD 88 DATUM, SEE GEN-G-100
2. TOP OF SLAB ELEVATION IS EL. -16", U.N.O.
3. SEE ARCHITECTURAL AND MEP DRAWINGS FOR ADDITIONAL OPENING NOT SHOWN ON PLANS.
4. SEE ARCHITECTURAL AND MEP DRAWINGS FOR CURBS, PADS, AND FILLS SIZE AND LOCATIONS.
5. SEE GEN-S-002 FOR STRUCTURAL SYMBOLS AND ABBREVIATIONS
6. SEE GEN-S-003 FOR FOUNDATION & EXCAVATION NOTES
8. SEE GEN-S-004 FOR CONCRETE NTOES
6. SEE MAQ-S-321 TO 322 FOR SLAB-ON-GRADE DETAILS

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
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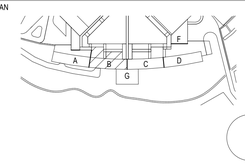

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REGISTERED PROFESSIONAL
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ENGINEER No. PE087243
PENNSYLVANIA

SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

PA State Police Academy - New Construction of Three Core Buildings and BESO
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

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FRAMING PART PLAN B - LEVEL 0

SHEET No. MAQ-S-111

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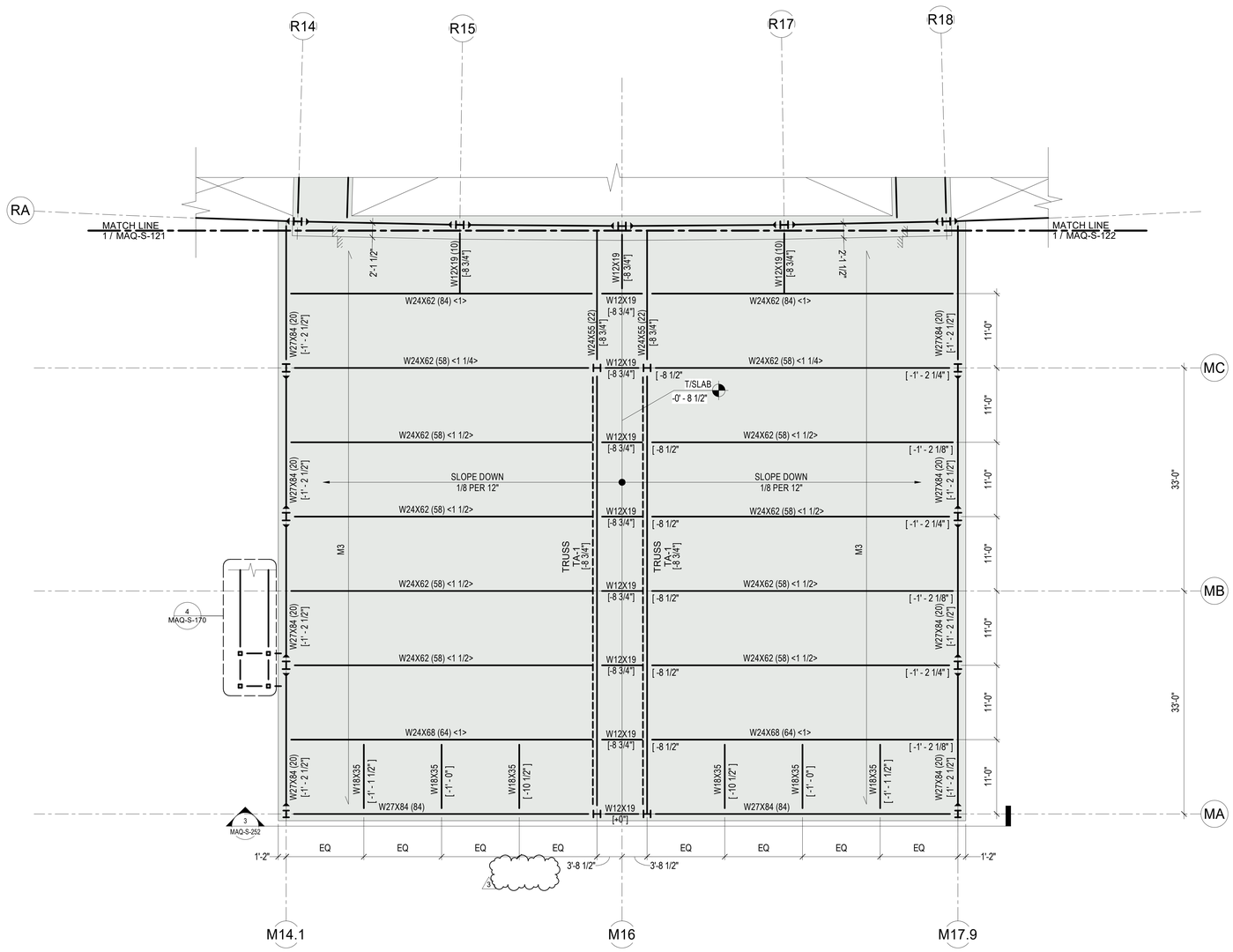

1 LEVEL 1 FRAMING PLAN G

SCALE: 1/8" = 1'-0" 0 4'-0" 8'-0" 16'-0"

GENERAL SHEET NOTES:

1. ALL BUILDING ELEVATIONS ARE REFERENCED TO BUILDING REFERENCE DATUM, EL. +0' = NAVD 88 DATUM, SEE GEN-G-100
2. TOP OF SLAB ELEVATION IS EL. +0', U.N.O.
3. TOP OF STEEL ELEVATION IS EL -0'-7 1/2" , THUS [+/-X'-X"] DENOTES VERTICAL OFFSET
4. COMPOSITE BEAM SHEAR STUD SHALL BE 3/4" DIAMETER AT 12" O.C., U.N.O., THUS (XX)
5. SEE ARCHITECTURAL AND MEP DRAWINGS FOR ADDITIONAL OPENING NOT SHOWN ON PLANS.
6. SEE ARCHITECTURAL AND MEP DRAWINGS FOR CURBS, PADS, DEPRESSION AND FILLS SIZE AND LOCATIONS.
7. SEE GEN-S-002 FOR STRUCTURAL SYMBOLS AND ABBREVIATIONS
8. SEE GEN-S-004 FOR CONCRETE NTOES
9. SEE GEN-S-005 FOR STRUCTURAL STEEL AND METAL DECK NOTES
10. SEE GEN-S-006 FOR MASS TIMBER NOTES
10. SEE MAQ-S-501 TO 503 FOR STEEL COLUMN SCHEDULE AND DETAILS
11. SEE MAQ-S-511 FOR TYIPCAL STRUCTURAL STEEL DETAILS
12. SEE MAQ-S-531 TO 532 FOR METAL DECK SLAB DETAILS
13. SEE MAQ-S-541 FOR CLT DECK SLAB DETAILS
14. SLAB EDGE DIMENSION AT OPENING = 8", UNO.

TACTICAL TRAINING DESIGN

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LOCAL ARCHITECT

Jacobs Wyper Architects
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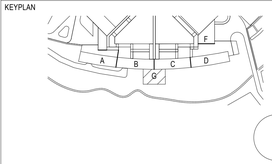
KEYPLAN



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ENGINEER
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PENNSYLVANIA

SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
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HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

PA State Police Academy - New Construction of Three Core Buildings and BESO
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

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FRAMING PART PLAN G - LEVEL 1

SHEET No. MAQ-S-125

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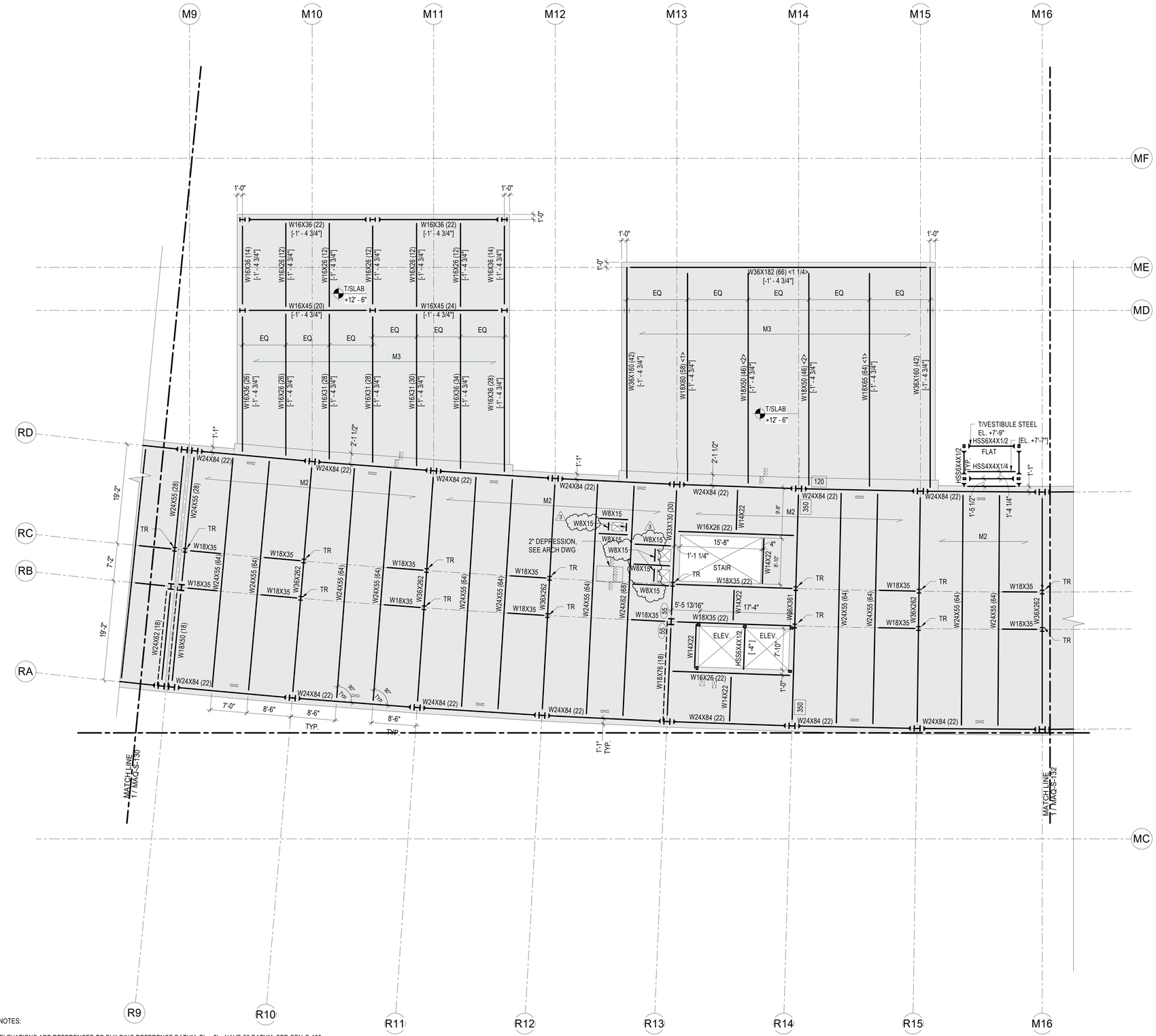

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2. TOP OF SLAB ELEVATION IS EL. +14'-0", U.N.O.
3. TOP OF STEEL ELEVATION IS EL +13'-3 3/4" , THUS [+/-X'-X"] DENOTES VERTICAL OFFSET
4. COMPOSITE BEAM SHEAR STUD SHALL BE 3/4" DIAMETER AT 12" O.C., U.N.O., THUS (XX)
5. SEE ARCHITECTURAL AND MEP DRAWINGS FOR ADDITIONAL OPENING NOT SHOWN ON PLANS.
6. SEE ARCHITECTURAL AND MEP DRAWINGS FOR CURBS, PADS, DEPRESSION AND FILLS SIZE AND LOCATIONS.
7. SEE GEN-S-002 FOR STRUCTURAL SYMBOLS AND ABBREVIATIONS
8. SEE GEN-S-004 FOR CONCRETE NTOES
9. SEE GEN-S-005 FOR STRUCTURAL STEEL AND METAL DECK NOTES
10. SEE GEN-S-006 FOR MASS TIMBER NOTES
10. SEE MAQ-S-501 TO 503 FOR STEEL COLUMN SCHEDULE AND DETAILS
11. SEE MAQ-S-511 FOR TYIPCAL STRUCTURAL STEEL DETAILS
12. SEE MAQ-S-531 TO 532 FOR METAL DECK SLAB DETAILS
13. SEE MAQ-S-541 FOR CLT DECK SLAB DETAILS
14. SLAB EDGE DIMENSION AT OPENING = 8", UNO.

1 LEVEL 2 FRAMING PLAN B

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0"

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
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LANDSCAPE
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POOL DESIGN
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KEYPLAN

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RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
BONGHWAN KIM
ENGINEER No. PE087245
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PENNSYLVANIA

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

PA State Police Academy - New Construction of Three Core Buildings and BESO
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
ON ORIGINAL DRAWING:
0 1
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

FRAMING PART PLAN B - LEVEL 2

SHEET No. MAQ-S-131

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Author	Checker		AS NOTED

GENERAL SHEET NOTES:

1. ALL BUILDING ELEVATIONS ARE REFERENCED TO BUILDING REFERENCE DATUM, EL. +0' = NAVD 88 DATUM, SEE GEN-G-100
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12. SEE MAQ-S-531 TO 532 FOR METAL DECK SLAB DETAILS
13. SEE MAQ-S-541 FOR CLT DECK SLAB DETAILS
14. SLAB EDGE DIMENSION AT OPENING = 8", UNO.

1 LEVEL 2 FRAMING PLAN D
SCALE: 1/8" = 1'-0"

VERIFY SCALE

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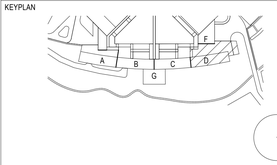

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BONGHWAN KIM
ENGINEER
No. PE087249
PENNSYLVANIA

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

PA State Police Academy - New Construction of Three Core Buildings and BESO
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

FRAMING PART PLAN D - LEVEL 2

SHEET No.
MAQ-S-133

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED

1 LEVEL 2 FRAMING PLAN F

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0"

GENERAL SHEET NOTES:

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14. SLAB EDGE DIMENSION AT OPENING = 8", UNO.

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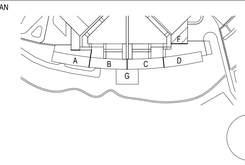

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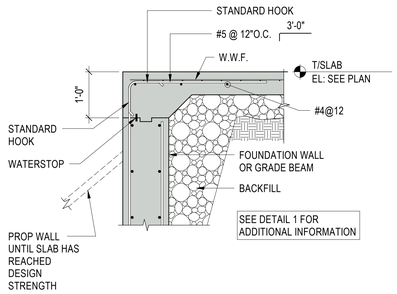
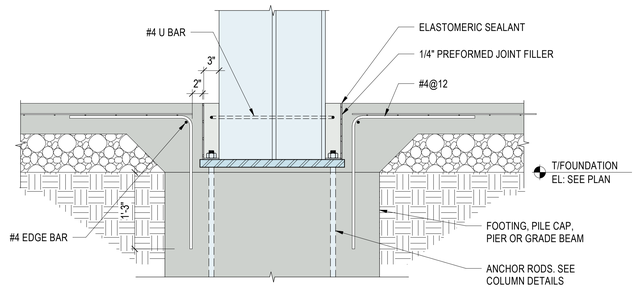
FRAMING PART PLAN F - LEVEL 2

SHEET No.
MAQ-S-134

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED

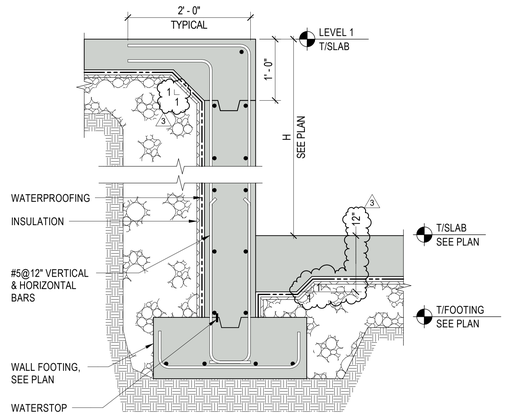


1 TYPICAL SLAB-ON-GRADE AT WALL BELOW
NOT TO SCALE



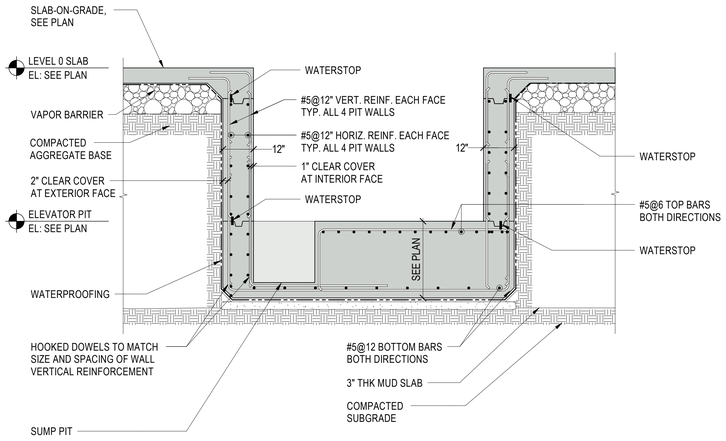
NOTES:
1. FOUNDATION REINF. NOT SHOWN FOR CLARITY.

2 TYPICAL SLAB-ON-GRADE - AT COLUMN DETAIL
NOT TO SCALE

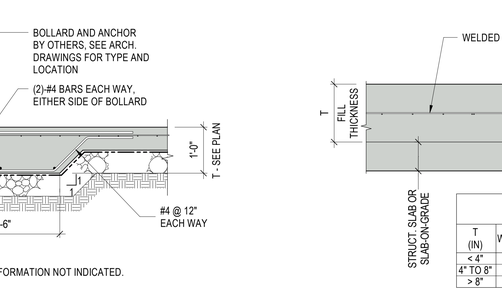


NOTE: SEE DETAIL 1/MAQ-S-301 FOR ADDITIONAL BASE INFORMATION.

3 TYPICAL SLAB-ON-GRADE DEPRESSION H>1'-0"
NOT TO SCALE

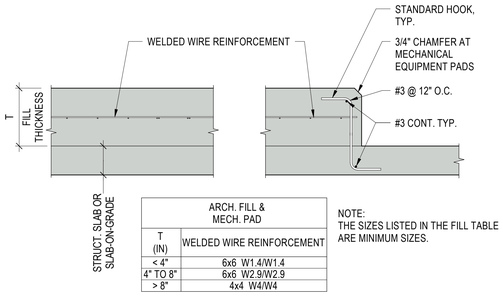


4 SECTION AT ELEVATOR PIT S1
1/2" = 1'-0"



NOTES:
1. REFER TO DETAIL 1 FOR ADDITIONAL INFORMATION NOT INDICATED.

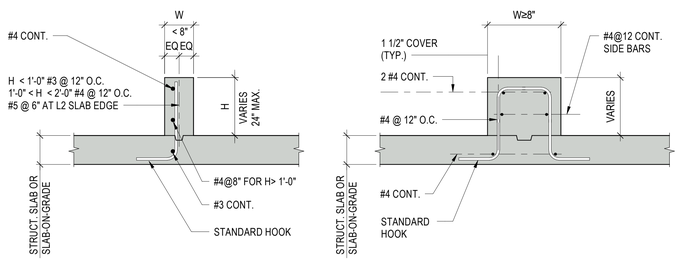
5 TYPICAL SLAB-ON-GRADE AT BOLLARD
NOT TO SCALE



ARCH. FILL & MECH. PAD	
T (IN)	WELDED WIRE REINFORCEMENT
< 4"	6x6 W1.4/W1.4
4" TO 8"	6x6 W2.9/W2.9
> 8"	4x4 W4/W4

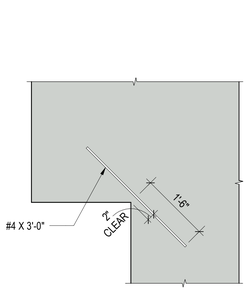
NOTE:
THE SIZES LISTED IN THE FILL TABLE ARE MINIMUM SIZES.

6 TYPICAL CONCRETE PAD/ARCH. FILL DETAIL
NOT TO SCALE



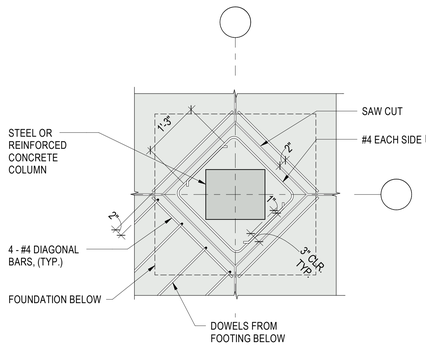
NOTE:
1. SEE ARCH., MECH., ELEC., AND PLUMBING DRAWINGS FOR CURB SIZE AND LOCATION.
2. SEE WALL DETAILS FOR CURBS TALLER THAN 30 INCHES.

7 TYPICAL CURB DETAILS
NOT TO SCALE

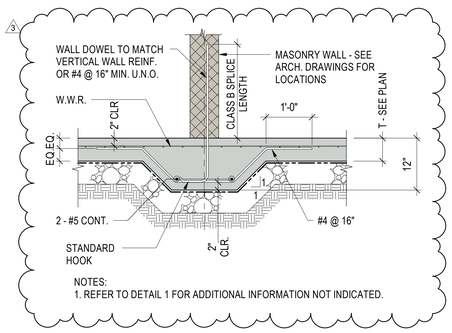


NOTES:
1. PROVIDE AT ALL RE-ENTRANT CORNERS.

8 TYPICAL SLAB-ON-GRADE RE-ENTRANT CORNER REINFORCEMENT
NOT TO SCALE



9 TYPICAL DIAGONAL REINFORCING IN SLAB-ON-GRADE AT COLUMN
NOT TO SCALE



NOTES:
1. REFER TO DETAIL 1 FOR ADDITIONAL INFORMATION NOT INDICATED.

10 TYPICAL SLAB-ON-GRADE AT MASONRY WALL
NOT TO SCALE

TACTICAL TRAINING DESIGN
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231 E. Buffalo St #502, Milwaukee, WI 53202

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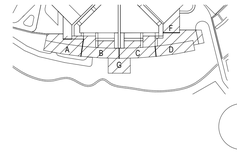
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



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1	16 FEB 2022	ISSUED TO L&I

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COMMONWEALTH OF PENNSYLVANIA
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SIGNATURE DATE

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

PA State Police Academy - New Construction of Three Core Buildings and BESO
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE
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ON ORIGINAL DRAWING:
0 1
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

TYPICAL SLAB-ON-GRADE DETAILS

SHEET No.
MAQ-S-322

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED

MARQUEE STEEL COLUMN & BASE PLATE SCHEDULE

fy = SEE NOTES ON GEN-S-005

	FLOOR LEVEL	RA/R0	RA/R1	RA/R2	RA/ R3,R4	RA/R5	RA/R6	RA/R7	RA/R8	RA/R8.9	RA/R9.1	RA/R10	RA/R11	RA/R12	RA/R13	RA/ R14-17, M16	RA/R18	RA/R19	RA/R20	RA/ R21-22	RA/R22.9	RA/R23.1	RA/ R24-29	RA/R30	RA/R31
COLUMN	LEVEL ROOF																								
	EL: SEE PLAN / LEVEL 4		W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X106	W12X106	W12X106	W12X106
	EL: SEE PLAN / LEVEL 3		W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X106	W12X106	W12X106	W12X106
	EL: SEE PLAN / LEVEL 2		W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X120	W12X106	W12X106	W12X106	W12X106
	EL: SEE PLAN / LEVEL 1	W12X87	W12X170	W12X152	W12X190	W12X190	W12X190	W12X152	W12X152	W12X152	W12X152	W12X152	W12X170	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152
	EL: SEE PLAN / LEVEL FDN.	PILASTER	W12X170	W12X152	W12X190	W12X190	W12X190	W12X152	W12X152	W12X152	W12X152	W12X152	W12X170	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152	W12X152
	EL: SEE PLAN	3																							
BASE PLATE	W (in)	21	22	22	23	23	23	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
	L (in)	14	22	22	23	23	23	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
	T (in)	1	1 1/2	2	1 3/4	2	1 3/4	1 3/4	2	1 3/4	1 1/2	2	2	2	2 1/4	1 3/4	2	2 1/4	1 3/4	2	1 1/2	1 3/4	2	1 3/4	1
	NUMBER OF ANCHOR RODS	4	4	4	4	4	4	4	4	6	4	4	4	4	8	4	4	8	4	4	4	6	4	4	4
	ANCHOR ROD DIAMETER (in)	3/4	3/4	1 1/2	3/4	3/4	3/4	3/4	3/4	1 1/2	1 1/2	3/4	3/4	3/4	1 1/2	3/4	3/4	1 1/2	3/4	3/4	1 1/2	1 1/2	3/4	1 1/2	3/4
	ANCHOR ROD EMBEDMENT LENGTH (in)	18	18	30	18	18	18	18	18	30	30	18	18	18	36	18	18	36	18	18	30	30	18	30	18

MARQUEE STEEL COLUMN & BASE PLATE SCHEDULE (CONT.)

fy = SEE NOTES ON GEN-S-005

	FLOOR LEVEL	RB/ R1-8	RB/R8.9	RB/R9.1	RB/ R10-12	RB/R13	RB/ R14-18, M16	RB/R19	RB/ R20-22	RB/R22.9	RB/R23.1	RB/ R24-29	RB/R30	RB/R31	RB.5/R0	RC/ R1-29, M16	RC/R30	RC/R31	RC/R32	ITV Col.	Stair Col. A	Stair Col. B
COLUMN	LEVEL ROOF																					
	EL: SEE PLAN / LEVEL 4	W8X40	W12X58	W12X40	W8X40	W12X96	W8X40	W12X96	W8X40	W12X40	W12X58	W8X40	W12X79	W8X40		W8X40	W12X79	W8X40				
	EL: SEE PLAN / LEVEL 3	W8X40	W12X58	W12X40	W8X40	W12X96	W8X40	W12X96	W8X40	W12X40	W12X58	W8X40	W12X79	W8X40		W8X40	W12X79	W8X40				
	EL: SEE PLAN / LEVEL 2	W8X40	W12X58	W12X40	W8X40	W12X96	W8X40	W12X96	W8X40	W12X40	W12X58	W8X40	W12X79	W8X40		W8X40	W12X79	W8X40				
	EL: SEE PLAN / LEVEL 1	TRANSFER	W12X152	W12X106	TRANSFER	W12X170	TRANSFER	W12X170	TRANSFER	W12X106	W12X152	TRANSFER	W12X87	W8X40	W12X106	TRANSFER	W12X87	W8X40				
	EL: SEE PLAN / LEVEL FDN.		W12X152	W12X106		W12X170		W12X170		W12X106	W12X152		W12X87	W8X40	PILASTER		W12X87	W8X40	W12X40	W8X40	W12X95	W12X40
	EL: SEE PLAN																					
BASE PLATE	W (in)	-	22	22	-	22	-	22	-	22	22	-	22	22	21	-	22	22	13	16 1/2	21	21
	L (in)	-	22	22	-	22	-	22	-	22	22	-	22	22	14	-	22	22	21	16 1/2	21	21
	T (in)	-	2	1 3/4	-	2 1/2	-	2 1/2	-	1 3/4	1 3/4	-	1 3/4	1	1	-	1 3/4	1 1/4	1	1	1	1
	NUMBER OF ANCHOR RODS	-	6	4	-	6	-	6	-	4	6	-	4	4	4	-	4	4	4	4	4	4
	ANCHOR ROD DIAMETER (in)	-	1 1/2	1 1/2	-	1 1/2	-	1 1/2	-	1 1/2	1 1/2	-	1 1/2	3/4	3/4	-	1 1/2	3/4	3/4	3/4	3/4	3/4
	ANCHOR ROD EMBEDMENT LENGTH (in)	-	30	30	-	30	-	30	-	30	30	-	30	18	18	-	30	18	18	12	8	8

NOTE:
1. INCREASE BASE PLATE SIZE AS REQUIRED TO ACCOMMODATE GUSSET PLATES AT BRACE LOCATION
2. ANCHOR BOLTS AT BRACE FRAME COLUMNS TO BE GR. 55, SEE DETAIL 8/MAQ-S-505

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

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7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
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7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN

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1	18 FEB 2022	ISSUED TO L&I			

RECORD REVISIONS

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PE082749
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

PA State Police Academy - New Construction of Three Core Buildings and BESO
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING:
0 1

IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

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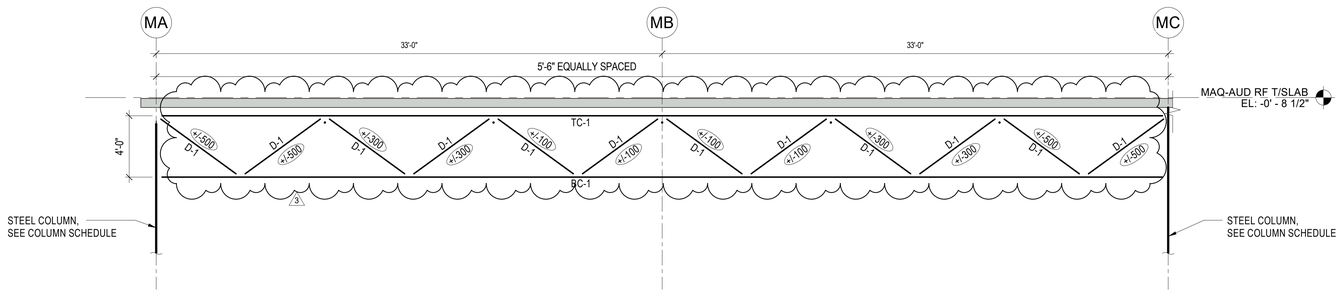
STRUCTURAL STEEL COLUMN SCHEDULE

SHEET No.
MAQ-S-501

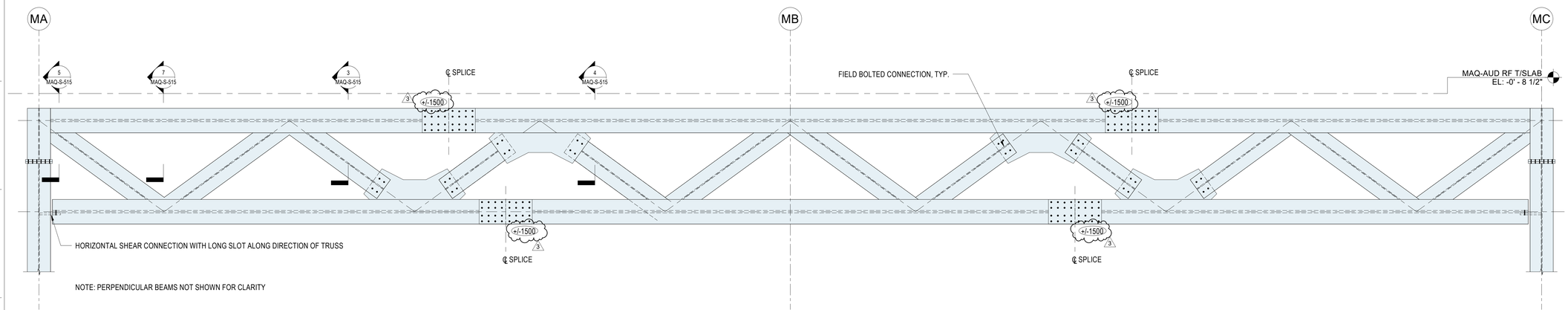
DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED



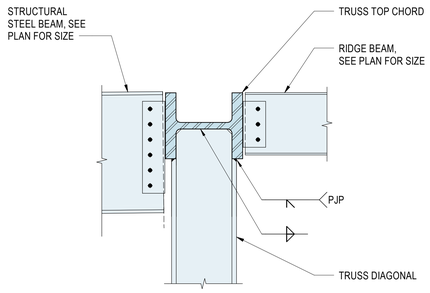
AUDITORIUM TRUSS MEMBER SCHEDULE		
MARK	MEMBER SIZE	MEMBER AXIAL FORCES
TC - 1	W12x230	SEE DETAIL 2
BC - 1	W12x230	SEE DETAIL 2
D - 1	W12x96	SEE DETAIL 1

NOTES:
1. ALL FORCE SHOWN AS KIPS
2. + DENOTES TENSION; - DENOTES COMPRESSION

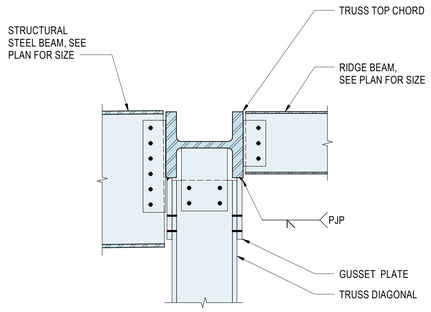
1 AUDITORIUM TRUSS KEY ELEVATION
1/4" = 1'-0"
MAQ-S-202 1



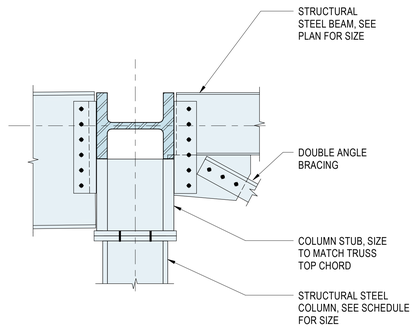
2 AUDITORIUM TRUSS SECTION TA-1 1-2
1/2" = 1'-0"



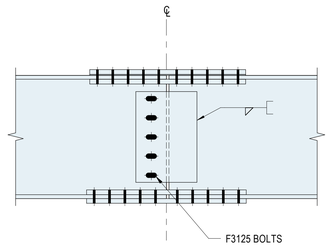
3 TRUSS SHOP CONNECTION DETAIL
1" = 1'-0"
MAQ-S-515 2



4 TRUSS FIELD CONNECTION DETAIL
1" = 1'-0"
MAQ-S-515 2

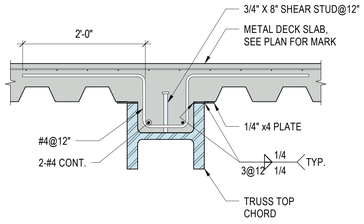


5 TRUSS TO COLUMN CONNECTION DETAIL
1" = 1'-0"
MAQ-S-515 2



NOTES:
1. CONNECTION TO DEVELOP THE AXIAL PLUS SHEAR REACTION WITH BOLTS IN BEARING.

6 TYPICAL BOLTED BEAM SPLICE
NOT TO SCALE



7 TRUSS TO METAL DECK CONNECTION
1" = 1'-0"
MAQ-S-515 2

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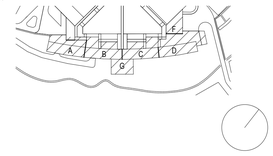
KEYPLAN



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SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

PA State Police Academy - New Construction of Three Core Buildings and BESO
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
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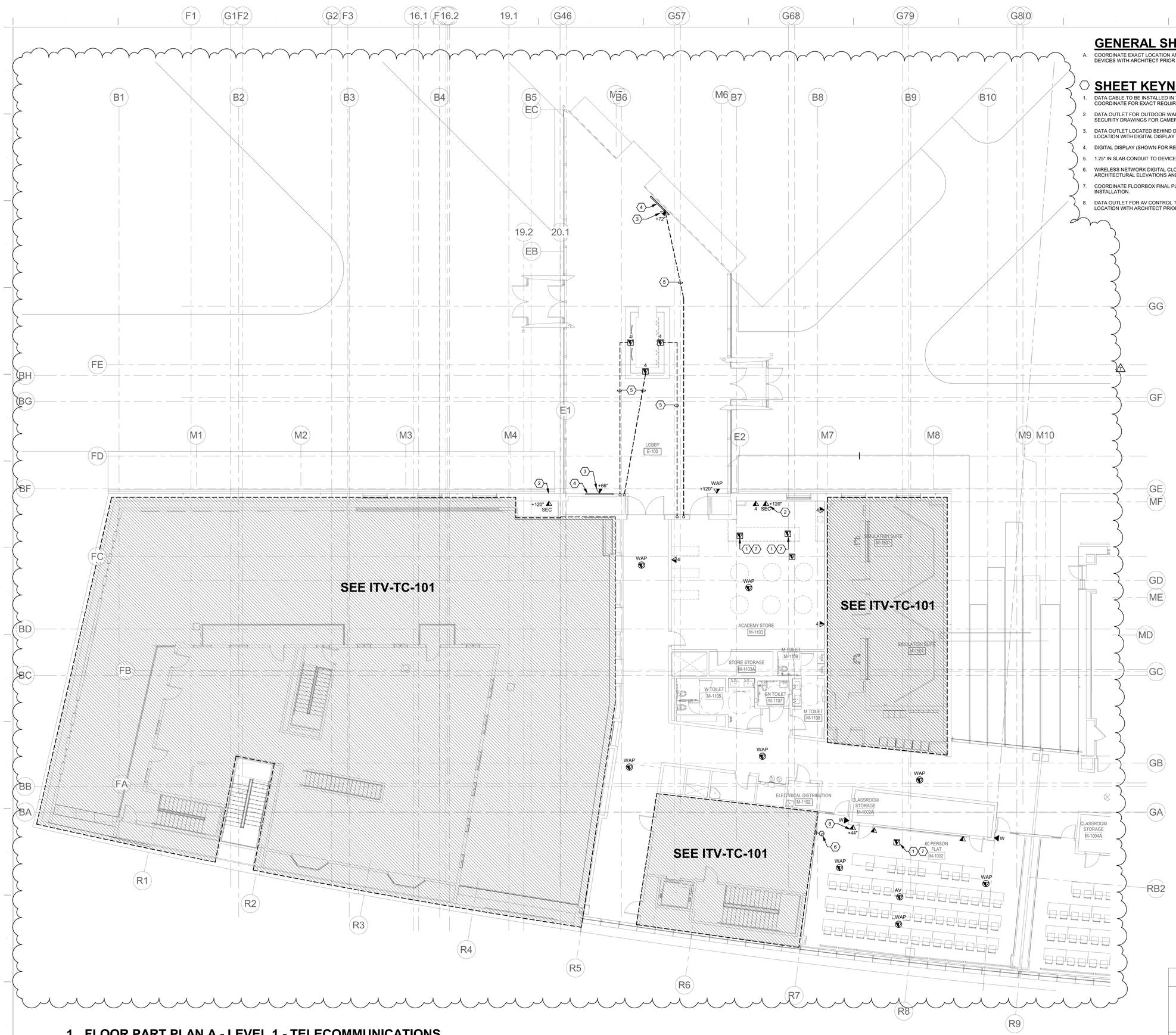
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

TYPICAL STRUCTURAL STEEL TRUSS ELEVATION, SCHEDULE AND DETAILS

SHEET No.
MAQ-S-515

DRAWN BY	CHECKED BY	DATE	SCALE
Author	Checker		AS NOTED



1 FLOOR PART PLAN A - LEVEL 1 - TELECOMMUNICATIONS

0' 4' 8' 16'
1/8" = 1'-0"

GENERAL SHEET NOTES

A. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF TELECOM DEVICES WITH ARCHITECT PRIOR TO INSTALLATION.

SHEET KEYNOTES

1. DATA CABLE TO BE INSTALLED IN THE SAME FLOORBOX AS ELECTRICAL. COORDINATE FOR EXACT REQUIREMENT AND FLOORBOX SIZE.
2. DATA OUTLET FOR OUTDOOR WALL MOUNT SECURITY CAMERA. SEE SECURITY DRAWINGS FOR CAMERA LOCATION.
3. DATA OUTLET LOCATED BEHIND DIGITAL DISPLAY. COORDINATE FINAL LOCATION WITH DIGITAL DISPLAY PRIOR TO INSTALLATION.
4. DIGITAL DISPLAY (SHOWN FOR REFERENCE ONLY).
5. 1.25" IN SLAB CONDUIT TO DEVICE LOCATION.
6. WIRELESS NETWORK DIGITAL CLOCK. COORDINATE INSTALLATION WITH ARCHITECTURAL ELEVATIONS AND ELECTRICAL DRAWINGS.
7. COORDINATE FLOORBOX FINAL PLACEMENT WITH ARCHITECT PRIOR TO INSTALLATION.
8. DATA OUTLET FOR AV CONTROL TOUCH PANEL. COORDINATE FINAL LOCATION WITH ARCHITECT PRIOR TO INSTALLATION.

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER
A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER
Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER
Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING
CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER
Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT
Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT
Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

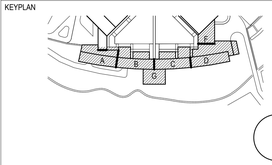
LANDSCAPE
Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING
MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE
Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
3	21 JUL 23	ADDENDUM 34			
2	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ANDREW J. FLANAGAN ENGINEER PE088A50 PENNSYLVANIA

07/21/2023
SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

INTERFACE ENGINEERING
PROJECT 2021-0159
CONTACT Robert Gannon
2000 M Street NW, Suite 270
Washington, DC 20036
TEL 202.370.9555
www.interfaceengineering.com

VERIFY SCALE

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FLOOR PART PLAN A - LEVEL 1 - TELECOMMUNICATIONS

SHEET No. MAQ-TC-120

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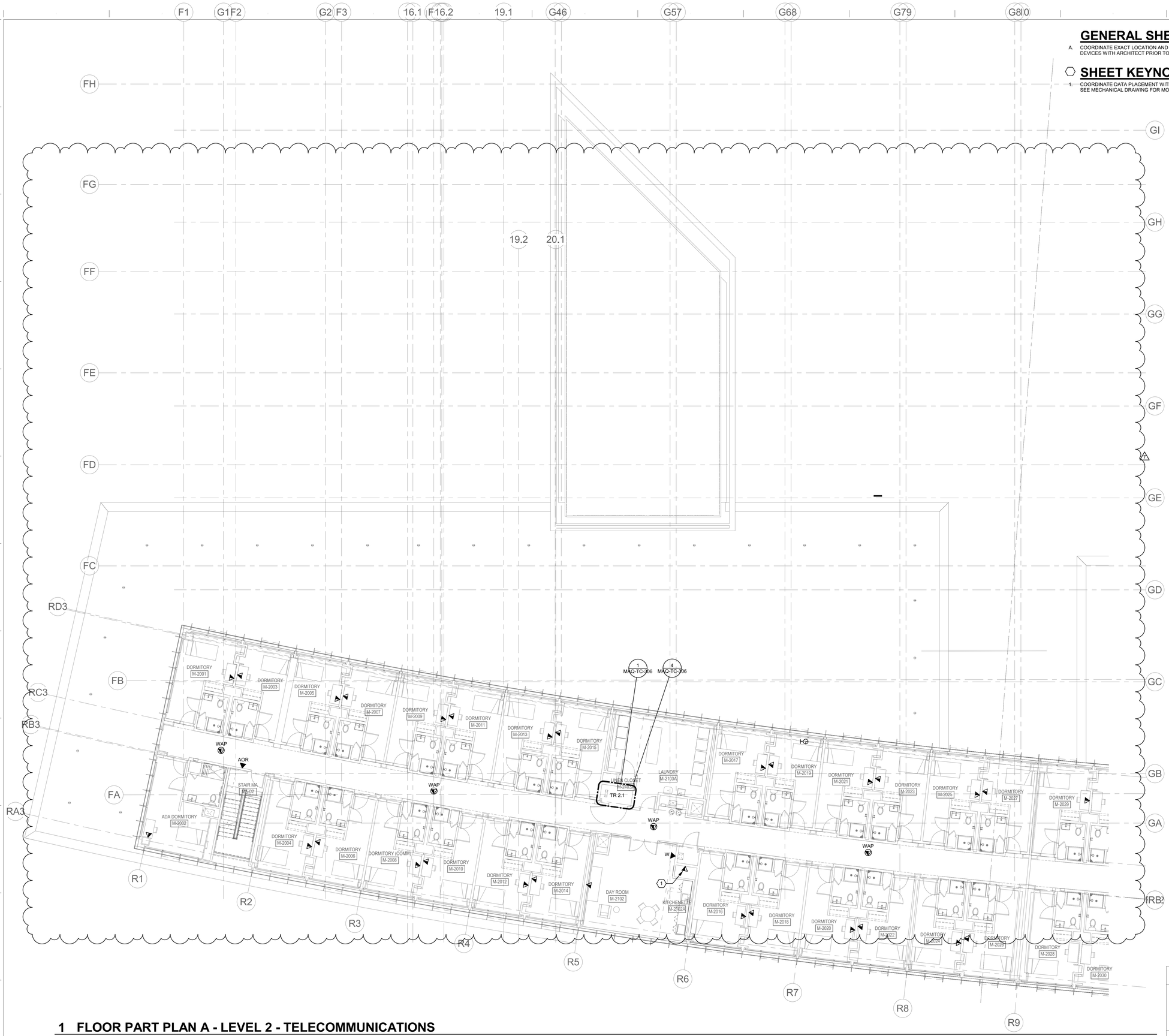
AD	MT		AS NOTED



1 FLOOR PART PLAN A - LEVEL 2 - TELECOMMUNICATIONS

0' 4' 8' 16'

1/8" = 1'-0"

GENERAL SHEET NOTES

A. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF TELECOM DEVICES WITH ARCHITECT PRIOR TO INSTALLATION.

SHEET KEYNOTES

1. COORDINATE DATA PLACEMENT WITH BAS/BMS PANEL REQUIREMENTS. SEE MECHANICAL DRAWING FOR MORE INFORMATION.

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

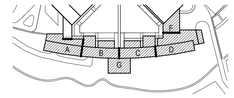
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
2	21 JUL 23	ADDENDUM 04			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
ANDREW J. FLANAGAN
ENGINEER
PE088458
PENNSYLVANIA

07/21/2023
SIGNATURE DATE

ARCHITECT

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

INTERFACE ENGINEERING
PROJECT 2021-0159
CONTACT Robert Gannon
2000 M Street NW, Suite 270
Washington, DC 20036
TEL 202.370.9555
www.interfaceengineering.com

VERIFY SCALE

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CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

FLOOR PART PLAN A - LEVEL 2 - TELECOMMUNICATIONS

SHEET No. MAQ-TC-130

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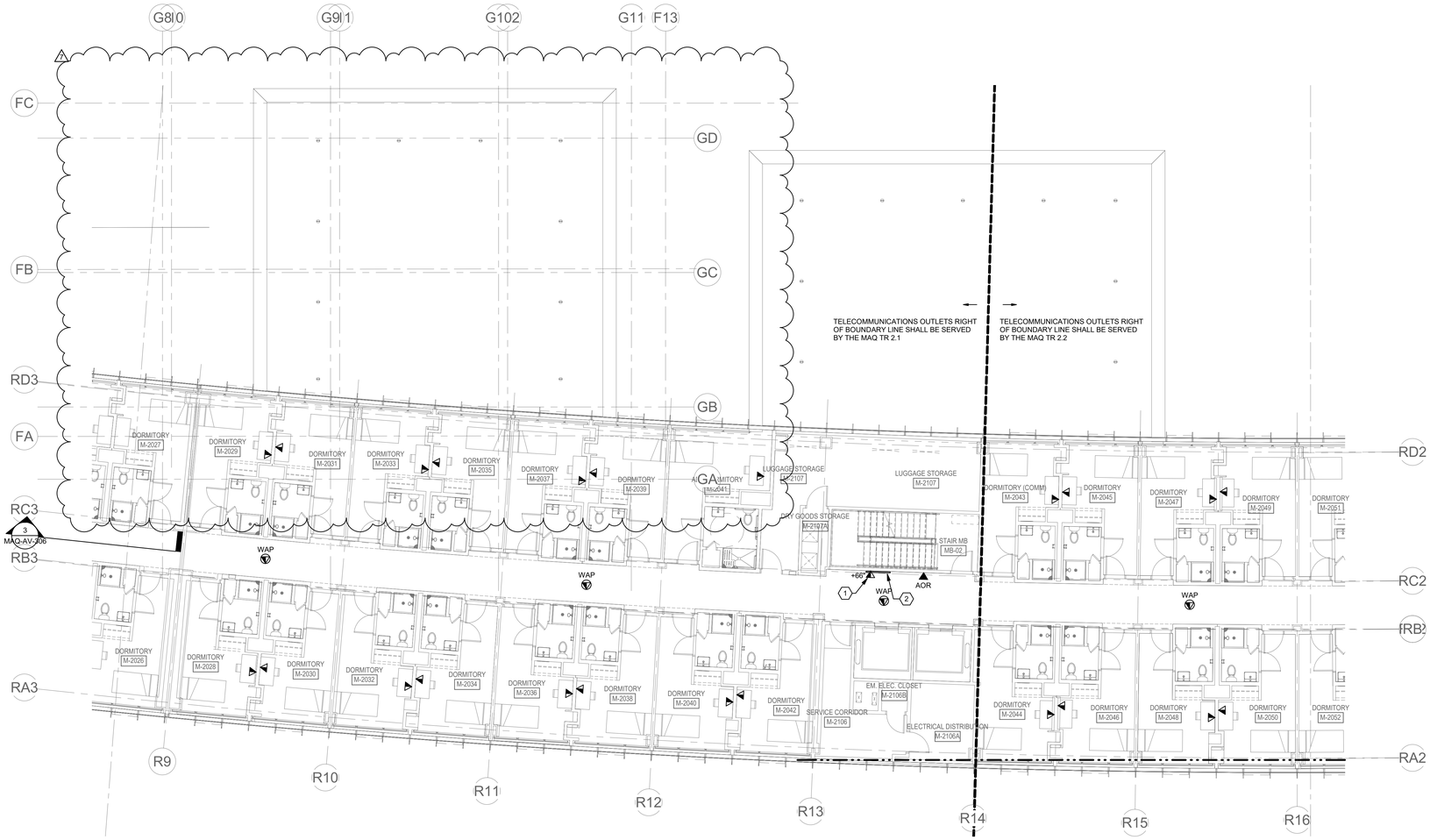
AD	MT		AS NOTED

GENERAL SHEET NOTES

A. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF TELECOM DEVICES WITH ARCHITECT PRIOR TO INSTALLATION.

SHEET KEYNOTES

1. DATA OUTLET LOCATED BEHIND DIGITAL DISPLAY. COORDINATE FINAL LOCATION WITH DIGITAL DISPLAY PRIOR TO INSTALLATION.
2. DIGITAL DISPLAY (SHOWN FOR REFERENCE ONLY).



1 FLOOR PART PLAN B - LEVEL 2 - TELECOMMUNICATIONS

0' 4' 8' 16'

1/8" = 1'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
7	21 JUL 23	ADDENDUM 34			
2	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ANDREW J. FLANAGAN ENGINEER PE088450 PENNSYLVANIA

07/21/2023
SIGNATURE DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

INTERFACE ENGINEERING

PROJECT 2021-0159
CONTACT Robert Gannon
2000 M Street NW, Suite 270
Washington, DC 20036
TEL 202.370.9555
www.interfaceengineering.com

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FLOOR PART PLAN B - LEVEL 2 - TELECOMMUNICATIONS

SHEET No. MAQ-TC-131

DRAWN BY	CHECKED BY	DATE	SCALE
AD	MT		AS NOTED

GENERAL SHEET NOTES

A. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF TELECOM DEVICES WITH ARCHITECT PRIOR TO INSTALLATION.

SHEET KEYNOTES

1. COORDINATE DATA PLACEMENT WITH BAS/BMS PANEL REQUIREMENTS. SEE MECHANICAL DRAWING FOR MORE INFORMATION.

1 FLOOR PART PLAN A - LEVEL 3 - TELECOMMUNICATIONS

0' 4' 8' 16'

1/8" = 1'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

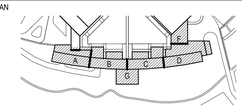
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
7	21 JUL 23	ADDENDUM 34			
2	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ANDREW J. FLANAGAN ENGINEER PE088A50 COMMONWEALTH OF PENNSYLVANIA

07/21/2023
SIGNATURE DATE

ARCHITECT

SOM

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

INTERFACE ENGINEERING

PROJECT 2021-0159
CONTACT Robert Gannon
2000 M Street NW, Suite 270
Washington, DC 20036
TEL 202.370.9555
www.interfaceengineering.com

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FLOOR PART PLAN A - LEVEL 3 - TELECOMMUNICATIONS

SHEET No. MAQ-TC-140

DRAWN BY	CHECKED BY	DATE	SCALE
AD	MT		AS NOTED

GENERAL SHEET NOTES

A. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF TELECOM DEVICES WITH ARCHITECT PRIOR TO INSTALLATION.

SHEET KEYNOTES

1. DATA OUTLET LOCATED BEHIND DIGITAL DISPLAY. COORDINATE FINAL LOCATION WITH DIGITAL DISPLAY PRIOR TO INSTALLATION.
2. DIGITAL DISPLAY (SHOWN FOR REFERENCE ONLY).

1 FLOOR PART PLAN B - LEVEL 3 - TELECOMMUNICATIONS

0' 4' 8' 16'

1/8" = 1'-0"

TACTICAL TRAINING DESIGN

Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT

Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

STRUCTURAL ENGINEER

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

ELECTRICAL, PLUMBING, FIRE PROTECTION, FIRE ALARM ENGINEER

A & J Consulting Engineering Services, P.C.
164 Brighton Rd, Clifton, NJ 07012

MECHANICAL, AVIT ENGINEER

Interface Engineering, Inc.
2000 M Street NW, Suite 270, Washington, DC 20036

ACOUSTICAL ENGINEER

Cerami
1001 Ave of the Americas, 4th Floor, New York, NY 10018

CODE CONSULTING

CCI
215 W 40th St, 10th Floor, New York, NY 10018

CIVIL ENGINEER

Langan
1818 Market St #3300, Philadelphia, PA 19103

VERTICAL TRANSPORT

Michael Blades & Associates Ltd.
5409 Rapidan Ct, Lothian, MD 20711

SIGNAGE CONSULTANT

Patricia Hord Graphik Design
119 S. St. Asaph St, Alexandria, VA 22314

LANDSCAPE

Lee and Associates, Inc.
638 I Street NW, Washington, DC 20001

LIGHTING

MCLA
1000 Potomac St NW, Suite 121, Washington, DC 20007

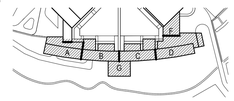
FOOD SERVICE

Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN

Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
2	19 MAY 2023	ISSUED FOR BID			
1	21 JUL 23	ADDENDUM 34			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
ANDREW J. FLANAGAN
ENGINEER
PE088450
PENNSYLVANIA

07/21/2023
SIGNATURE DATE

ARCHITECT

SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

INTERFACE ENGINEERING
PROJECT 2021-0159
CONTACT Robert Gannon
2000 M Street NW, Suite 270
Washington, DC 20036
TEL 202.370.9555
www.interfaceengineering.com

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FLOOR PART PLAN B - LEVEL 3 - TELECOMMUNICATIONS

SHEET No. MAQ-TC-141

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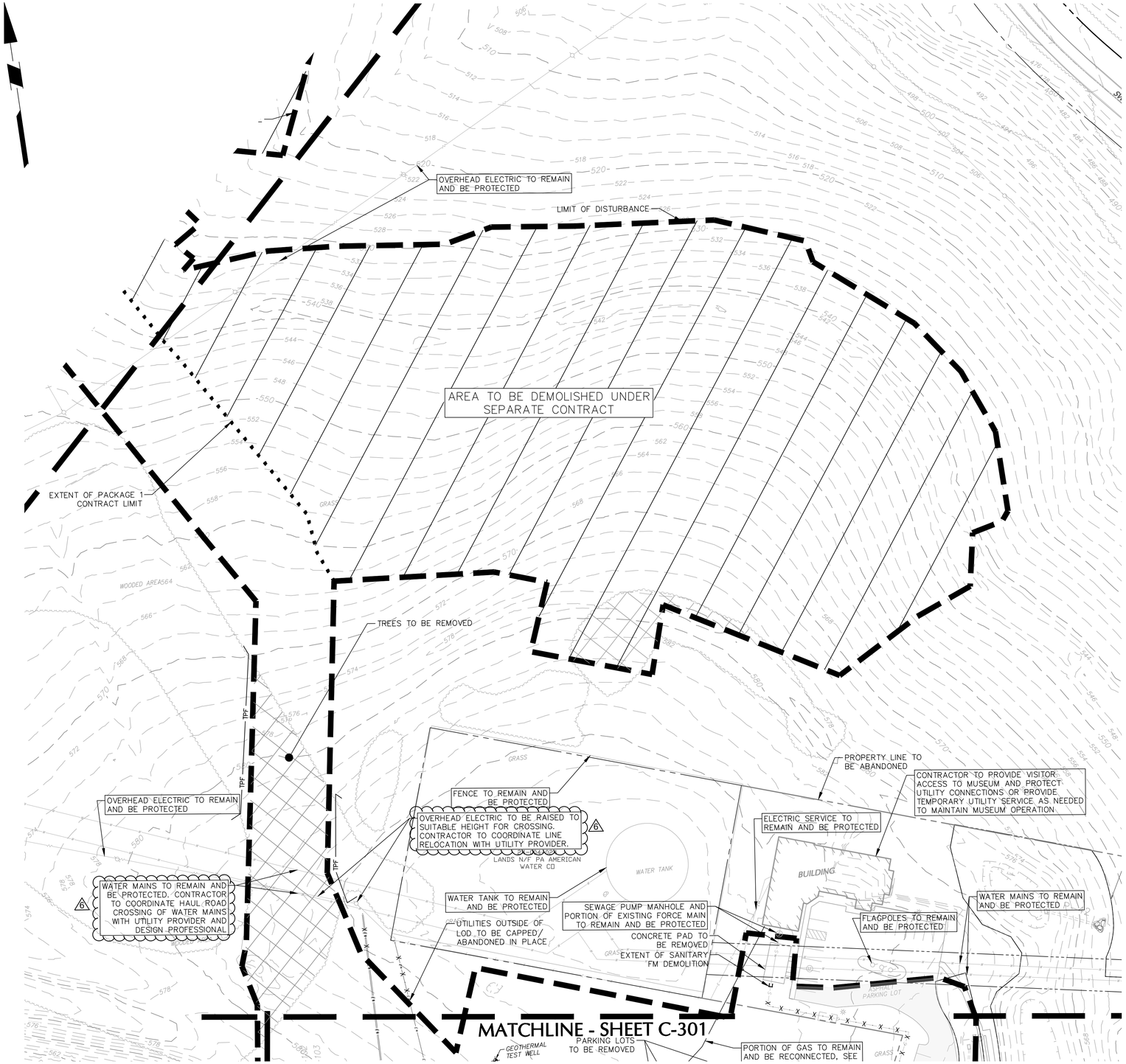
AD	MT		AS NOTED



LEGEND (NOT SHOWN TO SCALE)

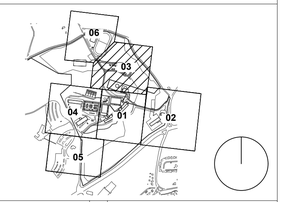
- AIR CONDITIONING UNIT
- BOLLARD
- COLUMN
- DOOR
- DOUBLE DOOR
- FLAG POLE
- MONITORING WELL
- SIGN
- TREE
- GROUND LIGHT
- CATCH BASIN
- CLEANOUT
- ELECTRIC BOX
- ELECTRIC METER
- FIRE HYDRANT
- COMMUNICATION BOX
- GAS METER
- GAS VALVE
- GUY WIRE
- LIGHT POLE
- MANHOLE (TYPE AS LABELED)
- POWER POLE
- ROOF DRAIN
- STANDPIPE
- TRAFFIC SIGNAL BOX
- PEDESTRIAN PUSH BUTTON
- TRAFFIC SIGNAL
- TRAFFIC SIGNAL ARM
- TRAFFIC SIGNAL POLE
- UNDERGROUND VAULT
- VALVE UNKNOWN
- WATER METER
- WATER VALVE
- METAL GUARD RAIL
- WOOD GUARD RAIL
- STOCKADE FENCE
- CHAINLINK FENCE
- IRON FENCE
- TREE LINE
- OVERHEAD WIRE
- EASEMENT LINE
- PROPERTY LINE
- PROPERTY LINE (TO BE ABANDONED)
- RIGHT-OF-WAY LINE
- CONTOUR LINE
- SANITARY FORCE MAIN
- CABLE TV MARK OUT LINE
- DRAINAGE MARK OUT LINE
- ELECTRIC MARK OUT LINE
- COMMUNICATION MARK OUT LINE
- GAS MARK OUT LINE
- SANITARY SEWER MARK OUT LINE
- WATER MARK OUT LINE
- UNKNOWN MARK OUT LINE
- REFERENCE UTILITY LINE (TYPE AS NOTED) – PLOTTED FROM EXISTING MAPPING
- BUILDING TO BE DEMOLISHED
- LIMIT OF DISTURBANCE
- CONTRACT LIMIT
- ASPHALT TO BE REMOVED
- TREES TO BE REMOVED
- SITE FEATURE TO BE REMOVED
- UTILITY TO BE REMOVED
- TREE PROTECTION FENCE

50 0 25 50
SCALE: 1 INCH = 50 FEET

TACTICAL TRAINING DESIGN	LOCAL ARCHITECT
Tactical Design North 231 E. Buffalo St #502, Milwaukee, WI 53202	**Jacobs Wyper Architects** 1232 Chancellor St, Philadelphia, PA 19107
STRUCTURAL ENGINEER	E, P, FP, FA ENGINEER
Skidmore, Owings & Merrill LLP 250 Greenwich St, New York, NY 10007	**A & J Consulting Engineering Services** 164 Brighton Rd, Clifton, NJ 07012
MECHANICAL, AV/IT ENGINEER	ACOUSTICAL ENGINEER
Interface Engineering, Inc. 2000 M Street NW, Washington, DC 20036	**Cerami** 1001 Ave of the Americas, New York, NY 10018
CODE CONSULTING	CIVIL ENGINEER
CCI 215 W 40th St, 10th Floor, New York, NY 10018	**Langan** 1818 Market St #3300, Philadelphia, PA 19103
VERTICAL TRANSPORT	SIGNAGE CONSULTANT
Michael Blades & Associates Ltd. 5409 Rapidan Ct, Lothian, MD 20711	**Patricia Hord Graphik Design** 119 S. St. Asaph St, Alexandria, VA 22314
LANDSCAPE	LIGHTING
Lee and Associates, Inc. 638 I Street NW, Washington, DC 20001	**MCLA** 1000 Potomac St NW, Washington, DC 20007
FOOD SERVICE	COST ESTIMATING
Hopkins Foodservice Specialists, Inc. 7906 MacArthur Blvd, Cabin John, MD 20818	**Aqua Design International** 7536 N. La Cholla Blvd, Tucson, AZ 85741

NOTE

KEYPLAN



4	29 JUL 2022 NPDES COMMENTS		
3	02 JUN 2022 TOWNSHIP COMMENTS		
2	06 MAY 2022 TOWNSHIP COMMENTS	6	21 JULY 2023 BID ADDENDUM 34
1	18 FEB 2022 ISSUED TO L&I	5	19 MAY 2023 ISSUED FOR BID

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL CHRISTOPHER J. HAGER ENGINEER PA LIC. NO. 63172

2023-07-21
SIGNATURE DATE

CHRISTOPHER HAGER, PE
PROFESSIONAL ENGINEER
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

BAR IS ONE (1) INCH LONG
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IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

SITE DEMOLITION PLAN - 3

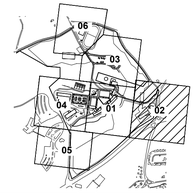
SHEET No. STE-C-303

DRAWN BY	CHECKED BY	DATE	SCALE
TJM/BXP/KSB	KLF	MAY 2023	AS NOTED

TACTICAL TRAINING DESIGN	LOCAL ARCHITECT
Tactical Design North 231 E. Buffalo St #502, Milwaukee, WI 53202	**Jacobs Wyper Architects** 1232 Chancellor St, Philadelphia, PA 19107
STRUCTURAL ENGINEER	E, P, FP, FA ENGINEER
Skidmore, Owings & Merrill LLP 250 Greenwich St, New York, NY 10007	**A & J Consulting Engineering Services** 164 Brighton Rd, Clifton, NJ 07012
MECHANICAL, AVIT ENGINEER	ACOUSTICAL ENGINEER
Interface Engineering, Inc. 2000 M Street NW, Washington, DC 20036	**Cerami** 1001 Ave of the Americas, New York, NY 10018
CODE CONSULTING	CIVIL ENGINEER
CCI 215 W 40th St, 10th Floor, New York, NY 10018	**Langan** 1818 Market St #3300, Philadelphia, PA 19103
VERTICAL TRANSPORT	SIGNAGE CONSULTANT
Michael Blades & Associates Ltd. 5409 Rapidan Ct, Lothian, MD 20711	**Patricia Hord Graphik Design** 119 S. St. Asaph St, Alexandria, VA 22314
LANDSCAPE	LIGHTING
Lee and Associates, Inc. 638 I Street NW, Washington, DC 20001	**MCLA** 1000 Potomac St NW, Washington, DC 20007
FOOD SERVICE	COST ESTIMATING
Hopkins Foodservice Specialists, Inc. 7906 MacArthur Blvd, Cabin John, MD 20818	**Aqua Design International** 7536 N. La Cholla Blvd, Tucson, AZ 85741

NOTE

KEYPLAN



4	29 JUL 2022 NPDES COMMENTS		
3	02 JUN 2022 TOWNSHIP COMMENTS		
2	06 MAY 2022 TOWNSHIP COMMENTS	6	21 JULY 2023 BID ADDENDUM 34
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2023-07-21

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UTILITY PLAN - 2

SHEET No.
STE-C-702

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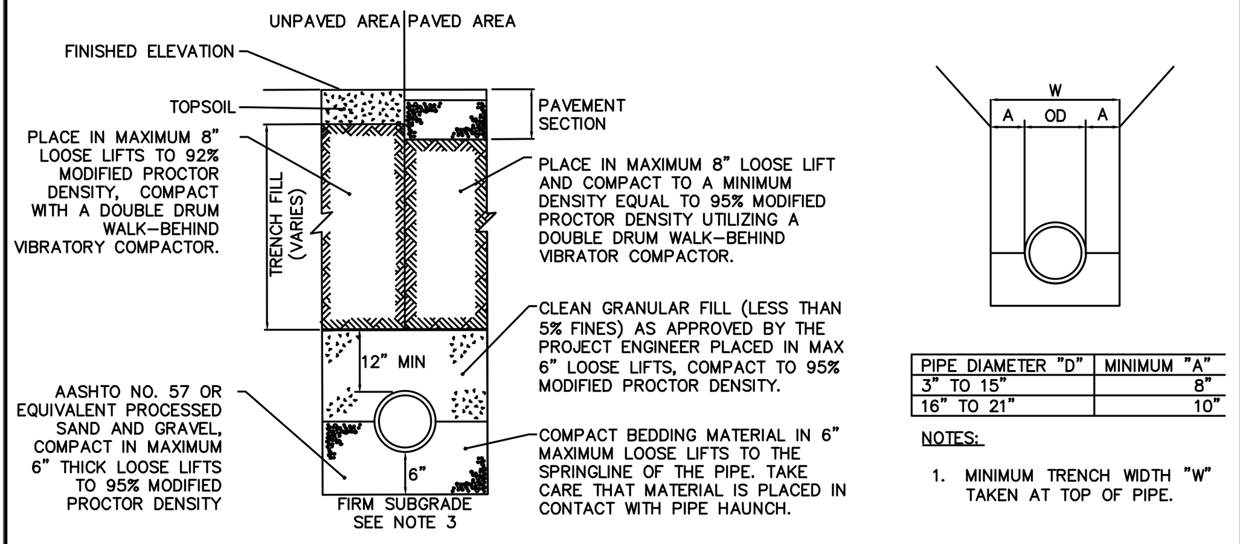
TJM/BXP/KSB	KLF	MAY 2023	AS NOTED

NTS



PIPE DIAMETER "D"	MINIMUM "A"
3" TO 15"	8"
16" TO 21"	10"

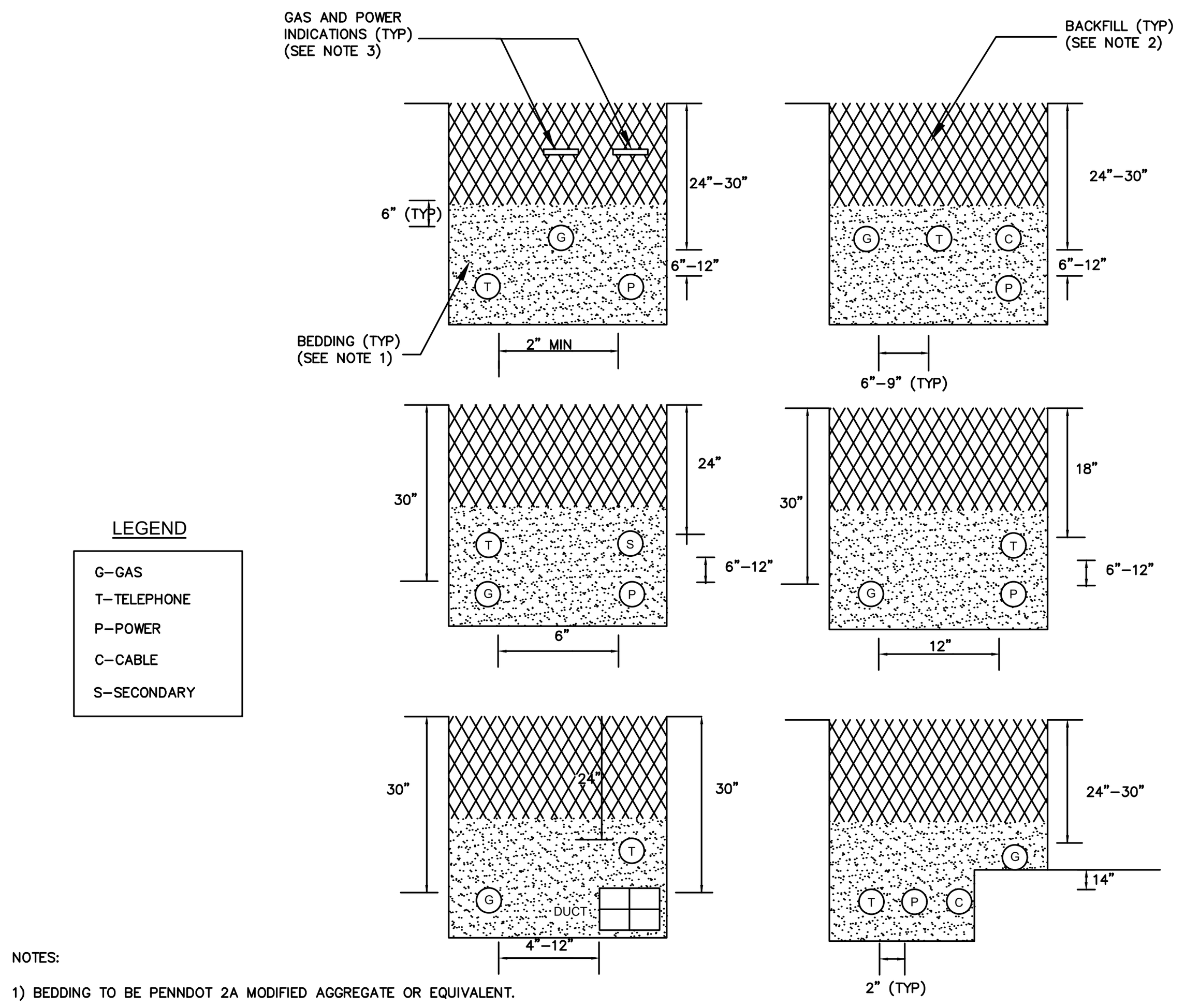
NOTES:

1. MINIMUM TRENCH WIDTH "W" TAKEN AT TOP OF PIPE.

NOTES:

1. ALL TRENCH EXCAVATIONS ARE TO BE DONE IN COMPLIANCE WITH OSHA REGULATIONS.
2. MINIMUM TRENCH WIDTHS TO BE DONE IN ACCORDANCE WITH THE CHART ABOVE.
3. IF SOFT SOIL IS ENCOUNTERED AT BEDDING SUBGRADE, THE SOFT SOIL IS TO BE REMOVED (TO A MAXIMUM DEPTH OF 2 FT) AND REPLACED WITH 3/4" CLEAN CRUSHED STONE.
4. TRENCH BACKFILL SHALL BE PREDOMINANTLY GRANULAR FILL MATERIAL AS APPROVED BY THE PROJECT ENGINEER. MATERIAL EXCAVATED FROM THE TRENCH MAY BE USED FOR BACKFILL PROVIDED IT IS PREDOMINANTLY SAND AND IS AT WATER CONTENT THAT THE MATERIAL CAN BE READILY COMPACTED TO THE DENSITY REQUIRED.
5. WITHIN PUBLIC RIGHT OF WAY BENEATH PAVEMENT, THE BACKFILL MATERIAL SHALL BE CLEAN CRUSHED STONE EQUIVALENT TO AASHTO NO. 57 OR 3/4" STONE, UNLESS AUTHORITY HAVING JURISDICTION REQUIRES OTHERWISE.
6. MAGNETIC UNDERGROUND MARKING TAPE TO BE PROVIDED FOR PLASTIC WATER, AND SANITARY FORCE MAINS. BURY 18" FROM FINISHED GRADE.
7. IN AREAS WHERE THERE IS NOT SUFFICIENT WIDTH FOR A DOUBLE DRUM WALK-BEHIND VIBRATORY COMPACTOR THE LIFT THICKNESS SHALL BE DECREASED AS NECESSARY TO ACHIEVE COMPACTION WITH APPROPRIATE EQUIPMENT.
8. MAXIMUM PARTICLE SIZE FOR TRENCH BACKFILL SHALL BE 4 INCHES UNLESS APPROVED OTHERWISE BY PROJECT ENGINEER.
9. BACKFILL CONTAIN NO DELETERIOUS OR CONTAMINATED MATERIAL.

TRENCH BACKFILL DETAIL

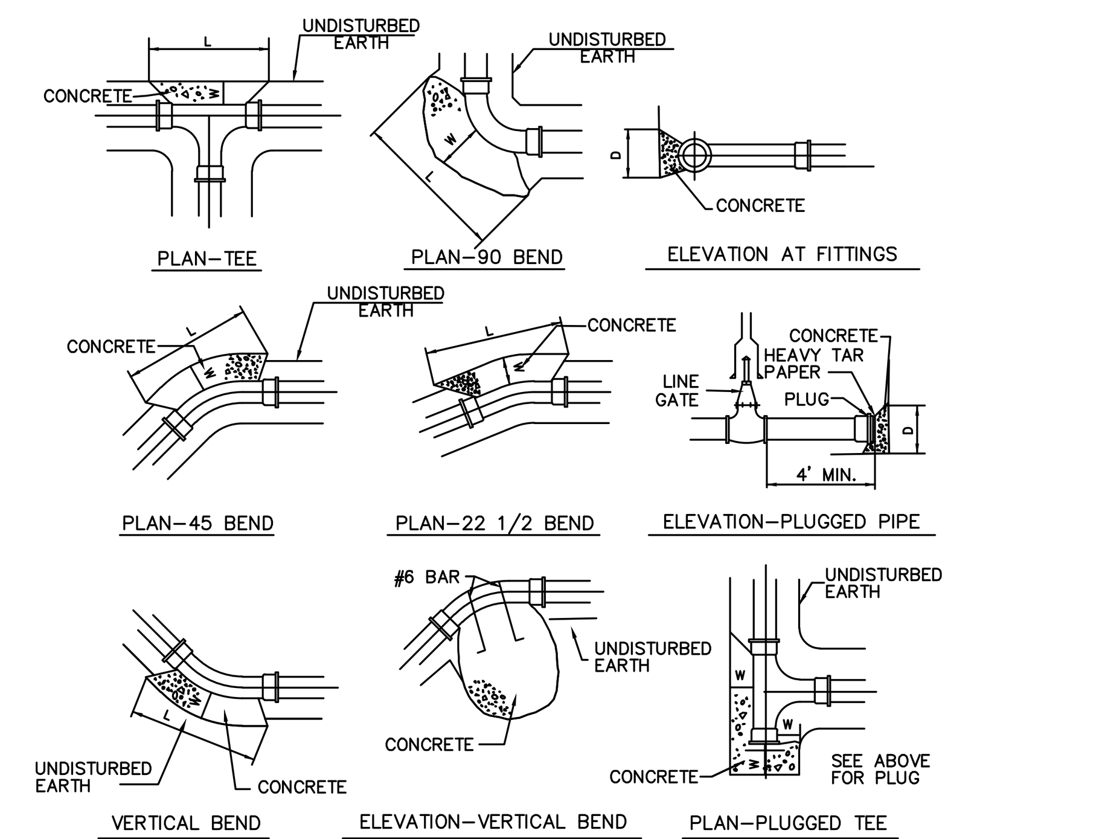


NOTES:

1) BEDDING TO BE PENNDOT 2A MODIFIED AGGREGATE OR EQUIVALENT.
2) BACKFILL TO BE SUITABLE MATERIAL REASONABLY FREE OF ORGANICS (SEE PENNDOT PUBLICATION 408 SECTION 206.2(a)2). BACKFILL UNDER PAVED ROADWAYS TO BE PENNDOT 2A COARSE AGGREGATE OR EQUIVALENT.
3) GAS AND/OR POWER INDICATIONS SHALL BE PLACED 12" BELOW FINISHED GRADE (TYPICAL FOR ALL TRENCHES.)
4) DETAILS PROVIDED FOR REFERENCE AND SPACING PURPOSES ONLY, CONTRACTOR TO REFER TO MEP DRAWINGS FOR TYPICAL DUCT BANK SECTION AND SERVICE DETAILS.

DETAIL PROVIDED FOR REFERENCE PURPOSES ONLY. COORDINATE PIPE BEDDING REQUIREMENTS WITH UTILITY PURVEYORS.

COMMON UTILITY TRENCH DETAIL



THRUST BLOCK SCHEDULE

PIPE SIZE	TEE L	TEE D	22 1/2 L	22 1/2 D	45 L	45 D	90 L	90 D	W
6"	18"	15"	15"	12"	15"	12"	15"	15"	21"
8"	2'	18"	18"	12"	18"	12"	2'	18"	2'
12"	3'	2'	2'	12"	2'	12"	3'	2'	28"
16"	4'	2.5'	2'	12"	2.33'	15"	4'	2.5'	31"
20"	5.25'	3'	2'	18"	3'	2'	5.25'	3'	33"
24"	7.5'	3'	3'	18"	4'	2.5'	7.5'	3'	3'

BASIS:
2,000 LB/SQ.FT. SOIL RESISTANCE
250 PSI WATER PRESSURE
CORRECTION FACTORS FOR OTHER SOILS:

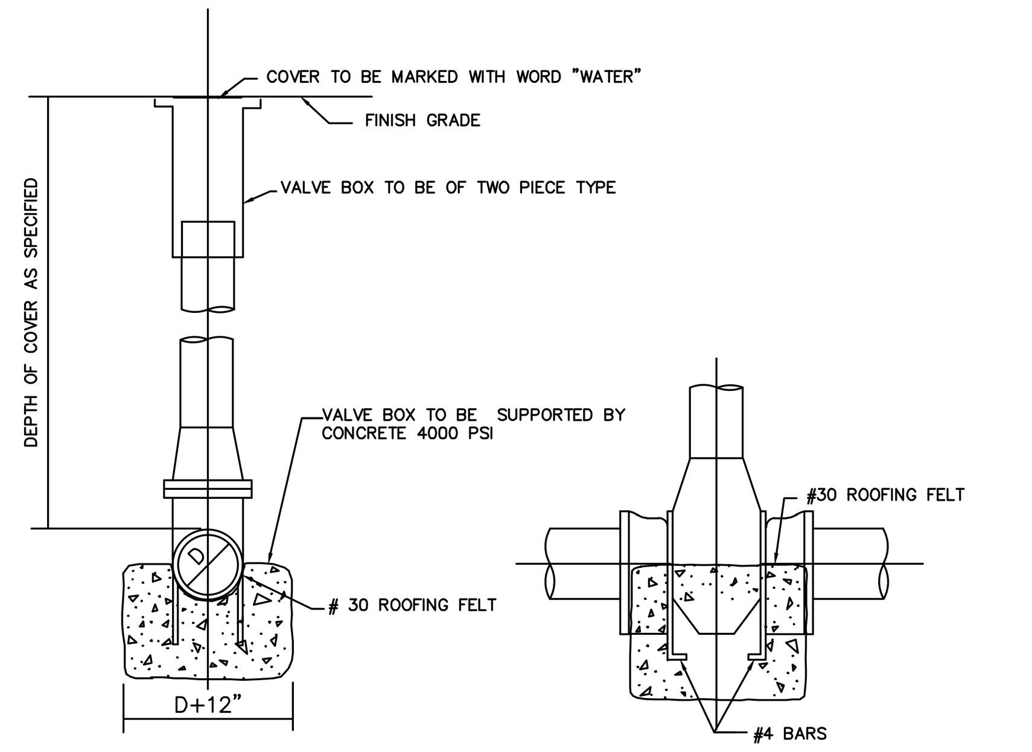
SOFT CLAY	4
SAND	2
SAND & GRAVEL	1.33
SHALE	0.4

NOTE:
1. IF SOFT MATERIALS ARE ENCOUNTERED THE THRUST BLOCKS SIZES SHALL BE ADJUSTED ACCORDINGLY.
2. CONCRETE TO BE 4000 psi.

THRUST BLOCKS

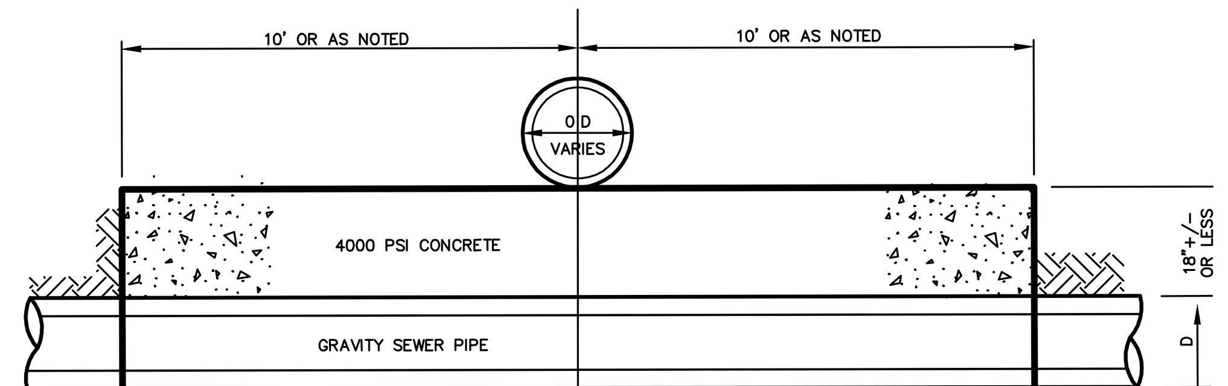
UTILITY INSTALLATION AND TRENCH EXCAVATION

1. CONSTRUCTION REQUIREMENTS –
   A. LIMIT ADVANCE CLEARING AND GRUBBING OPERATIONS TO A DISTANCE EQUAL TO TWO (2) TIMES THE LENGTH OF PIPE INSTALLATION THAT CAN BE COMPLETED IN ONE (1) DAY.
   B. WORK CREWS AND EQUIPMENT FOR TRENCHING, PLACEMENT OF PIPE, PLUG CONSTRUCTION AND BACKFILLING WILL BE SELF CONTAINED AND SEPARATE FROM CLEARING AND GRUBBING AND SITE RESTORATION AND STABILIZATION OPERATIONS.
   C. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT, PLUG INSTALLATION AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY.
   D. WATER THAT ACCUMULATES IN THE OPEN TRENCH WILL BE COMPLETELY REMOVED BY PUMPING, AS REQUIRED, TO A FACILITY FOR REMOVAL OF SEDIMENT IN ACCORDANCE WITH "PADEP" GUIDELINES.
   E. ON THE DAY FOLLOWING PIPE PLACEMENT AND TRENCH BACKFILLING, THE DISTURBED AREA WILL BE GRADED TO BE FINAL CONTOURS AND APPROPRIATE TEMPORARY EROSION AND SEDIMENT POLLUTION CONTROL MEASURES/FACILITIES WILL BE INSTALLED. SEEDING AND MULCHING OF ALL DISTURBED AREAS WILL BE DONE AT THE END OF EACH WEEK.
2. BACKFILLING – AFTER THE PIPE AND ITS APPURTENANCES HAVE BEEN SATISFACTORILY INSTALLED AND COVERED, THE TRENCH SHALL BE BACKFILLED IN SIX (6) INCH LAYERS AND IN SUCH A MANNER AS NOT TO DISTURB THE PIPE. HOWEVER, 8-INCH LAYERS WILL BE PERMITTED WHEN USING VIBRATORY COMPACTION EQUIPMENT PROVIDED BACKFILL MATERIAL IS SUITABLE FOR COMPACTION TESTING. EACH LAYER OF BACKFILL SHALL BE THOROUGHLY COMPACTED WITH MECHANICAL TAMPERS OR BY OTHER ACCEPTABLE METHODS, FOR THE FULL TRENCH WIDTH. T
3. EXCEPTIONS – IN CERTAIN CASES TRENCHES CANNOT BE BACKFILLED UNTIL THE PIPE IS HYDROSTATICALLY TESTED, OR ANCHORS AND OTHER PERMANENT FEATURES ARE INSTALLED IN THESE CASES, ALL OF THE REQUIREMENTS LISTED UNDER ITEM 1 WILL REMAIN IN EFFECT WITH THE FOLLOWING EXCEPTIONS:
   A. DAILY BACKFILLING OF THE TRENCH MAY BE DELAYED FOR SIX DAYS. ALL PRESSURE TESTING AND THE COMPLETE BACKFILLING OF THE OPEN TRENCH MUST BE COMPLETED BY THE SEVENTH WORKING DAY.
   B. IF DAILY BACKFILLING IS DELAYED, THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS APPROPRIATE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES/FACILITIES WILL BE INSTALLED, AND THE AREAS SEEDED AND MULCHED WITHIN THE NEXT TWO CALENDAR DAYS.
   C. SIDES OF TRENCHES SHALL BE KEPT AS NEARLY VERTICAL AS POSSIBLE, AND THE TRENCHES SHALL BE EXCAVATED TRUE TO THE LINE SO THAT A CLEAR SPACE EIGHT (8") INCHES IN WIDTH IS PROVIDED ON EACH SIDE OF THE BARREL OF THE PIPE TO A HEIGHT NOT LESS THAN ONE (1) FOOT ABOVE THE TOP OF THE PIPE. IF SHEETING IS REQUIRED AT THE LEVEL OF THE PIPE, THE DIMENSIONS IN THE FOREGOING SENTENCE SHALL BE APPLICABLE TO THE INSIDE FACES OF THE SHEETING.
   D. THE CITY SHALL HAVE THE RIGHT TO LIMIT THE AMOUNT OF TRENCH OPENED IN ADVANCE OF PIPE LAYING AND THE AMOUNT OF PIPE LAID IN ADVANCE OF BACKFILLING, BUT IN NO CASE SHALL MORE THAN FOUR HUNDRED (400) FEET OF TRENCH BE OPENED AT ANY ONE PLACE IN ADVANCE OF THE COMPLETED PIPE. THE TRENCH SHALL NOT BE OPENED FOR A DISTANCE OF MORE THAN FIVE HUNDRED (500) FEET AT ANY ONE TIME.
   E. NO TRENCH WITHIN A PUBLIC STREET SHALL BE LEFT UNCOVERED AT THE CLOSE OF THE WORK DAY. NO OTHER TRENCH SHALL BE LEFT UNCOVERED FOR MORE THAN FIVE CONSECUTIVE WORKING DAYS. STEEL PLATES OF ADEQUATE STRENGTH MAY BE USED TO COVER OPENINGS WITH THE PRIOR APPROVAL OF THE MUNICIPAL ENGINEER.
   F. PRIOR TO PERFORMING ANY BLASTING, THE CONTRACTOR MUST OBTAIN ALL NECESSARY LICENSES AND PERMITS. PROTECTIVE MEASURES MUST BE USED TO INSURE SAFETY TO ADJACENT PROPERTY.
   G. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR INJURY TO PERSONS OR PROPERTY THAT MAY RESULT FROM THE USE OF EXPLOSIVES. ALL BLASTING SHALL BE PERFORMED UNDER THE SUPERVISION OF A LICENSED BLASTER, AND SHALL BE SUBJECT TO STATE, COUNTY AND LOCAL REGULATIONS.
   H. WHEN PIPE IS TO BE INSTALLED IN FILL, THE EMBANKMENT SHALL BE CONSTRUCTED TO AT LEAST ONE (1) FOOT ABOVE THE PROPOSED TOP OF THE PIPE. THE EMBANKMENT SHALL THEN BE EXCAVATED TO THE PROPER FORM AND GRADE, AND THE PIPE INSTALLED. THE EMBANKMENT SHALL THEN BE CONSTRUCTED TO NOT LESS THAN THREE AND ONE HALF (3 1/2) FEET ABOVE THE TOP OF THE PIPE.



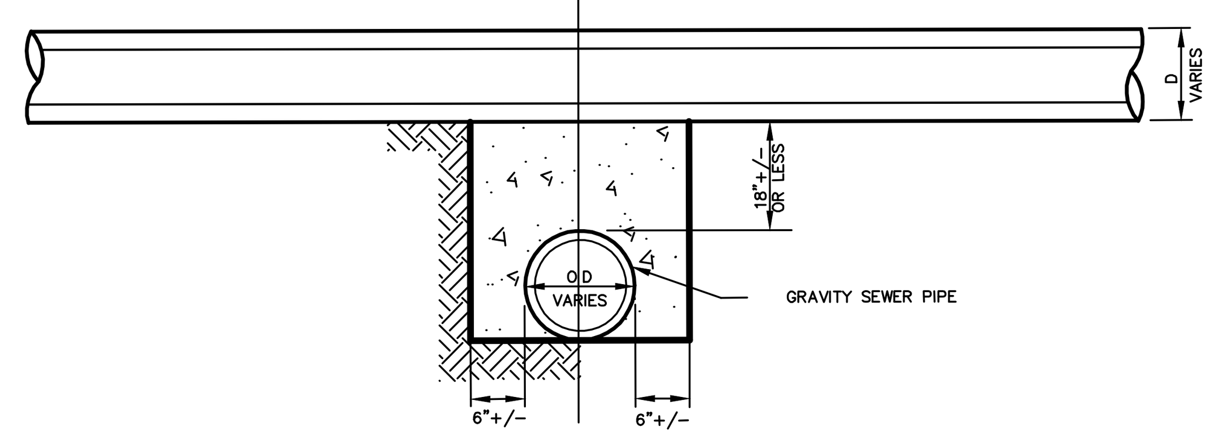
GATE VALVE DETAIL

NTS



NOTE:
ALL SANITARY PIPES SHALL BE ENCASED IN CONCRETE, WHEN THE VERTICAL DISTANCE BETWEEN PIPE CROSSINGS IS 18" OR LESS AND THE HORIZONTAL SEPARATION DISTANCE BETWEEN PIPES IS LESS THEN 10'. ENCASEMENT SHALL BE EXTENDED FOR A DISTANCE OF 10' (20' TOTAL) FROM BOTH SIDES OF THE CENTERLINE OF THE PIPE OR UNTIL THE PIPE SEPARATION IS 10' HORIZONTAL, WHICH EVER IS LONGER.

MAINTAIN CONCRETE PLACEMENT CHUTE PARALLEL WITH AXIS OF ENCASED PIPE TO PREVENT PIPE FROM MISALIGNMENT WHILE CONCRETING.



PIPE ENCASEMENT

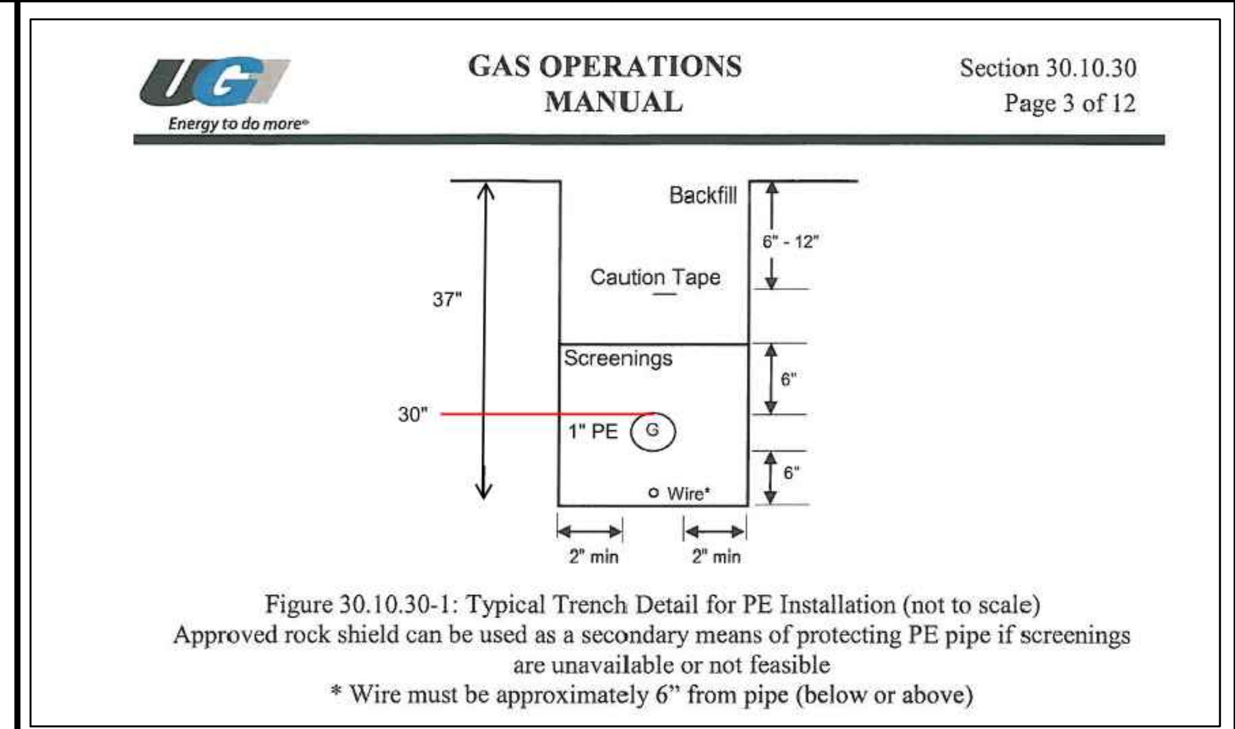
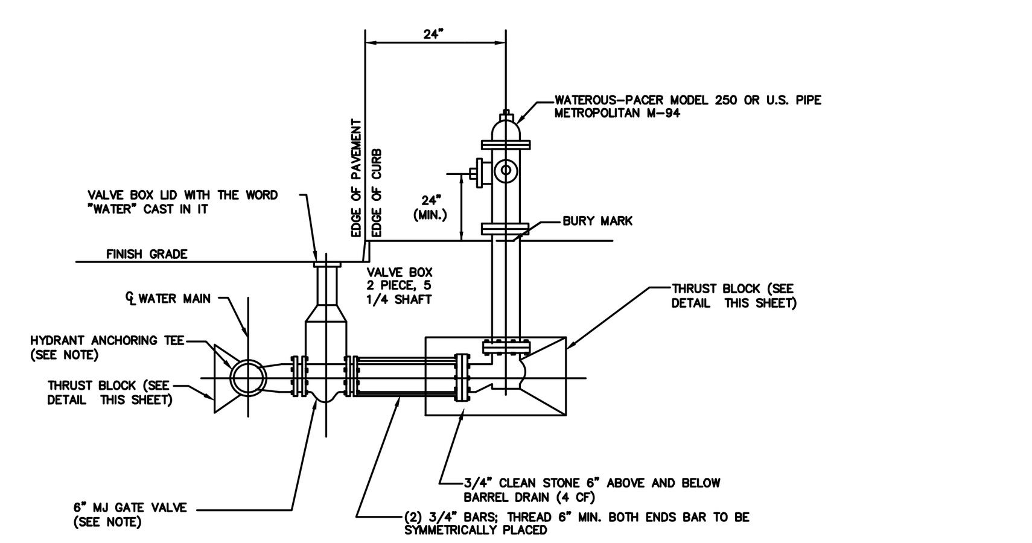


Figure 30.10.30-1: Typical Trench Detail for PE Installation (not to scale)
Approved rock shield can be used as a secondary means of protecting PE pipe if screenings are unavailable or not feasible
* Wire must be approximately 6" from pipe (below or above)

UGI GAS PIPE TRENCHING DETAIL



FIRE HYDRANT NOTES

1. THE INLET HUB, GATE VALVE AND HYDRANT TEE SHALL BE RODDED TOGETHER WITH CONTINUOUS THREADED RODS (ALL THREAD), SOCKET CLAMPS, WASHERS AND CORPORATION EYE BOLTS TO PREVENT HYDRANT FROM BLOWING OFF.
2. CONTRACTOR SHALL ENSURE THAT THE FIRE HYDRANT THREADS CONFORM TO CITY FIRE DEPARTMENT STANDARDS.

FIRE HYDRANT SPECIFICATIONS

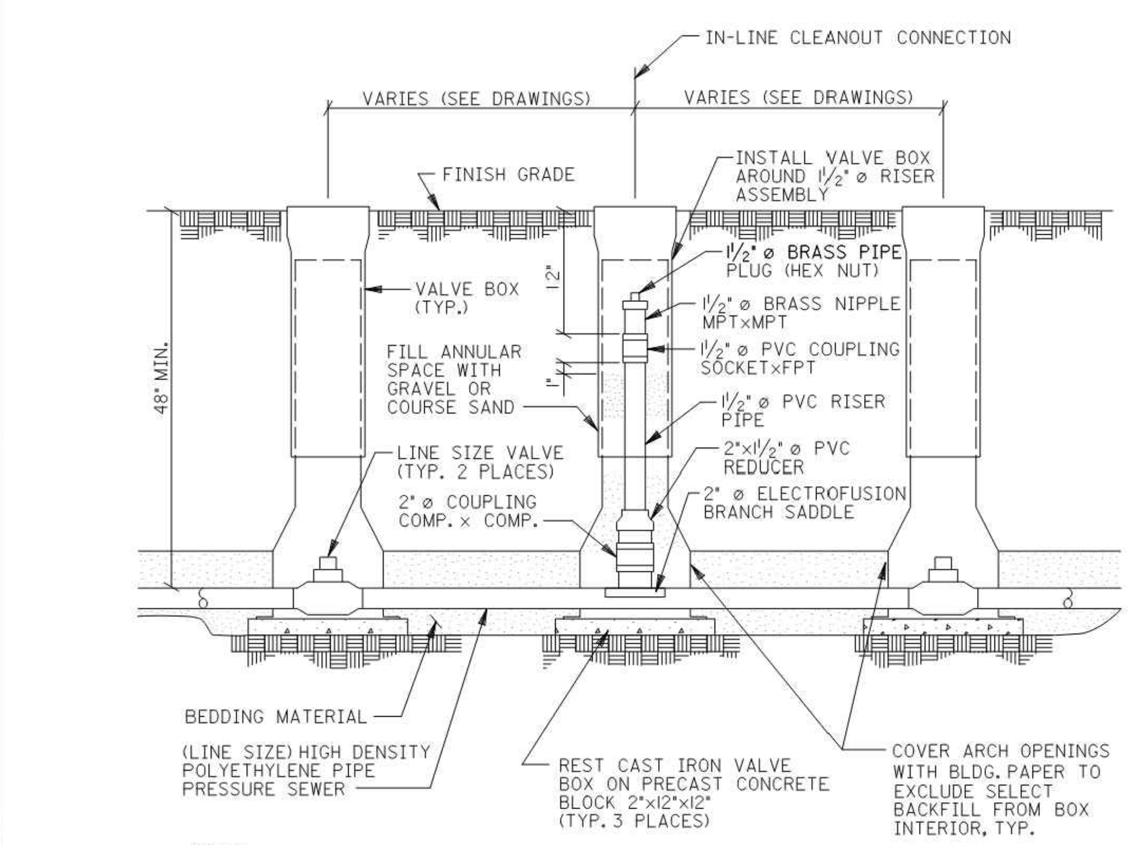
1. WATEROUS-PACER MODEL 250 OR U.S. PIPE METROPOLITAN M-94 5 1/4" VALVE OPENING (MIN.)
   6" MJ INLET HUB STANDARD 1 1/2" PENTAGON OPERATION NUT-OPEN COUNTER CLOCKWISE
2. CONNECTIONS: ONE (1) 4 1/2" PUMPER CONNECTION – N.S. THREAD
   TWO (2) 2 1/2" HOSE CONNECTIONS – N.S. THREAD
3. PAINT COLOR: AS DIRECTED BY CITY WATER DEPARTMENT.

ASSEMBLY SPECIFICATIONS

1. GATE VALVE: MJ, RESILIENT SEAT WEDGE, NON-RISING STEM, OPEN LEFT, AWWA C-509
   MUELLER MODEL #A-2360-20 OR APPROVED EQUAL
2. HYDRANT TEE: US PIPE U-590, CLOW 1217 OR EQUAL

HYDRANT ASSEMBLY DETAIL

DTMA
Derry Township Municipal Authority
670 Clearwater Road – Hershey, PA 17033



NOTES:

1. PRECAST CONCRETE BLOCKS TO REST ON UNDISTURBED EARTH OR FIRM SUBGRADE.

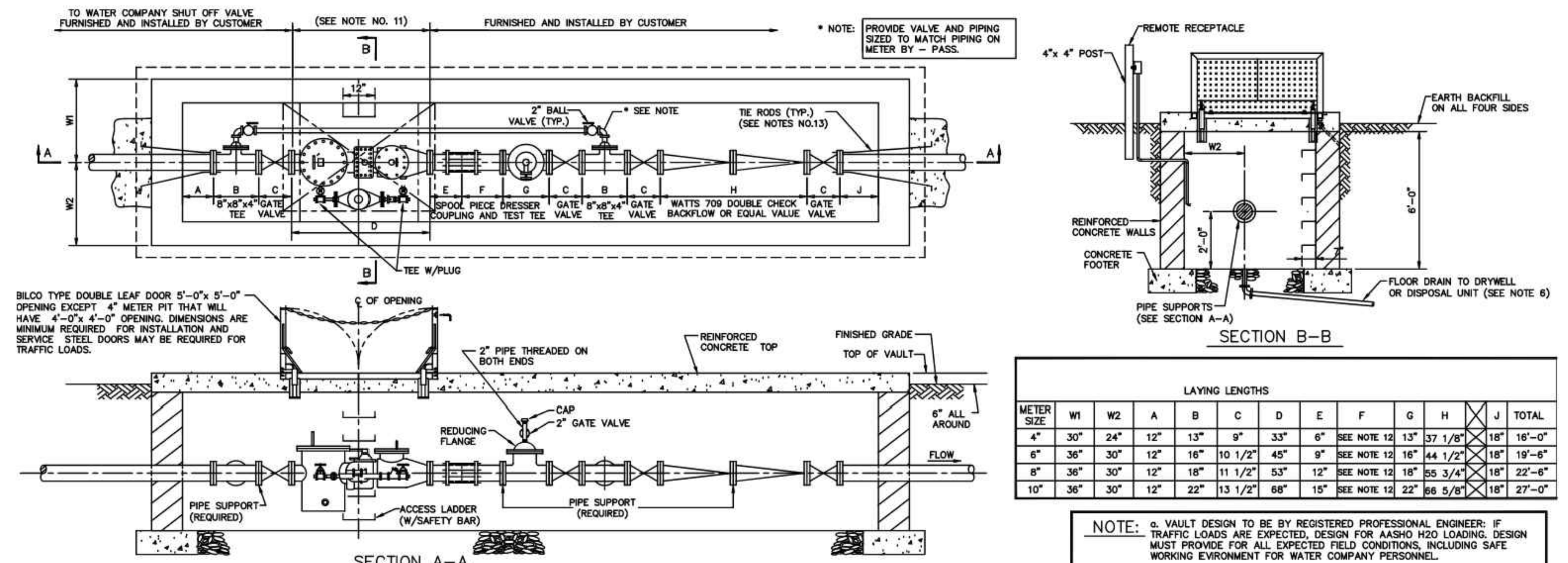
IN-LINE CLEANOUT CONNECTION DETAIL

33-08

6

4-INCH TO 10-INCH METER VAULT SPECIFICATIONS

PENNSYLVANIA AMERICAN WATER



LAYING LENGTHS

METER SIZE	W1	W2	A	B	C	D	E	F	G	H	⊠	J	TOTAL
4"	30"	24"	12"	13"	9"	33"	6"	SEE NOTE 12	13"	37 1/8"	⊠	18"	16'-0"
6"	36"	30"	12"	16"	10 1/2"	45"	9"	SEE NOTE 12	16"	44 1/2"	⊠	18"	19'-6"
8"	36"	30"	12"	18"	11 1/2"	53"	12"	SEE NOTE 12	18"	55 3/4"	⊠	18"	22'-6"
10"	36"	30"	12"	22"	13 1/2"	68"	15"	SEE NOTE 12	22"	66 5/8"	⊠	18"	27'-0"

NOTES:

1. CUSTOMER TO CONSTRUCT METERING VAULT AS SHOWN TO MINIMUM DIMENSIONS AND GENERAL CONFIGURAITON.
2. PIPE SUPPORTS, TIE RODS, ANCHORS AND THRUST BRACING AT FITTINGS AND VALVES SHALL BE PROVIDED SUFFICIENT, TO ALLOW PIPING TO STAND WITH REMOVAL OF METERS, FRICTION CLAMPS ARE NOT PERMITTED FOR RESTRAINT OF PIPING SYSTEMS.
3. THE CONNECTION TO THE EXISTING WATER MAIN AND VALVE WILL BE INSTALLED BY PENNSYLVANIA AMERICAN WATER COMPANY.
4. DOUBLE CHECK BACKFLOW PREVENTION DEVICE IS REQUIRED AS SHOWN AND/OR BACKFLOW PREVENTION DEVICE OF REDUCED PRESSURE. PRINCIPAL DESIGN MAY BE REQUIRED. THIS TYPE OF DEVICE IS TO BE INSTALLED ON THE SERVICE LINE, INSIDE AND AT THE POINT WHERE IT ENTERS THE BUILDING. (TYPE AND MANUFACTURES OF BACKFLOW DEVICE MAY AFFECT DIMENSIONS.)
5. 2" VALVES AND UNDER ARE I.P.S. 4" VALVES AND OVER ARE FLANGED – 125 P.S.I. CLASS FLANGE W/125 P.S.I. DRILLING.
6. IT WILL BE NECESSARY FOR THE CUSTOMER TO INSTALL PROPER DRAINAGE OR OTHER MECHANICAL MEANS TO KEEP VAULT DEWATERED.
7. WATER SERVICE WILL NOT BE PROVIDED UNTIL VAULT IS COMPLETED AS DETAILED. WATER COMPANY TO REVIEW FINAL DESIGN OF VAULT BY CUSTOMER FOR DIMENSIONS AND OVERALL CONFIGURATION.
8. GATE VALVES AND PIPING MUST BE SAME SIZE AS METER.
9. ALL VALVES AND BACKFLOW PREVENTORS TO BE MAINTAINED BY CUSTOMER.
10. BILCO TYPE DOOR BY BE CENTERED OVER METER ASSEMBLY AND ACCESS LADDER
11. METER ASSEMBLY WILL NOT BE INSTALLED UNTIL ALL PIPING IS COMPLETED IN THE VAULT. A FILLER PIECE SHOULD BE INSTALLED TO ASSURE PROPER ALIGNMENT OF FLANGES. METER ASSEMBLY FURNISHED AND INSTALLED BY PENNSYLVANIA – AMERICAN WATER COMPANY.
12. MUST BE SUFFICIENT TO CLEAR BREAK IN PIPING W/DRESSER COUPLING RING.
13. TIE RODS TO BE EMBEDDED IN CONCRETE OR BOLTED TO STEEL ON PLATES ON EXTERIOR WALLS. WATER COMPANY TO INSPECT BEFORE BACKFILLING.

NOTE:
a. VAULT DESIGN TO BE BY REGISTERED PROFESSIONAL ENGINEER: IF TRAFFIC LOADS ARE EXPECTED, DESIGN FOR AASHO H20 LOADING. DESIGN MUST PROVIDE FOR ALL EXPECTED FIELD CONDITIONS, INCLUDING SAFE WORKING EVIRONMENT FOR WATER COMPANY PERSONNEL.
b. PA. AMERICAN WATER CO. MAY REQUIRE IN THE VAULT TELEPHONE AND/OR POWER (120 VAC, 15 AMP) FOR "AMR" INSTALLATION OR SUMP PUMP FOR DRAINAGE.
c. IF PIT IS PROVIDED WITH ELECTRICAL SUPPLY PLEASE SUPPLY OUTSIDE DISCONNECT AND PROVISIONS FOR SUMP PUMP (FUTURE).
d. PRE-CAST VAULTS ARE AVAILABLE AND CUSTOMERS SHOULD VERIFY DESIGN BY THEIR ENGINEER.
e. VAULT AND METER INSTALLATION IS PA. AMERICAN WATER CO. STANDARD FOR OPTIMUM PERFORMACE AND DESIGN FOR INSTALLATION AND SERVICING. ALTERNATE DESIGNS MAY BE REQUIRED, PLEASE CONTACT PA. AMERICAN WATER CO. PERSONAL FOR REVIEW AND APPROVAL.

10

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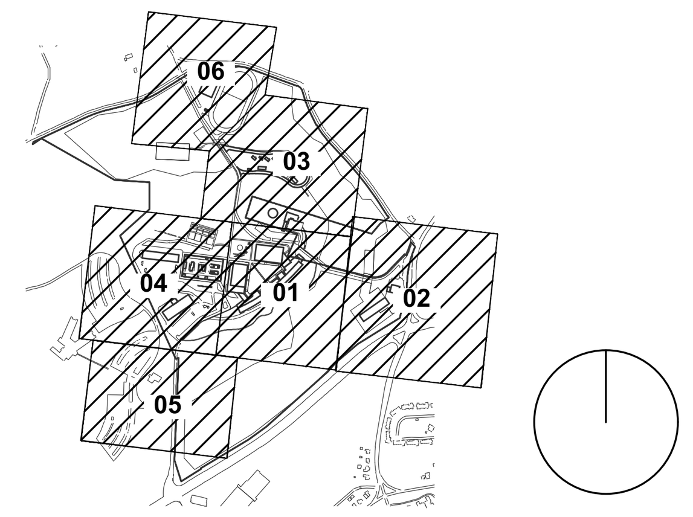
STRUCTURAL ENGINEER **Skidmore, Owings & Merrill LLP** 250 Greenwich St, New York, NY 10007	E, P, FP, FA ENGINEER **A & J Consulting Engineering Services** 164 Brighton Rd, Clifton, NJ 07012
MECHANICAL, AV/IT ENGINEER **Interface Engineering, Inc.** 2000 M Street NW, Washington, DC 20036	ACOUSTICAL ENGINEER **Cerami** 1001 Ave of the Americas, New York, NY 10018
CODE CONSULTING **CCI** 215 W 40th St, 10th Floor, New York, NY 10018	CIVIL ENGINEER **Langan** 1818 Market St #3300, Philadelphia, PA 19103
VERTICAL TRANSPORT **Michael Blades & Associates Ltd.** 5409 Rapidan Ct, Lothian, MD 20711	SIGNAGE CONSULTANT **Patricia Hord Graphik Design** 119 S. St. Asaph St, Alexandria, VA 22314
LANDSCAPE **Lee and Associates, Inc.** 638 I Street NW, Washington, DC 20001	LIGHTING **MCLA** 1000 Potomac St NW, Washington, DC 20007
FOOD SERVICE **Hopkins Foodservice Specialists, Inc.** 7906 MacArthur Blvd, Cabin John, MD 20818	COST ESTIMATING **Aqua Design International** 7536 N. La Cholla Blvd, Tucson, AZ 85741

NOTE

KEYPLAN



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2023-07-21

SIGNATURE DATE

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PROFESSIONAL ENGINEER
PA LIC. NO: 63172

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250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

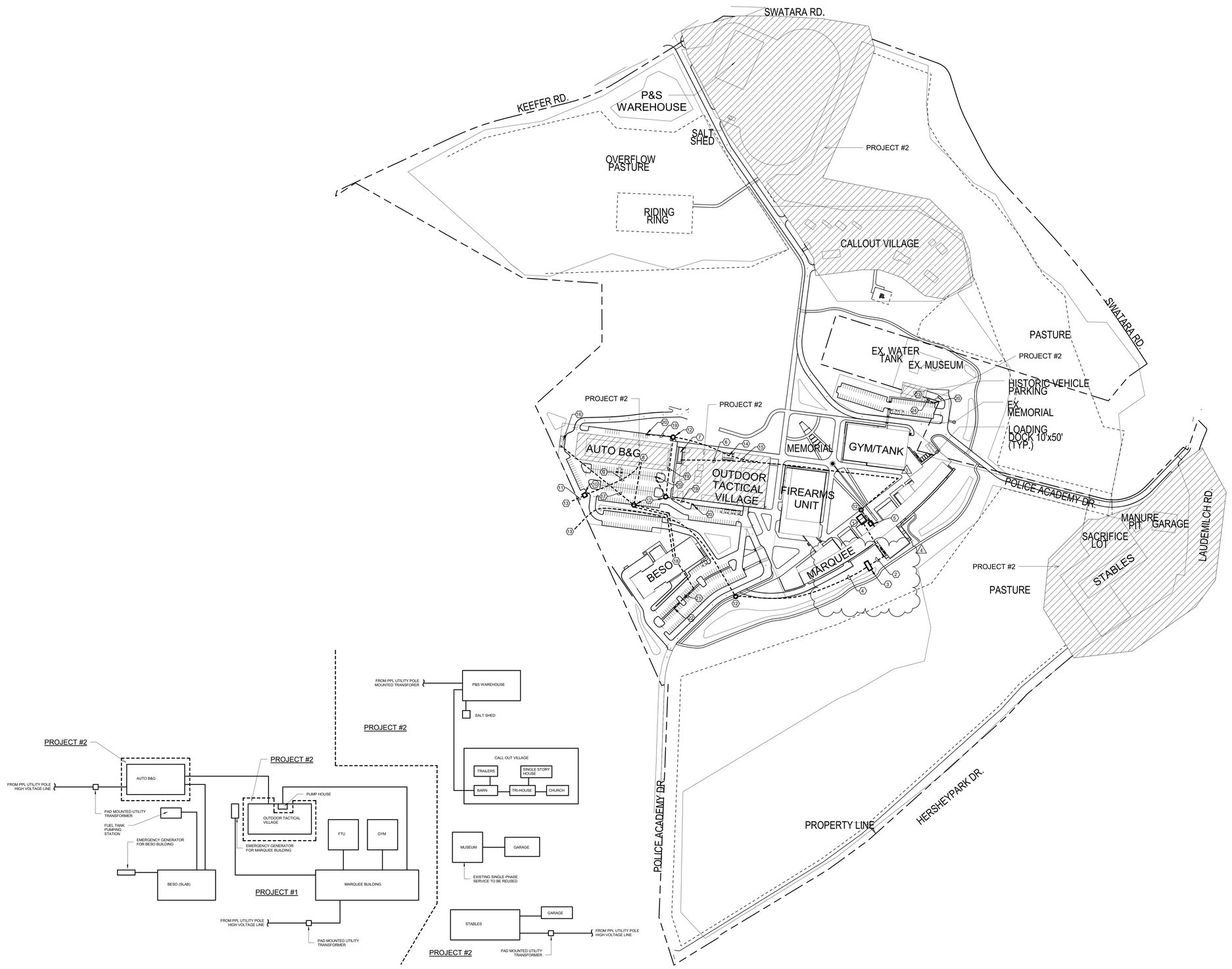
D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy
Core Buildings, BESO & Sitework
PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

UTILITY DETAILS - 1

SHEET No.
STE-C-751

DRAWN BY	CHECKED BY	DATE	SCALE
TJM/BXP/KSB	KLF	MAY 2023	AS NOTED



2 ELECTRICAL SERVICE BLOCK DIAGRAM

STE-E-100 SCALE: N.T.S.

1 ELECTRICAL SITE AND SERVICE PLAN

STE-E-100 SCALE: 1" = 160'-0"

GENERAL NOTES

1. REFER TO GEN-E-001 FOR SYMBOLS, ABBREVIATIONS AND NOTES.
2. REFER TO GEN-E-701 FOR DETAILS.
3. CONDUIT ROUTING AND TRANSFORMER PAD AND UTILITY POLE LOCATIONS ON SITE ARE FOR REFERENCE ONLY. REFER TO SITE/CIVIL PLANS FOR EXACT LOCATION AND ROUTING.

SHEET NOTES

1. MAIN SERVICE SWITCHBOARD IN MAIN ELECTRICAL ROOM.
2. INCOMING 3 PHASE, 4 WIRE, 277/480V, (2) 3000AMP UNDERGROUND SERVICE FEEDERS FROM UTILITY FOR MARQUEE BUILDING. (16) 4" CONDUIT, (4) SPARE CONDUIT. (4)
3. UTILITY TRANSFORMER PAD
4. INCOMING ELECTRIC SERVICE FEEDERS FROM UTILITY - (2) 4" CONDUITS
5. ATS ROOM
6. UNDERGROUND EMERGENCY ELECTRIC SERVICE FEEDERS FROM EMERGENCY GENERATOR
7. 3.25MW 480/277V, 3 PHASE EMERGENCY GENERATOR
8. CAP AND PROTECT FOR FUTURE CONNECTION IN PROJECT #2
9. 4 SETS OF 4" CONDUIT INCOMING 3 PHASE, 4 WIRE, 277/480V, 1600AMP UNDERGROUND SERVICE FEEDERS FROM UTILITY FOR AUTOMOTIVE B&G BUILDING
10. UTILITY TRANSFORMER PAD
11. INCOMING ELECTRIC SERVICE FEEDERS FROM UTILITY - (2) 4" CONDUITS
12. ELECTRIC MANHOLE. SEE DETAIL 3 ON SHEET GEN-E-704.
13. EXISTING UTILITY ELECTRIC TRANSMISSION POLES
14. PUMP HOUSE
15. FEEDERS FROM MARQUEE ELECTRIC ROOM - (3) 4" CONDUIT, (3) 1/0 AWG Mi CABLE FOR FIRE PUMP.
16. FUEL PUMPING STATION, REFER TO MAQ-E-405
17. FEEDERS FROM PUMP HOUSE ELECTRIC ROOM - (1) 2" CONDUIT
18. BESO ELECTRICAL CLOSET, REFER TO BSO-E-100 FOR MORE INFORMATION
19. 1-1/2" CONDUIT FROM PUMP HOUSE TO EV CHARGING STATION
20. DUAL BOLLARD EV CHARGING STATION
21. (8) 1-1/2" CONDUITS FROM BESO TO EV CHARGING STATIONS
22. (8) DUAL BOLLARD EV CHARGING STATIONS
23. GARAGE ELECTRICAL CLOSET, REFER TO GRG-E-100 FOR MORE INFORMATION
24. 1-1/2" CONDUIT FROM GARAGE TO EV CHARGING STATION

TACTICAL TRAINING DESIGN
Tactical Design North, Inc.
231 E. Buffalo St #502, Milwaukee, WI 53202

LOCAL ARCHITECT
Jacobs Wyper Architects
1232 Chancellor St, Philadelphia, PA 19107

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Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, NY 10007

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1000 Potomac St NW, Suite 121, Washington, DC 20007

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Hopkins Foodservice Specialists, Inc.
7906 MacArthur Blvd, Suite 100, Cabin John, MD 20818

POOL DESIGN
Aqua Design International
7536 N. La Cholla Blvd Tucson, AZ 85741

KEYPLAN

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
4	21 JUL 2023	ADDENDUM 34			
3	07 JUL 2023	ADDENDUM 31			
1	19 MAY 2023	ISSUED FOR BID			

RECORD REVISIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
JITENDRA K AGARWAL
ENGINEER PE033176E

2023-06-16
SIGNATURE DATE

ARCHITECT
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

Pennsylvania State Police Academy Core buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

VERIFY SCALE

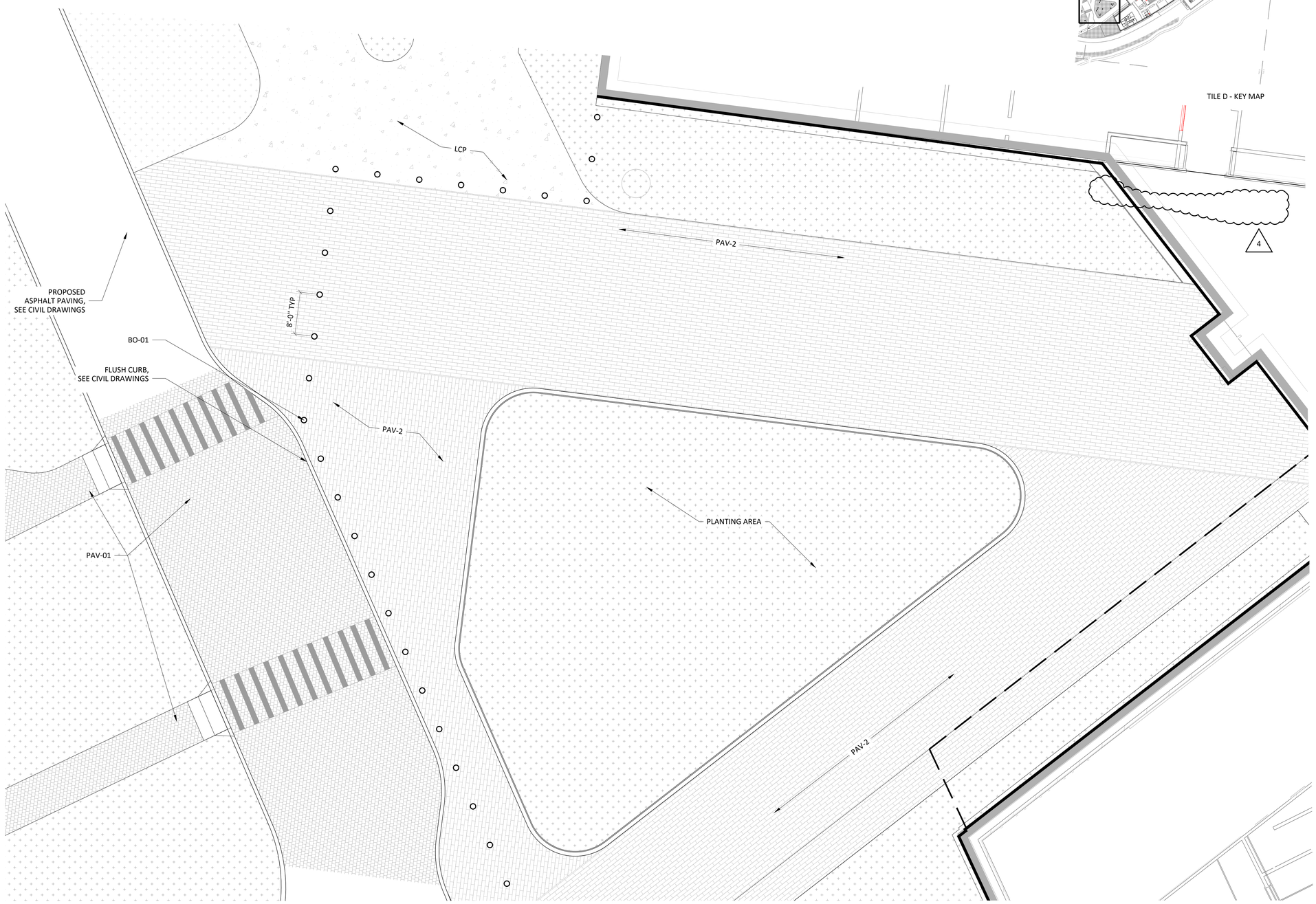
BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING:
0 1
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

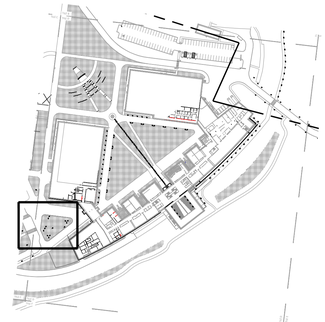
CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT PROFESSIONAL & BUREAU OF CONSTRUCTION APPROVAL.

SITE PLAN - ELECTRICAL SYSTEMS

SHEET No. STE-E-100

DRAWN BY	CHECKED BY	DATE	SCALE
AA	MK	APR 2022	AS NOTED





1 ENLARGED SITE MATERIALS PLAN - TILE D

SCALE: 1/8" = 1' - 0"

N

LEGEND

PROPERTY LINE

MATCH LINE

SEE SITE-L-500 SERIES FOR PLANTING LAYOUTS

NOTES
SEE STE-L-600 SERIES FOR LIGHTING LAYOUTS

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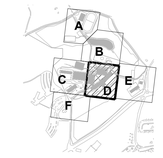
KEYPLAN



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
4	21 JUL 2023	ADDENDUM 34			
2	19 MAY 2023	ISSUED FOR BID			
1	18 FEB 2022	ISSUED TO L&I			

RECORD REVISIONS

PENNSYLVANIA · SANG SHON · REGISTERED LANDSCAPE ARCHITECT · REGISTRATION NUMBER LA-003401

SIGNATURE DATE

ARCHITECT
SOM
Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No.
C-0211-0005 PHASE 5

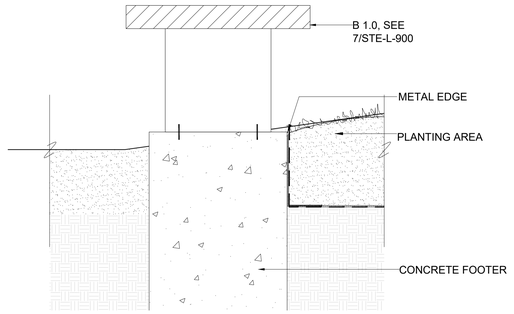
Pennsylvania State Police Academy
Core Buildings, BESO & Sitework

PENNSYLVANIA STATE POLICE
HERSHEY, DAUPHIN COUNTY, PA

ENLARGED SITE MATERIALS PLAN - TILE D

SHEET No.
STE-L-104_D

DRAWN BY	CHECKED BY	DATE	SCALE
LB/DJ	BS	MAY 2023	AS NOTED

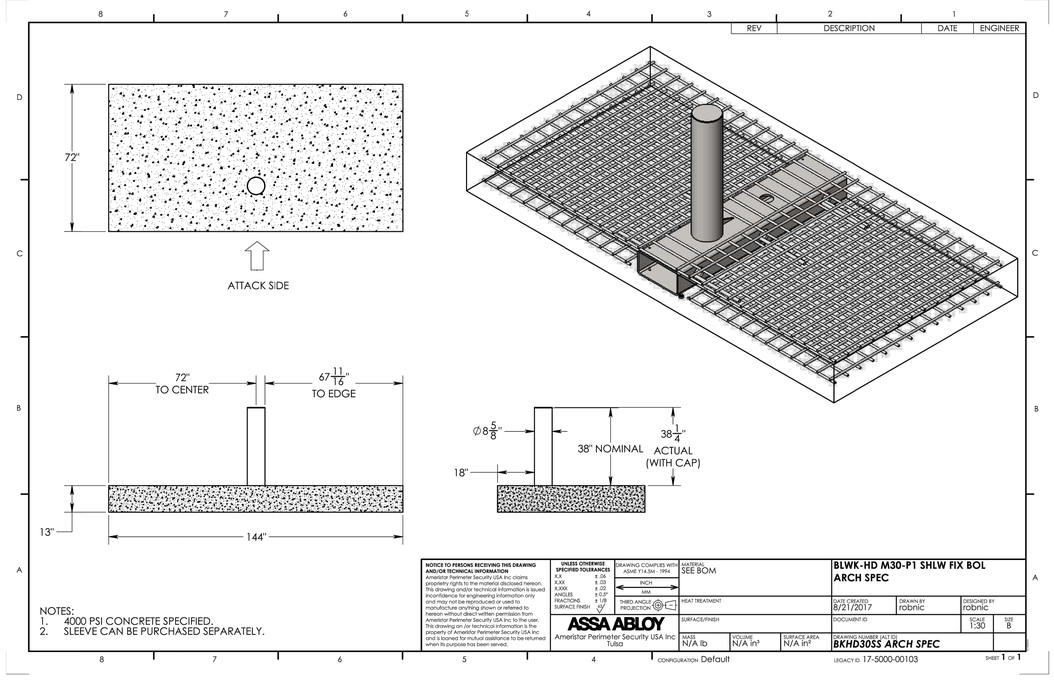


1 METAL EDGING

SCALE: 1-1/2" = 1'-0"

BOLLARD NOTES:

1. DELEGATED DESIGN ITEM
2. GC TO SUBMIT PA STRUCTURAL ENGINEER'S STAMPED AND SEALED SHOP DRAWING WITH FOOTER DESIGN PER MANUFACTURER'S STANDARDS AND GEOTECH REPORT FOR APPROVAL.
3. SEE ALSO CIVIL DETAILS.



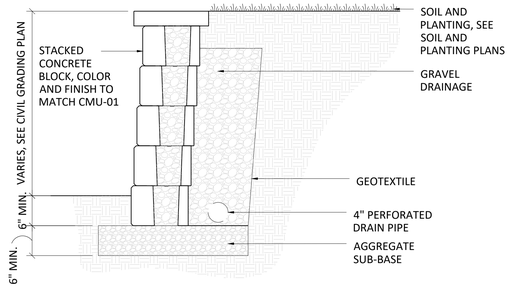
2 BOLLARD

SCALE: 1-1/2" = 1'-0"

3 NOT USED

4 NOT USED

NOTE:
1. BASIS OF DESIGN IS WESTBROOK CORNERSTONE 100 WALL.
2. CMU BLOCK COLOR AND FINISH TO MATCH CMU-01.



5 SITE WALL

SCALE: 1/2" = 1'-0"

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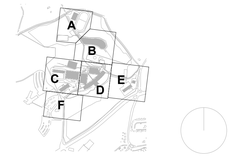

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RECORD REVISIONS

REGISTERED LANDSCAPE ARCHITECT — COMMONWEALTH OF PENNSYLVANIA — WANG SIMON — REGISTRATION NUMBER LA-RA004417

SIGNATURE DATE

ARCHITECT

SOM

Skidmore, Owings & Merrill LLP
250 Greenwich St, New York, 10007

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

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C-0211-0005 PHASE 5

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HARDSCAPE DETAILS

SHEET No. STE-L-901

DRAWN BY	CHECKED BY	DATE	SCALE
LB/DJ	BS	MAY 2023	AS NOTED