# Bureau of Maintenance and Operations



## MAINTENANCE MANUAL



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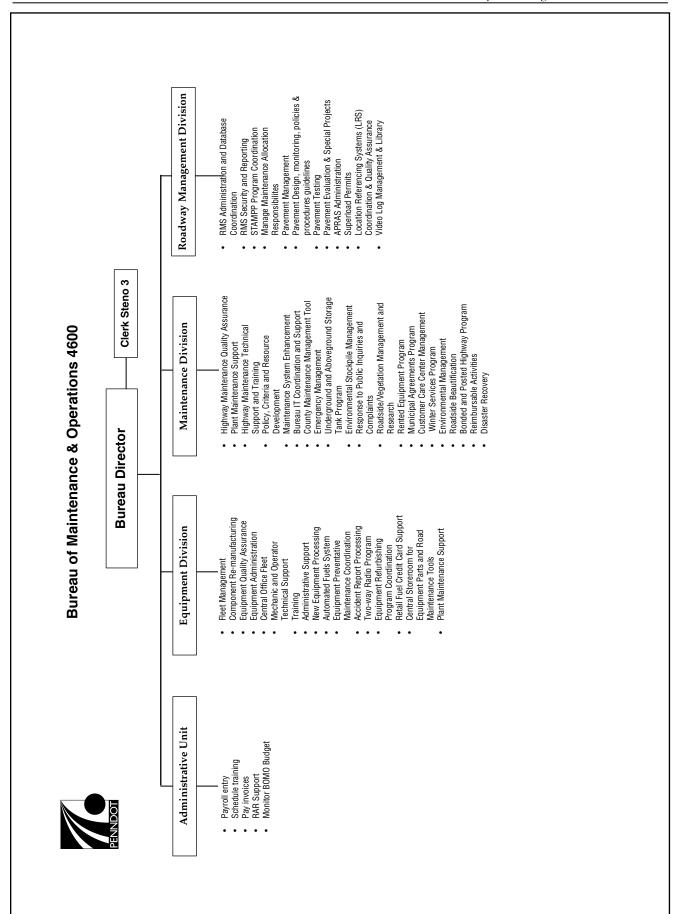
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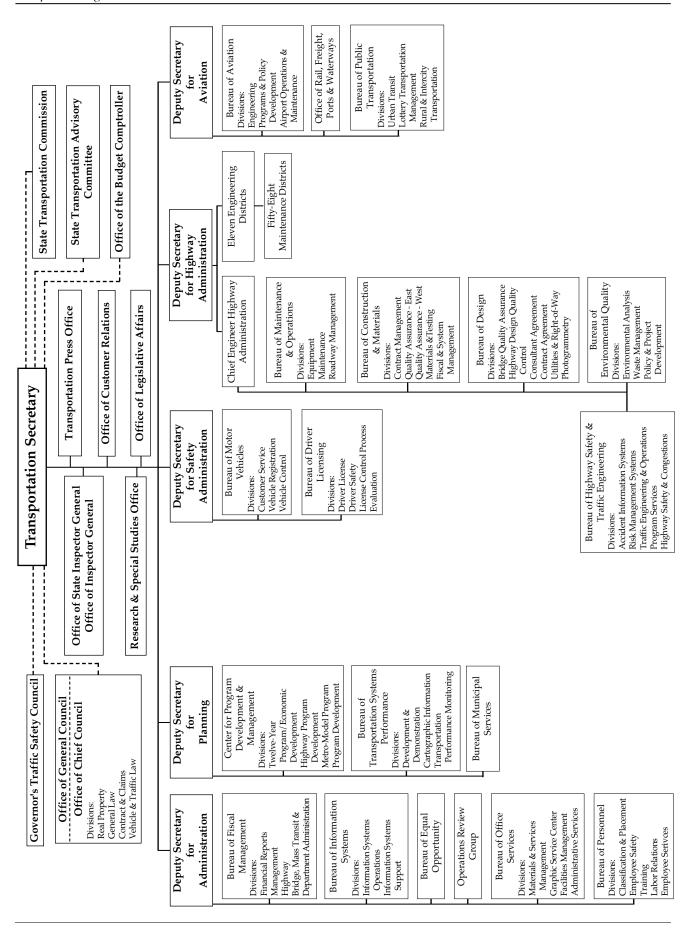
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## CHAPTER 1 ORGANIZATIONAL STRUCTURE

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## 1.2 BUREAU OF MAINTENANCE OPERATIONS

#### **EQUIPMENT DIVISION**

#### 4610

- Equipment Management
- Component Re-Manufacturing
- Equipment Quality Assurance
- Equipment Administration
- Central Office Fleet
- Mechanic & Operator Technical Support
- Mechanic & Operator Technical Training
- Administrative Support
- New Equipment Processing
- Equipment Specification Unit
- Automated Fuel Systems
- Equipment Preventative Maintenance
- Accident Report Processing
- Retail Fuel Credit Card Support
- Central Storeroom for Equipment Parts and Road Maintenance Tools
- Two-way Communications Program
- AVL System Support
- Operator Training Sites
- Plant Maintenance Support

#### **MAINTENANCE DIVISION**

#### 4620

- Highway Maintenance Quality Assurance
- Highway Maintenance Technical Support & Training
- Policy, Criteria & Resources Development
- Maintenance Systems Enhancement
- Emergency Management
- Underground & Aboveground Storage Tanks Programs
- Stockpile Management
- Bureau IT Coordinator and Support
- Customer Care Center Management

- County Maintenance Management Tool (CMMT)
- Plant Maintenance Support
- Roadside/Vegetation Management & Research
- Response to Public Inquiries & Complaints
- Rented Equipment Program
- Municipal Agreement Program
- Winter Services Program
- Environmental Management
- Bonded & Posted Highways Administration
- Reimbursable Activities
- Disaster Recovery

#### **ADMINISTRATIVE UNIT**

#### 4640

- Payroll Entry
- Schedule Training
- RAR Support
- Pay Invoices
- Montor Budget

#### ROADWAY MANAGEMENT DIVISION

#### 4650

- Oversize & Overweight Regulations & Permits
- Superload Permits
- APRAS Administration
- RMS Administration & Database Coordinator
- RMS Security & Reporting
- STAMPP Program Coordination
- Manage Maintenance Allocation Responsibilities
- Pavement Management
- Pavement Design, Monitoring, Policies, Procedures & Guidelines
- Pavement Testing
- Pavement Evaluation & Special Projects
- Location Referencing System (LRS)
   Coordination & Quality Assurance
- Video Log Management & Library

#### 1.3 EQUIPMENT DIVISION 4610

## EQUIPMENT ADMINISTRATION SECTION MANAGEMENT INFORMATION - TECHNICAL TRAINING - TECHNICAL SUPPORT - TRAINING SITES

- Responsible for the 211 fuels systems
- Operates a central purchasing and warehouse operation for equipment components and highway maintenance hand tools
- Administers the Mechanic Operator Training Program
- Manages the research and development of new products systems, tools and other equipment related products or concepts
- Responsible for contract management, purchasing and invoice processing for the Equipment Division Programs, 822 & 844
- Process Accident Reports

#### FLEET MANAGEMENT SECTION, COMPONENT RE-MANUFACTURING, QUALITY ASSURANCE, C.O. FLEET MAINTENANCE.

- Responsible for the equipment related subsystem of SAP Plant Maintenance
- Develops policies & procedures for the maintenance and operation of the department's equipment fleet
- Provides management assistance in the repair of the department-owned equipment
- Manages and operates the Central Office equipment fleet
- Responsible for managing Equipment Division's 813 program
- Garage and shop tool inventory systems
- Establishes repair standards
- Responsible for the maintenance of the building and grounds at the Equipment Division and Training Centers
- Establishes and monitors the equipment Preventative Maintenance Program
- Manage the department's engine, transmission, hydraulic and electrical rehabilitation program

- Develop Equipment Rehabilitation Program
- Coordinates the removal of old equipment from the fleet
- Assists on garage and shop tools with the counties
- Equipment Division's approval of 838's

#### SPECIFICATIONS & NEW EQUIPMENT SECTION - NEW EQUIPMENT PROCESSING & SPECIFICATIONS SECTION

- Prepare specifications for the purpose of all Capital Equipment used for roadway maintenance
- Inspects new equipment to insure compliance with purchasing specifications
- Manages the research and development of new equipment, conducts experimental programs in conjunction with the Maintenance Division on the application of equipment for maintenance operations Administrative Support
- Maintain Capital Equipment Budget reports
- Process all purchase requisitions, purchase orders and equipment invoices processed for roadway equipment
- Manages the review and development of statewide specifications for oils, lubricants, anti-freeze and other equipment related products
- Administer the equipment warranty program

#### 1.4 MAINTENANCE DIVISION 4620

#### **QUALITY ASSURANCE SECTION**

- Regional Maintenance Advisors
- Quality Assurance Program Development
- Quality Assurance Reporting Support
- Quality Assurance Reviews
- Productivity Reviews
- Maintenance Training Programs
- Foreman's Academy Support
- Assistant County Maintenance Manager's Academy Support
- Program Project Selection Reviews
- Production Inspection Reviews
- Environmental Reviews
- SEMP Reviews & Management
- AAR Support
- CMMT Support
- Core Business Training Development
- Core Business Training Implementation
- WZTC Training Development
- WZTC Training Implementation
- WZTC Quality Assurance Reviews
- Bureau Representation on Interdepartmental Teams
- Bureau Representation on Interagency Teams
- Bureau Representation on Industry Organization
- Special Projects

#### MAINTENANCE PROGRAMS SECTION

- Reimbursable Activities
- Disaster Recovery
- Snow Academy
- Foreman's Academy
- Waste Management
- Tank Management
- Hazardous & Environmentally Sensitive Materials Manual
- FHWA Reports
- Special Projects
- Stockpile Environmental Projects Coordination
- Roadside Vegetation Management Program
- Posted Highway Program

- Rented Equipment Program
- Municipal Agreement Program
- Winter Service Programs
- Snow Reports
- Materials Agreements
- Transportation Communication Center
- Product Evaluation
- Maintenance Training Programs
- Manage Research Projects
- Roadway Weather Information System (RWIS)
- Roadside Beautification

## MAINTENANCE SYSTEMS AND REPORTING SECTION

- mySAP (Systems, Applications and Products)
   Payroll Oversight
- Plant Maintenance Data Control and Analysis
- Q/A Investigations
- Long Term Plan and Budget Review
- Foreman's Manual Maintenance
- Maintenance Reporting Programs
- Customer Care Center (CCC)
- CMMT Coordination
- SAP/PM Help Desk

## 1.5 ROADWAY MANAGEMENT DIVISION 4650

## ROADWAY INVENTORY & TESTING SECTION

- RMS Applications & Enhancement
- Maintenance Allocation Program ASHMA Formula Source Data Management
- Pavement Evaluation and Testing Programs
- LRS Program Coordination, Quality Assurance, and Training
- Pavement Testing Data Analysis and Reporting
- Pavement Testing Equipment Calibration and Verification
- RMS Security Administration
- RMS Data Retrieval
- SAS Application Programming
- Program Library Maintenance
- Special Program Request
- Graphic Data Presentations
- SAS Training
- Manage Pavement Evaluation & Testing Programs
- Manage Maintenance & Calibration of All Testing & Pool Vehicles
- Prepare Specifications for New Equipment
- Light Weight Profiler Calibration Verification
   Operator Certification
- Manage Maintenance Allocation Responsibilities
- Manage RMS Engineering
- Supervise RMS Training & System Documentation
- Develop RMS Applications Procedures
- RMS Enhancements
- Maintain RMS Help Screen Facility
- Promote RMS & STAMPP Through Visits & Meetings With District
- Manage Video Log project
- Maintain Video Log library

## PAVEMENT DESIGN & ANALYSIS SECTION

- Review Federal Oversight Pavement Designs and LCCA's. Perform PennDOT Oversight Pavement Design Q/A.
- Pavement Management.
- I-4R and Betterment Program development and assistance.
- Maintain the Pavement Policy Manual (Pub 242).
- Provide support for AASHTO 93 Pavement Design and Darwin 3.01 Software.
- Data Analysis & Application of FWD Including Mechanistic Design Procedure
- Develop Pavement Design & Rehabilitation Policies, Procedures & Guidelines
- Development of Specifications & Standard Drawings for Roadway Construction & Rehabilitation
- Prepare Annual State of the Interstate Report
- Assist Program Center with the Interstate 4 Year Program
- Provide Technical Assistance to Districts with all Pavement Related Problems
- Provide Liaison with FHWA on all Pavement Issues

#### **CENTRAL PERMIT OFFICE**

- Special Hauling Permit Program Mangement
- Oversize and Overweight Regulations
- Superload Permit Review and Analysis and Issuance
- APRAS Administration
- Liason with State Police regarding hauling Permits, Scheduling, Regulations, MCSAP Application, Truck Scale Maintenance

## CHAPTER 2 MAINTENANCE MATERIAL CONTROL

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#### 2.1 INTRODUCTION

Quality materials play a very important role in assuring a quality product whether it be construction or maintenance related.

Material is accepted for use on Department Force projects by two acceptance methods: "Restricted Performance Specification" (for Aggregates and Anti-skid Materials) and "Certification" for all other materials. Each will be discussed in detail and materials associated with each will be identified.

This Chapter is intended to provide guidance to Maintenance Managers in assuring proper Material Quality Control. Each Maintenance Manager and appropriate staff should familiarize themselves with the related sections of the following Department publications, as well as with the specifications in the materials contract:

Publication 4	408	Specifications
Publication	8	Construction Manual
Publication	2	Project Office Manual
Publication	19	Field Test Manual
Publication	34	Bulletin 14 Aggregate Producers
Publication	35	

#### 2.2 ACCEPTANCE PROCEDURES

All material (other than experimental) purchased by the Department must conform to the requirements of Publication 408 "Specifications"; material control shall be in accordance with Section 106 and the Physical properties and quality of the material shall conform to the applicable section(s).

Experimental material can be requisitioned through the Department of General Services using material Procurement Procedures #140, VII.

#### 2.3 CERTIFICATION

Certification is a procedure whereby the producer or manufacturer certifies that his product meets the Department's specification requirements. This certification is verified by random Quality Assurance checks performed by Material Testing Division.

While certification eliminates time-consuming sampling and testing, it does not constitute a waiver of the Department's right to inspect and test any item which appears to be of questionable quality.

Should any receiver or user of material accepted by certification suspect the quality to be less than required, the District Materials Engineer shall be notified, samples taken, identified and sent to the Materials Testing Division of the Bureau of Construction and Materials for conformance testing.

Material not conforming to the requirements of the specifications will be rejected, removed, and replaced with specification material. In lieu thereof, and, at the discretion of the Department's representative, the contractor and the representative may agree in writing that, for practical purposes, the deficient lot should not be removed, but should be paid for at fifty percent (50%) of the contract price.

Certification shall be provided with each shipment and shall include a statement certifying compliance of the produce to the applicable specification and must provide the following information:

- Producer's name and location
- Company batch or lot identification
- Type of material
- Quantity shipped
- Date of Shipment
- Name and location of consignee
- Statement that the material shipped has been tested and meets the applicable Department specifications.

## DISTRIBUTION OF THE CERTIFICATION IS AS FOLLOWS:

- One (1) copy retained by Company
- One (1) copy to project or Maintenance District Office

### MATERIAL RECEIVED WITHOUT CERTIFICATION SHALL:

- Be returned to the vendor or,
- Be unloaded; identified as not certified and stocked in an isolated area

This material shall not be used or paid for until certification is received or until samples are submitted to the Materials and Testing Division and test results indicating compliance with specifications are received.

#### MATERIALS ACCEPTED BY CERTIFICATION

- Bituminous Concrete
- Bituminous Materials (liquid)
- Crack Sealing Materials
- Concrete End Sections
- Reinforced Concrete Cribbing
- Metal Cribbing
- Portland Cement
- Portland Cement Concrete
- Neoprene Compression Seals
- Lubricant Adhesives
- Gaskets and Waterstops
- Plastic Pipe
- Reinforced Concrete Pipe
- Plain Cement Concrete Pipe
- Vitrified Clay Pipe
- Perforated Vitrified Clay Pipe
- Coal Tar Epoxy Lined Pipe
- Perforated Plastic Pipe
- Cast Iron Pipe
- Corrugated Metal Pipe
- Galvanizing Repair
- Polymer Coated Pipe
- Concrete Curing Compound (Clear)
- Wire Cable
- Rail Elements
- Posts
- Offset Brackets
- Hardware, Plates, Fittings, Rods and Miscellaneous
- Rotating Brackets
- Precast Concrete Blocks
- Precast Concrete Median Barriers
- Cast-in-Place Concrete Piles (Steel Pipe)
- Right-of-Way Fence, Fabric, Fasteners and Wire
- (2) Post, Braces and Fittings
- (3) Hardware, Nuts and Bolts
- End Posts, Corner and Pull Posts, Line Posts, Fittings and Hardware
- Aluminizing

- Vinyl Coated Fabric
- Highway Lighting Material
- Sodium Chloride (Rock)
- Calcium Chloride
- Epoxy Resin Protective Coating Foam Joint Filler
- High Strength Bolts
- Neoprene Material
- Joint Sealing Materials
- Reinforcement Steel
- Epoxy Coated Reinforcement Steel

## 2.4 RESTRICTED PERFORMANCE SPECIFICATION (R.P.S.)

Restricted Performance is an acceptance procedure widely used in highway construction. It has recently been adopted for use in the acceptance of Maintenance Aggregates and Antiskid Materials.

This procedure differs from past methods in that it places the responsibility of sampling and testing on the vendor and the responsibility of assuring quality on the Department. It provides a statistically based procedure for determining material quality and also for adjusting prices of unusable, nonconforming material.

The sampling and testing of material is performed by the vendor's technician and observed by Department inspectors who are ultimately responsible for material acceptability.

## 2.5 ACCEPTANCE OF MAINTENANCE AGGREGATES

#### **SUMMARY**

Materials shall conform to the specifications of Publication 408 and all supplements thereof. Certify each day's shipment of maintenance aggregate for bedding in accordance with Section 106.03(b)3

#### **QUALITY CONTROL PLAN GUIDELINES**

Prepare the maintenance aggregate quality control plan to meet or exceed the minimum guidelines as established by the Department.

## ACCEPTANCE SAMPLING AND TESTING OF MAINTENANCE AGGREGATES

#### 1. Sampling Method

Accepted sampling and testing of main-tenance aggregates shall be conducted by the vendor at the source of supply and will be witnessed by a Department representative. Under Department supervision, sample material from the hauling unit in accordance with PTM 607, or from a mini-stockpile representing the material that would otherwise be in the hauling unit. When the mini-stockpile method is chosen, the following procedure will be used:

- 1) The tonages to be tested for acceptance will be selected by the Inspector in accordance with PTM No. 1.
- 2) At the direction of the Inspector, prior to loading the truck which would contain the tonage determined in Step 1, have the loader operator place approximately 10 tons of the maintenance aggregate which will go into the truck onto a mini-stockpile on a suitable surface, and use the loader bucket to strike-off the top of the ministockpile.
  - NOTE: When loading the mini stockpile, do not include material from the source floor.
- 3) At the direction of the Inspector, obtain sufficient material from random locations on the mini-stockpile using a square-faced shovel to collect material samples. Transport acceptance samples from sampling point to testing site as directed by the Inspector.
- 4) When sampling is completed, load the mini-stockpile onto the truck. Take additional maintenance aggregate, as needed to fill the truck from the original stockpile.

#### 2. Sample Frequency

Lot sizes for acceptance testing of maintenance aggregate will not exceed 2,000 tons. Square yard or lump sum items will be converted to tons to determine lot sizes. Sampling frequency at the source will be determined by the following:

- 1) When the purchase order quantity for a particular type of maintenance aggregate shipped to the Department is 500 tons or less, the District has the option to accept the maintenance aggregate on certification. Submit daily certification (Form CS-4171 or other form acceptable to the District), with each shipment, stating that the material delivered meets the requirements of Section 703. No acceptance sampling is necessary.
- 2) When the purchase order quantity for a particular type of maintenance aggregate shipped to the Department is more than 500 tons but less than 2,000 tons, the lot size for acceptance testing at the source will be determined by purchase order quantity, or in the case of several line items in a purchase order, by the quantity for each item.
- 3) When the total quantity for a particular type of maintenance aggregate shipped to the Department is 2,000 tons or more, the quantity will be divided into lots not exceeding 2,000 tons per lot. If the final quantity shipped from the source does not constitute a complete 2,000-ton lot, but is more than 500 tons, then that quantity will be considered a lot for acceptance testing purposes. Final quantities shipped which are 500 tons or less may be accepted on certification at the discretion of the Representative.

#### 3. Testing Criteria

Divide each lot, as defined above, into three equal sublots, and collect a sample from each sublot in accordance with PTM No. 1. Perform dry gradations on each sample. Subject one of the three samples to a wash test (PTM No. 100) to determine the amount of material finer than the No. 200 sieve. Additionally, perform a crush count on gravel sources (ASTM D 5821) to determine the percentage of crushed fragments.

If the first sublot fails the wash test and/or the crush count test the remaining two samples and average the results of all three tests to determine compliance. No single wash test results can exceed the limits specified by more than 2.0%. No tolerance will be allowed on the wash test when the maintenance aggregate is used for surface treatment or seal coats. All three subject

samples of maintenance aggregate for surface treatment or seal coats will be tested for loss by wash. If any one of the samples fails to meet the specifications, the lot will be rejected. The lot will be rejected if any single crush count test result falls below the values listed below:

- 75% crushed particles with at least two faces fractured for maintenance aggregate used in Bituminous Wearing Course.
- 65% crushed particles with at least three faces fractured for maintenance aggregate used in OGS.
- 45% crushed particles with at least one face fractured for all other uses of maintenance aggregates.
- When a crush count is performed, test results will be incorporated into the determination of lot percent within limits.

#### CENTRAL OFFICE QUALITY ASSURANCE SAMPLING AND TESTING OF MAINTENANCE AGGREGATES

Central Office quality assurance samples can be taken at the source of supply or point of placement for testing at the MTD.

#### PRICE ADJUSTMENTS

Lot test results will be reviewed for compliance with Section 703.2(c), Tables C and D. Payment for materials meeting specifications will be at 100%. Material not meeting specifications will be evaluated in accordance with Section 106.03(a)3 to determine the percent within limits (PWL) for each sieve that does not meet the specifications, including the No. 200 sieve. The results of all sieve analyses, the wash test, and crush count, when applicable, will be averaged to determine the lot percent within limits (PWL). Lot PWL's of 90 or greater will be paid at 100%. A lot with a PWL of less than 90 will have a price adjustment applied as shown on the statistical evaluation form (FORM TR-4126A). The statistical evaluation form will include all maintenance purchase orders receiving any portion of the material in the lot. The responsible District will provide the statistical evaluation to each office or, for orders located in adjoining Districts, in care of the respective District

office. The Inspector at the source will coordinate the lots and sublots for testing. The Maintenance Manager will maintain a record of locations where specific lots are placed.

The price adjustment for each project will be applied only to the actual tonnage of maintenance aggregate from the failed lot delivered to each order.

The price adjustment will be determined by the following:

- Lot Payment (PWL/100) X Certified Invoice Price (FOB Source) X Tons Delivered. Material with a sample PWL of less than 50 will be rejected. The Department reserves the right to reject any stockpile on the basis of test results.
- 2) A deviation greater than + 5% from specification limits determined by averaging the best results of the sublots for each individual dry screen, except for the maximum sieve size, shall be cause for material rejection.
- 3) No tolerance shall be permitted for maximum size of material as indicated in Pub. 408, Section 703.2(c), Tables C and D, when the maintenance aggregate is used for surface treatment or seal coats.

Remove and replace rejected materials. In lieu thereof, the vendor and the Representative after review may agree in writing that for practical purposes the deficient lot will remain in place and will be paid for at either the PWL adjusted price or, if rejected for other reasons, at 50% of the certified invoice price.

#### NON-SPECIFICATION MATERIAL

Establish and maintain an effective and positive system for controlling material not meeting specifications, including procedures for identification, isolation, and disposition by the vendor.

Positively identify all non-conforming materials and products to prevent use or shipment.

#### **DEPARTMENT INSPECTION**

The Department reserves the right to inspect material stockpiles within the vendor's facility and/or material in place on the project in conjunction with the Bureau of Construction and Materials' Quality Assurance Program. Quality assurance or stockpile inspections do not constitute final acceptance nor do they in any way relieve the vendor of his responsibility to furnish an acceptable material or product.

#### WEIGHING RESPONSIBILITIES

Vendors shall be completely responsible for the preparation of accurate weight slips, certifications attesting to the accuracy of the weights recorded, and assuring conformance with Section 107.23(b), including the payment of liquidated damages as specified herein.

Designate a licensed weigh person(s) to act as your agent. Have scales calibrated annually by an independent agency acceptable to the Department. A Department Inspector may monitor weighing, and mobile weigh and scale inspection teams may provide random checking.

Weigh empty trucks that are used to haul material measured by weight daily unless otherwise directed.

When the invoice weight exceeds the net weight determined by a District mobile team by more than 3%, the deviation will be considered excessive and immediate corrective action will be taken upon notification. Within 30 days of notification, provide the District Executive with a written description of the corrective actions and safeguards and the time at which they were implemented. Provide a corrected billing or provide material at no charge to compensate for the weight in excess of the 3% that was invoiced, but not received.

#### PENNSYLVANIA DEPARTMENT OF TRANSPORTATION SUGGESTED GUIDELINES FOR AGGREGATE PRODUCERS QUALITY CONTROL PROGRAM

These "Guidelines" are intended as suggestions to assist the aggregate Producer in establishing quality control program. The contractor may modify these "Guidelines" or use some other quality control system. However, the vendor must prove that such modification or substitution will result in better quality control.

#### 1.0 SCOPE

This policy establishes minimum guidelines for a vendor quality control program. These guidelines pertain to the inspections, tests, and documentation necessary to substantiate conformance to contract requirements required by Publication 408 and Supplements thereto.

#### 2.0 APPLICABILITY

This policy shall apply to suppliers providing aggregate materials for the Department of Transportation.

#### 3.0 REQUIREMENTS

#### 3.1 Vendor Responsibilities

The vendor shall provide and maintain a quality control program that will provide reasonable assurance that all materials delivered to the Department are in conformance with Department Specifications. The vendor shall perform, or have performed by a technician whose primary function will be the inspection, testing and documentation of test required to substantiate product conformance.

#### 3.2 Documentation

The vendor shall maintain permanent records of all inspection and tests. The records shall indicate the nature and number of observations made, the testing results obtained, the quantities passing or failing, and when required the nature of corrective action implemented. The vendor's documentation procedures will be subject to the review and approval of the Department prior to any delivery and to compliance checks during the contract period.

#### 3.2.1 Grading Charts

All conforming and non-conforming inspections and test results shall be recorded daily on straight line analysis charts which shall be kept complete during the contract period. Chart data for aggregate gradation test shall differentiate between production and record testing results.

#### 3.3 Corrective Action

The vendor shall take prompt action to correct conditions which have resulted, or could result, in shipment of materials to the Department which do not conform to the quality required by the specifications.

#### 3.4 Sampling and Testing

Sampling and testing methods and procedures used by the vendor to determine quality if the materials and products shall be as stated in FIELD TEST MANUAL (PUBLI- CATION 19). All material shall conform to Publication 408 and Supplements thereof. No representative of the vendor or the Department is authorized to compromise any specification.

## 3.4.1 Sampling Frequency and Production Sampling

Minimum production sampling lot size shall be 1,000 tons. One sample increment will be sufficient representation for each lot. Production samples should be selected prior to stockpiling to reduce the change for segregation.

## 2.6 ANTI-SKID SAMPLING AND ACCEPTANCE REQUIREMENTS AND SPECIFICATIONS

#### **SUMMARY**

Furnish materials conforming to the requirements of the Pennsylvania Department of Transportation Publication 408 and all supplements thereto.

In addition, the successful bidder will be required to submit an Anti-Skid Quality Control Program for the District's review prior to the effective date of the new contract

#### **QUALITY CONTROL PLAN GUIDELINES**

Anti-Skid Quality Control Programs must meet or exceed the established minimum guideline.

## ACCEPTANCE SAMPLING AND TESTING OF ANTI-SKID MATERIAL

Have the vendor perform acceptance sampling and testing of anti-skid material at the source of supply and in the presence of a Department representative. Under Department supervision, sample material from the hauling unit in accordance with PTM No. 607 or from a ministockpile representing the anti-skid material that would otherwise be in the hauling unit. When the mini-stockpile method is chosen, the following procedure will be used:

- 1) The tonage to be tested for acceptance will be selected by the Inspector in accordance with PTM No. 1.
- 2) At the direction of the Inspector, prior to

the truck which would contain the tonage determined in Step 1, have the loader operator place approximately 10 tons of the anti-skid material which will go into the truck onto a mini-stockpile on a suitable surface, and use the loader bucket to strike off the top of the mini-stockpile. NOTE: When loading the mini-stockpile, do not include material from the source floor.

- 3) At the direction of the Inspector, obtain sufficient anti-skid material from random locations on the mini-stockpile using a square faced shovel to do the necessary sampling. Transport acceptance samples from sampling point to testing site as directed by the Inspector.
- 4) When sampling is completed, load the mini-stockpile onto the truck. Take additional anti-skid material, as needed to fill the truck, from the original stockpile.

#### SAMPLING FREQUENCY

Lot sizes for acceptance testing of anti-skid material will not exceed 2,000 tons. Square yard or lump sum items will be converted to tons to determine lot sizes. Sample frequency at the source will be determined by the following:

- When the purchase order quantity of a particular type of anti-skid material is 500 tons or less, the District has the option to accept that anti-skid material on certification. No acceptance testing is necessary.
- 2) When the purchase order quantity for a particular type of anti-skid material is more than 500 tons, but less than 2,000 tons, the lot size at the source will be determined by purchase order quantity, or in the case of several line items in a purchase order, by the quantity for each item.
- 3) When the purchase order quantity of a particular type of anti-skid material is 2,000 tons or more, the quantity will be divided into lots not exceeding 2,000 tons. Final quantities which are 500 tons or less may be accepted on certification at the discretion of the Representative.
- 4) When a lot is terminated before the expected tonage is shipped, either three sublots will be determined based on the

actual amount of material that was shipped or the results of the sublots tested will be combined with those of the most recently completed lot.

Divide each lot, as defined above, into three equal sublots and collect a sample from each lot in accordance with PTM No. 1. Perform dry gradations on each sample. In the case of Types 3B and 6S, subject one of the three samples to the wash test (PTM No. 100) to determine the amount of material finer than the No. 200 sieve. Additionally, perform a crush count (ASTM D 5821) on gravel of Types 2 and 6S to determine the percentage of crushed fragments.

If the first sample fails the wash test and/or crush count, test the remaining two samples and average the results of all three tests to determine compliance. No single wash test result can exceed the limits specified by more than 2.0%. The lot will be rejected if any single crush count test result falls below the values listed below:

- 75% crushed particles with at least one face fractured for Type 2
- 25% crushed particles with at least one face fractured for Types 3, 3A, and 3B
- 50% crushed particles with at least one face fractured for Type 6S

When a crush count is performed, test results will be incorporated into the determination of lot percent within limits.

## CENTRAL OFFICE QUALITY ASSURANCE AND TESTING OF ANTI-SKID MATERIAL

Central Office quality assurance samples can be taken at the source of supply or point of placement for testing at the Materials Testing Division (MTD).

#### PRICE ADJUSTMENTS

Lot test results will be reviewed for compliance with Section 703.4 (b) and Table E. All payments will be based on the dry weight of the material. Payment for anti-skid material meeting specification will be at 100%. Anti-skid material

not meeting specifications will be evaluated in accordance with Section 106.03(a)3 to determine the percent within limits (P.W.L.) for each sieve that does not meet the specifications, including the No. 200 sieve. The results of all sieve analyses, the wash test, and crush count, when applicable, will be averaged to determine the lot percent within limits (P.W.L.). Lot PWL's of 90 or greater will be paid at 100%. A lot with a P.W.L. of less than 90 will have a price adjustment applied as shown on the statistical evaluation form (FORM TR-4126A). The responsible District will provide the statistical evaluation to each office or, for orders located in adjoining Districts, in care of the respective District Office.

The price adjustment will be determined by the following:

- Lot payment = (PWL / 100) X Certified Invoice Price (FOB Source) X Tons Delivered.
- 2) Anti-skid material with a sample PWL of less than 50 will be rejected. The Department reserves the right to reject any stockpile on the basis of test results.
- 3) Anti-skid material which deviates more than + 5% from specification limits, as determined by averaging the test results of the sublots for each individual dry screen, except for the maximum sieve size, will be rejected.
- 4) No tolerance will be allowed on the maximum size of anti-skid material as specified in Pub. 408, Section 703.4(c), Table E. Anti-skid material having test values in excess of specification values will be rejected.

Remove and replace rejected anti-skid materials. In lieu thereof, the vendor and the Representative, after review, may agree in writing that for practical purposes, the deficient lot will remain in place and will be paid for at either the P.W.L. adjusted price, or, if rejected for other reasons, at 50% of the certified invoice price. If the rejected anti-skid material is not removed within 15 days after notification, the anti-skid material will be considered to be the Department's at no cost.

#### **NON-SPECIFICATION MATERIAL**

The District shall establish and maintain an effective and positive system for controlling anti-

skid material not meeting specifications, including procedures for identification, isolation, and disposition by the vendor.

Positively identify all nonconforming materials and products to prevent use or shipment.

#### DEPARTMENT INSPECTION

The Department reserves the right to inspect anti-skid material stockpiles within the vendor's facility and/or material after it is delivered to the county maintenance site in conjunction with the Bureau of Construction and Materials' Quality Assurance Program. Quality assurance or stockpile inspections do not constitute final acceptance nor do they in any way relieve the vendor of his responsibility to furnish an acceptable anti-skid material or product.

#### WEIGHING RESPONSIBILITIES

Vendors shall be completely responsible for the preparation of accurate weight slips, certifications attesting to the accuracy of the weights recorded, and assuring conformance with Section 107.23(b), including the payment of liquidated damages as specified therein.

The district shall designate a licensed weigh person(s) to act as its agent. Have scales calibrated annually by an independent agency acceptable to the Department. A Department inspector may monitor weighing, and mobile weight and scale inspection teams may provide random checking.

Weigh empty trucks used to haul material measured by weight daily, unless otherwise directed.

When the invoice weight exceeds the next weight determined by a District mobile team by more than 3%, the deviation will be considered excessive. Take immediate corrective action immediately upon notification of an excessive deviation. Within 30 days of notification, provide the District Executive with a written description of the corrective actions and safeguards and the time at which they were implemented. Provide a correct billing or provide material at no charge to compensate for the weight in excess of 3% that was invoiced, but not received.

#### PENNSYLVANIA DEPARTMENT OF TRANSPORTATION GUIDE-LINES FOR ANTI-SKID PRODUCERS QUALITY CONTROL PROGRAM

These "Guidelines" are intended to assist the anti-skid Producer in establishing quality control program. The contractor may modify these "Guidelines" or use some other quality control system. However, the vendor must provide that such modification or substitution will result in better quality control.

#### 1.0 SCOPE

This policy establishes minimum guidelines for a vendor quality control program. These guidelines pertain to the inspections, tests, and documentation necessary to substantiate conformance to contract requirements required by Publication 408 and Supplements thereto.

#### 2.0 APPLICABILITY

This policy shall apply to suppliers providing anti-skid materials for the Department of Transportation.

#### 3.0 REQUIREMENTS

#### 3.1 Vendor Responsibilities

The vendor shall provide and maintain a quality control program that will provide reason- able assurance that all materials delivered to the Department are in conformance with Department Specifications. The vendor shall perform, or have performed by a technician whose primary function will be the inspection, testing and documentation of test required to substantiate product conformance.

#### 3.2 Documentation

The vendor shall maintain permanent records of all inspections and tests. The records shall indicate the nature and number of observations made, the testing results obtained, the quantities passing or failing, and when required the nature of corrective action implemented. The vendor's documentation procedures will be subject to the review and approval of the Department prior to any delivery and to compliance checks during the contract period.

#### 3.2.1 Grading Charts

All conforming and non-conforming inspections and test results shall be recorded daily on straightline analysis charts which shall be kept complete during the contract period. Chart data for anti-skid gradation test shall differentiate between production and record testing results.

#### 3.3 Corrective Action

The vendor shall take prompt action to correct conditions which have resulted, or could result, in shipment of materials to the Department which do not conform to the quality required by the specifications.

#### 3.4 Sampling and Testing

Sampling and testing methods and procedures used by the vendor to determine quality conformance of the materials and products shall be as stated in FIELD TEST MANUAL (PUBLICATION 19). All materials shall conform to Publication 408 and Supplements thereof. No representative of the vendor or the Department is authorized to compromise any specification.

## 3.4.1 Sampling Frequency and Production Sampling

Minimum production sampling lot size shall be 1000 tons. One sample increment will be sufficient representation for each lot. Production samples should be selected prior to stockpiling to reduce the change for segregation.

#### 2.7 MANAGEMENT RESPONSIBILITIES

#### **GENERAL**

While the ultimate responsibility for material control belongs to the District Executive, the District Materials Engineer, as his agent, assumes total responsibility to ensure that only quality materials are accepted and used by the Department. Acceptance of materials to be used by Department Forces requires close cooperation between the Maintenance Manager and the Material Engineer

#### **DISTRICT EXECUTIVE**

As Chief Officer of the Engineering District the District Executive is responsible for the total operation of the District Office, which includes highway maintenance and the materials used.

As such, he is responsible for: the interaction of the Maintenance Managers and the Materials Engineer to ensure that all materials ordered/used are inspected and comply with Department specifications; for ensuring that all materials functions are in accordance with Department Standards, specifications, applicable laws and regulations.

#### DISTRICT MATERIALS ENGINEER

The District Materials Engineer is responsible for assuring that all materials purchased by the Engineering and Maintenance Districts are in compliance with Department specifications.

This responsibility includes witnessing, sampling and testing aggregates and anti-skid material in accordance with the Restricted Performance Specifications and providing plant Quality Assurance for material accepted by certification.

Close cooperation is required between the District Materials Engineer and the Maintenance Manager in determining material requirements and shipping schedules so that resources can be balanced among material sources.

The District Materials Engineer is the District's resource person relative to materials, and as such, shall be available as a consultant to the Maintenance Manager on material problems.

#### **MAINTENANCE MANAGER**

The Maintenance Manager is responsible for ensuring that only quality materials conforming to the Departments specifications are used in maintenance operations and for providing resources for receiving material.

Close cooperation with the District Materials Engineer is imperative to ensure proper material inspection. The Maintenance Manager should determine material quantities and shipping schedules and coordinate this with the District Materials Engineer in sufficient time for him to determine resource requirements and complete planning.

## DEPARTMENT INSPECTION AT SUPPLIERS FACILITIES

The Department reserves the right to inspect material stockpiles within the vendor's facility in conjunction with the Materials and Testing Quality Assurance Program. Quality Assurance or stockpile inspections do not constitute final acceptance nor relieve the vendor of his responsibility to furnish an acceptable material or product

#### WEIGHING RESPONSIBILITIES

The vendor shall be completely responsible for the preparation of weight slips and certification attesting to the accuracy of the weights recorded. The vendor shall designate a weight person(s) to act as his agent. The Department Inspector will monitor weighing as required; Mobile Weight Inspection Teams will provide random checking in the field. Deviations in weight, gross or take, based on the random checks, will be considered acceptable when the deviation is less than 1%. Deviation of 1% to 3% will constitute a letter of warning; deviations exceeding 3% will require reweighing at a neutral scale (with a current inspection) with no additional compensation. The neutral scale weight shall be used for payment.

#### ALTERNATE PROCEDURES

Alternate sampling methods, procedures and inspection equipment may be used by the vendor when such procedure and equipment provide, as a minimum, the quality level required by the specifications. Prior to applying such alternative inspection procedures, the vendor shall describe them in a written proposal and shall demonstrate for the approval of the Department that their effectiveness is equal to, or better than the established procedure. In case of dispute as to whether certain procedures of the vendor's inspection system provide equal assurance, the procedures stipulated by the Field Test Manual shall apply.

## CHAPTER 3 PLANNING AND SCHEDULING

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#### 3.1 FLOWCHART

This section addresses planning and scheduling, an important aspect of Highway Maintenance Operations. Careful planning provides many benefits. First, planning is necessary to ensure that each part of the organization will know when, how and what to contribute toward maintaining the highway system. Planning also enables us to focus attention on our objectives and to gain economical operations. Cost is minimized because of the emphasis placed on consistent and efficient operations. Lastly, plans facilitate achieving directed goals.

Planning maintenance operations involves various steps. Objectives are established, areas of primary emphasis are identified, and a network of strategies and programs are developed to accomplish the objectives. The SAP Plant Maintenance System automated and integrated many of the steps in Maintenance Programming and Planning.

Various management considerations are instrumental in determining and evaluating alternate courses of action. Selecting a course and deriving a plan is based on available resources, budgets and maintenance needs.

Maintenance Planning is the process that begins well before the work is actually scheduled and concludes with the weekly scheduling documents. This task is often difficult because of the many variables which affect the maintenance function; however, it is possible to plan and schedule most maintenance activities. Adherence to the following policies and procedures will insure effective and efficient maintenance operations.

The Maintenance Planning Flowchart (Figure 3.1, page 3-3) illustrates suggested procedures for the planning and scheduling process for Maintenance Operations beginning with anticipated revenue forecasts and the Business Plan.

Initial resource balancing is conducted based on various management considerations such as: current Department policies and procedures, fiscal guidelines, the roadway needs survey (M-681) and/or annual pavement condition survey data, available resources, performance standards and seasonal work schedules. Initial resource balancing is necessary to identify all the resources required for maintenance (Appropriation 187) programs. Resource balancing facilitates the development

and coordination of the various programs (e.g., General Maintenance, Restoration, Reimbursable). Intermediate Resource Balancing in Plant Maintenance provides a method to balance between the resources required and the resources available to accomplish the planned production units to schedule monthly production for Long Term Plan.

The Long Term (LTP) Plan is then developed from the intermediate resource balancing and work schedule calendar to summarize the total annual production units by month for each activity.

Intermediate Scheduling (Revision) identifies all the activities which will be performed during the scheduling period and the foreman who will be performing the activities.

The preceding procedure provides the data necessary for the preparation of the Foreman's Weekly Schedule (Work Order) This data includes:

- 1) Road Maintenance Survey (M-681).
- 2) Revision (Project Listing).
- 3) Emergency type projects identified after completion of the Revision by any of the sources including corrective work in response to complaints.
- 4) Long Term Plan (represented by the Work Plan File).
- 5) Management Considerations.

The Maintenance Manager conducts weekly meetings to schedule the projects on the Work Order Plan (Weekly Schedule). Feedback on the actual production compared to the scheduled production can be obtained from the Plant Maintenance Inquiry System. The Assistant Maintenance Manager / Foreman identifies any work that must be carried over to the next week's schedule during the work planning meeting and prepares the next week's schedule accordingly.

## 3.2 PLANNING AND SCHEDULING ROLES OF THE MANAGEMENT TEAM

The county management team must work together to produce good plans and be able to monitor the plans. The team is built on the County Manager, the Assistant County Managers, the Roadway Programs Coordinator, the County Equipment Manager and the Foreman. Each of these team members plays an important role in developing and following the plans of the county.

The County Managers are the owner of the teams. They are the arbitrator. Their ultimate planning responsibility is to balance the Budget, Long Term Plan and the Revisions. They determine the needs of the county to fulfill the plan, such as crew specialization, contracting, etc.

The Assistant County Managers are responsible for developing and monitoring the Revisions. They build the Revisions after assessing and prioritizing the needs of the roads in their areas of responsibility. They ensure the work performed by their crews is in compliance with Department policies and specifications. They mentor their foreman. They recommend to the County Manager staffing and makeup of crews, contracts, and equipment/material procurement. They review and sign payrolls.

The Roadway Programs Coordinator monitors the Budget, Long Term Plan and Revisions. They manage the administrative staff, including overseeing all purchasing. They use Plant Maintenance and other systems to assist with developing plans and balancing resources as well as ensuring planning compliance. They ensure payrolls are input in a timely manner.

The County Equipment Manager maintains the fleet to ensure that the plans can be followed. They schedule PM's and equipment repairs to minimize impact to the plan. They purchase equipment, share equipment, or procure rented equipment to ensure the equipment is available when needed. They ensure safe operation of equipment by coordinating equipment training. Another important planning role of the Equipment Manager is to manage the county facilities.

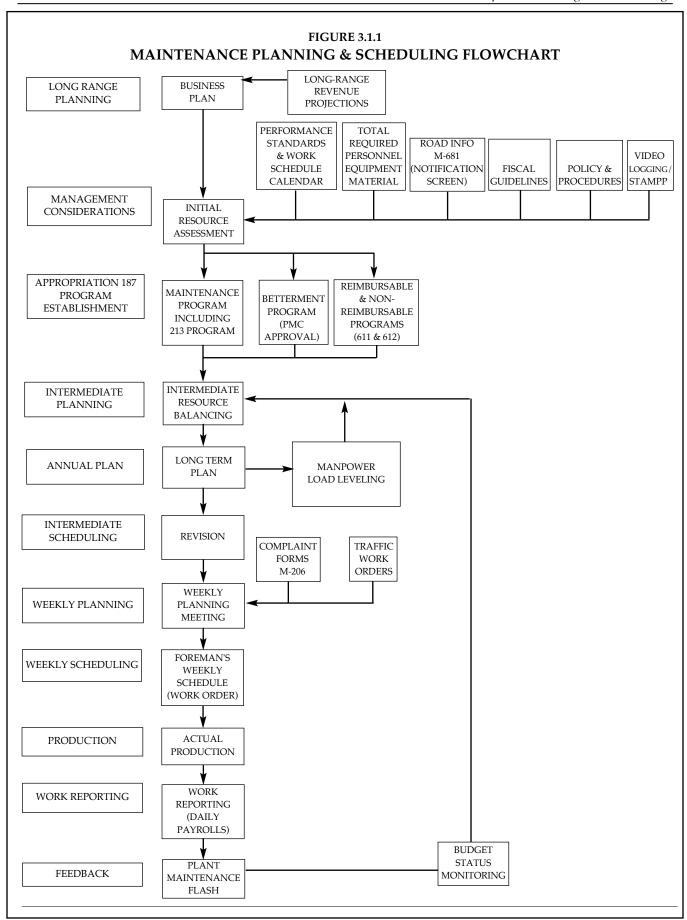
The Foreman are responsible for executing the plans. They follow the plans handed down from Assistant Manager and document the work performed. They communicate to the Assistant Manager the work progress as well as concerns about the work or plans. They supervise their own crew and coordinate the work with other crews. They also coordinate deliveries with vendors. By following standards and procedures, they ensure quality and safety at the work site.

Each member of the county management team is responsible for fulfilling their part of the plan. By working together, plans can be followed and resource can be maximized.

#### LONG TERM PLAN CHANGES

Long Term Plan change requests outside of the open planning periods will require BOMO approval. The open planning periods run through mid-July of the current fiscal year and a week in late August for the re-budget process.

The procedure for Long Term Plan changes in the closed periods is for the county to send a change request with justification to the District Maintenance Office. If the change is approved by the District, it will be forwarded to BOMO for the final approval. Retro active changes will not be approved.



#### **FIGURE 3.1.2**

#### STANDARD ITEMS IN A COUNTY BUDGET

#### **Revenue Sources:**

Gross Allocation (ASHMA)
Act 26
Act 3
Hold Harmless
Other Revenue

#### **Expenses:**

Central Office Overhead District Office Overhead Personnel

#### 124-Capital Outlay

- Facilities
- Equipment

#### 137-Automated Technology

- Services
- Purchases

#### 381-100% State Highway Restoration Program

Cost by project and phase

#### 383 Federal and State Funded Betterments

• Cost by project and phase

#### 611-Non-Reimbursable Special Projects

• Cost by project and phase

#### 612-Reimbursable Special Projects

- Cost by project and phase
- Contract services such as guide rail, median barriers, and over head sign repairs

#### 618-Agility

#### 711-General Maintenance

- Maintenance contracts by project
- Rented Equipment
- Contract Services
- Consultant Inspection

#### 712-Winter Traffic Services

- Municipal Agreements
- Rented Agreements

#### 713-Traffic Services

- Contract services, including RPM's and pavement markings, guiderail, lighting utilities
- Rented Equipment including flashing lights

#### 714-Roadside

- Contract services, such as herbicides, tree cutting, mowing, rest area
- Rented Equipment

#### 719-Maintenance Administration

• Travel, office supplies, training

### 813-Maintenance & Operations of Equipment & Machinery

- Repair parts
- Rented Equipment
- Credit card fuel purchases
- Small tool purchases
- Contracted services

#### 822-Maintenance & Operations of Buildings

& Grounds

- Utilities, except phone
- Building and garage maintenance
- Contracted Services

#### 844-Inventory Procurement (330)

• Winter Materials

#### 844-Inventory Procurement (340-360)

• Aggregates, bituminous materials, line paint, beads, pipes, signs, herbicides, concrete

#### 844-Inventory Procurement (370)

 Bulk fuels and petroleum products, equipment repair parts

#### 844-Inventory Procurement (380)

- Miscellaneous supplies
- Purchasing card purchases

#### 3.3 SCHEDULING PERIODS

For planning purposes the year is divided into three seasonally planned production periods (Figure 3.3.1, page 3-5):

- Revision 1 July, August, September, and October
- Revision 2 November, December, January, February, and March
- Revision 3 April, May, and June

The exact beginning and ending dates for Revision 2 shall be established by each District individually and be based on when the expected major activity becomes Winter Traffic Service. The southeast Districts should have a shorter Revision 2 than the northwest Districts.

Althought Revision Plans are optional for Revision 2, the development of plans for this period is strongly recommended to take advantage of opportunities to engage in select activities presented during periods of mild winter weather.

#### RESPONSIBILITY

The Assistant District Engineer for Maintenance will hold a monthly planning meeting with the Maintenance Manager and his staff. This meeting will be used to coordinate intercounty plans, establish exact beginning and ending dates for Revision Period 2 and review individual county progress and problems.

SEE FIGURE 3.1.1 (page 3-3)

#### 3.4 RESOURCE BALANCING

Resource Balancing is an essential component of the preparation of the Long Term Work Plan (LTP) and for the adjustment of seasonally planned production units.

#### **PURPOSE**

To check the balance between resources required and resources available to accomplish the planned production units established for each month in the Long Term Work Plan, and to adjust the monthly planned production units to meet the available resources.

#### **PROCEDURE**

Plant Maintenance will calculate the manpower and major equipment required to complete the Long Term Work Plan.

#### MANAGEMENT CONSIDERATIONS

The following must be considered when preparing and resource balancing the Long Term Work Plan:

- 1) Department Force work in Allotments 381, 383, 611, 612, 618, 822 etc. (LTP Screen).
- 2) Temporary employees and/or approved overtime (Capacity Utilization).

- Sick, Annual and Personal Leave taken per month (Capacity Utilization).
- 4) Holidays and sporting seasons.
- 5) Work scheduling calendar.
- 6) Inclement weather estimate and alternate work activities.
- 7) Corrective work in response to complaints.
- 8) County organizations should consider cycles when developing their Long Term Work Plans. County goals should be consistent with District and Central Office directions. Cycles may vary based on geography, climate, function, needs budget, etc. Maintenance activities to consider for cycle maintenance should include, but are not limited to: surface treatment, resurfacing, shaping unpaved roads, crack sealing, joint sealing, CPR, shoulder cutting/grading, bridge cleaning/flushing, sweeping, mowing/vegetation control, sign upgrade, pavement markings and drainage maintenance. Cycle maintenance can produce long term cost savings by direction efforts towards "Preventative" Maintenance instead of "Demand" Maintenance.

#### **ACTION**

- 1. If Man-Hours Required are less than Man-Hours Available, additional Planned Production Units and/or additional activities will have to be planned and scheduled in order to gainfully utilize the excess man-hours.
- 2. If Man-Hours Required are greater than Man-Hours Available, some Planned Production Unit's and/or some activities will have to be rescheduled in another month, if possible, in order to accomplish all of the Planned Production Unit's planned on the Long Term Work Plan (additional contract work could also be planned to reduce the man-hours required).
- 3. If Equipment-Hours Required are less than Equipment-Hours Available, some pieces of equipment will not be fully utilized during the month.
- 4. If the Equipment-Hours Required are greater than Equipment-Hours Available, some Planned Production Unit's and/or some activities will have to be rescheduled in another month if possible Rental agreements (refer to Chapter 10) can also be initiated in order to accomplish all of the Planned Production Unit's planned on the Long Term Work Plan.
- Decide on the necessary action and adjust the resources to obtain a reasonable balance.

#### RESPONSIBILITY

The Maintenance Manager is responsible to see that the Long Term Work Plan is balanced.

FIGURE 3.3.1 WORK SCHEDULING CALENDAR												
	ASSEMBLY NUMBER AND NAME    JULY   AUG   SEP   OCT   NOV   DEC   JAN   FEB   MAR   APR   MAY   JUNE											
Unpaved Roads	JULY	AUG	SEP	OCI	NOV	DEC	JAN	FED	MAK	APK	MAI	JUNE
711-7112 Shaping	0	0	X	X	X					X	X	X
711-7113 Restabilization	0	0	X	X	X				Х	X	X	0
711-7114 Dust Palliative	0	X			'						X	X
Paved Roads											,,	- 7.
711-7121 Manual Patching	0	0	0	0	0	0	0	0	X	X	X	X
711-7122 Mechanized Patching	X	X	Х	0					,,,	0	X	X
711-7123 Surf. Treat Mixer Paver	Х	Х	Х	0						0	Х	Х
711-7124 Surf. Treat Liq. Bit	X	X	Х	_							0	Х
711-7125 Surf Treat. Paver Finisher	X	X	X	0						0	X	X
711-7126 Base/Subbase Repair	X	X	Х	0						0	X	Х
711-7127 Skin Patching	X	X	Х	0						0	0	Х
711-7128 Crack Sealing - Bit. Surf.	0	0	X	X	0				Х	X	X	0
711-7131 Scratch Coat	X	X	Х	0						0	X	Х
711-7132 Milling Bit. Surf.	Х	Х	0							Х	Х	Х
711-7133 Recycling Pavements	X	X	0							0	X	X
711-7147 Crack & Joint Sealing - Conc. Rds.			Х	Х	0				Х	Х	X	
Unpaved Shoulders and Side Approaches												
711-7212 Grading	0	0	X	X	X				0	Х	X	Х
711-7213 Stabilization	0	0	Х	Х	Х				Х	Х	Х	0
711-7214 Dust Palliative	0	X	Х								Х	Х
711-7215 Cutting	0	0	X	Х	Х	0			0	Х	X	X
711-7216 Upgrading Unpave Shoulders	X	X	Х	Х					Х	Х	Х	Х
Paved Shoulders												
711-7221 Manual Patching	0	0	0	0	0	О	0	0	X	Х	X	X
711-7222 Mechanized Patching	Х	Х	Х	0						0	Х	Х
711-7224 Surface Treatment - Liq. Bit.	Х	Х	Х	0							Х	Х
711-7226 Base/Subbase Repair	Х	Х	Х	0						0	Х	Х
711-7227 Skin Patching		Х	Х	0						0	Х	Х
Drainage Cleaning, Repair or Replacement												
711-7311 Cleaning - Inlet/Endwall	0	0	0	0	0	О	0	0	0	0	0	0
711-7312 Cleaning - Ditch/Drain, Chan.	0	0	0	0	0	0	0	0	0	0	0	0
711-7314 Cleaning - Pipes and Culverts	0	0	0	0	0	0	0	0	0	0	0	0
711-7321 Repair or Replace Inlet & Endwall	Х	Х	Х	Х	Х	0	0	0	Х	Х	Х	Х
711-7324 Repair or Replace Pipes or Culverts	Х	Х	Х	Х	Х	0	0	0	Х	Х	Х	Х
Roadway Section Restoration												
711-7331 Side Dozing	0	0	X	X	X	0			0	Х	X	X
Major Damage and/or Disaster Restoration												
711-7341 Major Slides	0	0	0	0	0	0	0	0	0	0	0	0
711-7342 Major Structure Damage	0	0	0	0	0	0	0	0	О	0	0	0
Storm Patrol												
711-7351 Rain or Wind Patrol	0	0	О	0	0	0	0	0	0	0	0	0
Tunnel Maintenance and Repair												
711-7421 Wash/Clean	0	0	0	0	0	0	0	0	0	0	0	0
711-7422 Traffic Service	0	0	0	0	0	0	0	0	0	0	0	0
711-7423 Light Sys. Service	0	0	0	0	0	0	0	0	0	0	0	0
711-7424 Electro-Mech. Equip. Maintenance		0	0	0	0	0	0	0	0	0	0	0
Bridge maintenance and Repair												
711-7431 Preventive maintenance - Cleaning	X	X	X	X	0				0	X	X	X
711-7432 Preventive Maintenance - Spot Painting	X	X	X	0	0					0	0	X
711-7433 Preventive Maintenance Joint Sealing			X	X	X				X	X	X	О

X = Period of Expected Performance O = Periods of Possible Performance Blank = Periods When Activity usually Should Not Be Scheduled

The Assistant District Engineer for Maintenance is responsible for the review of the completed plan.

#### **DISTRIBUTION / RETENTION**

The Capacity Leveling and Tasks List Screens can be inquired and printed at any time as the Long Term Work Plan is being prepared or during the Fiscal Year.

#### 3.5 ROAD MAINTENANCE SURVEY

The use of Form M-681 or equivalent is recommended for the collection of road condition data. Data collected will further define and compliment the annual condition data survey and will be used in planning and scheduling.

#### **PURPOSE**

Form M-681 or equivalent is to be used as a dynamic roadway condition data collection document. The data will be entered into the Plant Maintenance Notification File. This Planning File, once developed, will provide the user with a menu of site specific maintenance activities and associated production requirements. The user will have the capability to automatically pass selected data from this file to the Revision File and/or the automated M-213 (Notification Screen).

#### **PROCEDURE**

During the course of the year, as conditions warranting corrective or preventative maintenance action are observed, those conditions shall be noted and the required action cited and recorded on Form M-681 or its equivalent.

Roadway condition data recorded on the M-681 or its equivalent shall be data entered to the Plant Maintenance Notification File.

#### RESPONSIBILITY

The Maintenance Manager will be responsible to see that roadway condition data is collected as a matter of routine and that the data is entered in the Plant Maintenance Notification Planning File from Form M-681 or its equivalent, by an individual or individuals designated by him.

#### RETENTION

The Planning File in Plant Maintenance will be

the official repository of roadway condition information.

Following data entry to the Plant Maintenance Notification File, at the discretion of the Maintenance Manager, the M-681 Form may be discarded.

## 3.6 INTERMEDIATE SCHEDULING REVISION PLAN

#### **PURPOSE**

To identify all the Department Force activities which will be performed during the scheduling period (Revision), identify the Work Centers who will be performing those activities and schedule the projects in order of completion.

#### **PROCEDURE**

- Before the beginning of the scheduling period prepare the Revision Plan using the previously balanced Long Term Work Plan for the scheduling period and the project identification sources from the Notification Screen in Plant Maintenance.
- 2. Enter the Revision Number on the Notification Screen for all the activities to be scheduled for the period. Activities must be scheduled at the method level.
- 3. Enter the Maintenance Planner or Work Center Number.
- 4. Assign foremen (work centers) to activities applying the concept of crew specialization. All crews should not perform all maintenance activities. Whenever possible, crews should perform only those activities which have similar skill requirements. By performing activities requiring similar skills, crews will become familiar with the tasks. This familiarity will lead to more efficient operations, uniform results and encourage the members of the crew to take pride in the quality of their work.
- 5. Be careful not to schedule a work center for more projects than can be realistically complete during the scheduling period.
- 6. The total days scheduled for each work center will automatically be calculated and displayed on the Revision Plan Print. The "Customer Service", or "Emergency" work centers do not have to be scheduled on a Revision Plan.

7. The Revision Plan is the primary document needed to complete the Work Order Schedule.

#### MANAGEMENT CONSIDERATIONS

The following must be considered when preparing the Revision Plan:

- The priorities and sequencing of specific projects and the planned quantities of the Long Term Work Plan.
- 2) Department Force work in Allotments 381, 383, 611, 612, etc. (Contract work may be included on the Revision Plan if desired to identify total production).
- 3) Holidays and sporting seasons.
- 4) Work scheduling calendar.
- Inclement weather estimate and alternate work activities.
- 6) Corrective work in response to complaints.

#### **RESPONSIBILITIES**

The Maintenance Manager is responsible for seeing that the Revision Plan is prepared and used properly, while the Assistant District Executive for Maintenance is responsible for reviewing the completed Revision Plans.

#### DISTRIBUTION

The Revision Plan may be inquired and printed at any time as it is being prepared or during the Revision Period.

#### RETENTION

Retain the Printed Revision Plan for the current fiscal year it is in. It may be discarded at the end of the fiscal year.

#### 3.7 FOREMAN'S WORK ORDERS

#### **PURPOSE**

To provide a Work Order Plan and preprinted payrolls for each foreman based on the Long Term Work Plan and the Revision Plan. See Figure 3.7.1, page 3-9, for listing of elements comprising a good planning meeting.

#### **PROCEDURE**

1. The fiscal year is divided into three time periods for scheduling purposes.

Revision 1 - July, August, September and October

- Revision 2 November, December, January, February and March\*
- Revision 3 April, May and June

\* NOTE:

District Office management shall determine the beginning and ending dates of Period 2 based upon the district's winter traffic services program.

- 2. During Revision Periods 1 and 3, the Work Order Plan will be prepared weekly.
- 3. During Revision Period 2, the Work Order Plan will be prepared from those activities listed on the Revision Plan for Period 2, list projects in priority order if it does not snow. The "Inclement Weather/Alternate Activity" Section of the Work Order Plan should include dark hour activities in the Districts that work a dual shift. All snow and ice control will take precedence and the projects on the Work Order Plan will be worked only when Winter Traffic Service Operations are not being performed. Before the beginning of the next week, complete a new Work Order Plan which will re-identify, in priority order, those projects which remain to be completed plus additional projects to be performed.
- 4. A Work Order Plan will be completed for each work center. Development of these plans are to be completed by the Assistant Maintenance Managers in concert with their respective foreman (work center).

#### RESPONSIBILITIES

Maintenance Manager - Conducts weekly scheduling meetings no later than Thursday afternoon. Assures that all Assistant Maintenance Managers, the Equipment Manager, the Roadway Programs Coordinator and selected Foreman as (appropriate) attend. Assures that the Work Order Plan is satisfactorily completed at the meeting and that material and equipment are available.

#### **DISTRIBUTION**

The Work Order Plan may be inquired and printed at any time during preparation and the payroll period that it covers. The Work Order Plan Print and the preprinted payrolls are kept by the foreman. The Work Order Plan may be discarded at the weeks end.

#### **RETENTION**

The completed preprinted payroll shall be signed and then entered into the system. The preprinted payroll is the source document for all payroll information. Faxed copies can be used. The signed and entered payrolls will be kept on file in the county for one year. After one year, the

#### **FIGURE 3.7.1**

#### ELEMENTS OF A GOOD PLANNING MEETING

#### A. WHO

- i. County Management Team
  - 1. County Manager
  - 2. Roadway Programs Coordinator
  - 3. Assistant County Managers
  - 4. County Equipment Manager
- ii. Other key players as needed

#### B. WHAT

- Review Accomplishments of current week ĺ.
- Develop Work Order Plan ii.
- Monitor Long Term Work Plan, Revision Plan and budget iii.
- Review material, manpower and equipment needs iv.
- Review crew size requirements; leave schedules, outside events v.

(Construction projects, community events, utility or municipality work, etc.)

- Review Agility work vi. Review flashing lights vii.
- Review RAR's viii. Review detours ix.
- Address quality and safety х.
- Review Oustanding M-206's/CCC Concerns xi.

#### C. WHERE

i. County office

#### D. WHEN

- Weekly i.
- Before Thursday afternoon ii

#### E. WHY

i. Ensure activities are selected from Revision Plan or customer concerns

#### F. HOW

- Agenda
- Minutes

#### **BALANCING RESOURCES:**

#### PERSONNEL:

- Proper Crew Size
- Check leave schedules
- Review training and meeting schedules
- Proper skills and certifications - Schedule Holidays
- Special events (fairs, hunting season, etc.)

#### **EQUIPMENT:**

- Equipment schedules
- Coordinate mobilization
- Equipment availability
- PM schedules
- Rental agreements in place
- Equipment Condition

#### MATERIALS:

- On-hand

- Proper purchasing procedures implemented
- Deliveries scheduled
- Haul Distance Time

thirteenth month of payrolls on file shall be sent to: State Records Center, Route 22 ByPass, Harrisburg, PA 17103, to be microfiched. The microfiche will be retained for seven years in the county office.

## 3.8 CREW DAILY PROJECT TIME RECORD AND DIARY

#### **PURPOSE**

The purpose of this section is to establish procedures for signing of payroll documents for field personnel reported through SAP.

#### **BACKGROUND**

The Assistant County Maintenance Manager is required to review and sign the "Crew Daily Project Time Record and Diary" Document.

#### RESPONSIBILITIES

The highway foreman and/or acting foreman and Assistant County Maintenance Manager must sign the payroll for all employees or rentals under that persons responsibility.

#### 3.9 HIGHWAY MAINTENANCE CUSTOMER SERVICE HANDLING

#### **PURPOSE**

The purpose of this section is to establish guidelines for creating and maintaining a uniform, efficient system that documents customer concerns and inquiries, ensures an adequate response, and provides a recoverable record of the concern and the corrective action taken.

#### **BACKGROUND**

Highway maintenance service records, regardless of their source, provide important information regarding the condition, serviceability, and safety of the highways. Customer concerns frequently provide timely, pertinent notification of highway conditions. These concerns and the condition surveys conducted by Department personnel provide the basis for identifying and responding to maintenance needs.

#### **Tort Liability**

Maintaining records that document corrective actions taken are critical for defending the Department against tort liability claims.

Undocumented responses to customer concerns have resulted in awards of liability claims, and practically anything that can prompt someone to register a concern can, at least initially, form the basis of a tort action. It is crucially important for liability reasons that all concern records are maintained in a thoroughly complete and accurate manner.

CCC users should operate under the assumption that every communication, every entry into the system, and every field of a record would have to be produced if subpoenaed. It is possible that there might be some instances where certain communications to the CCC could be legally privileged, and therefore not released pursuant to a subpoena, but these would be exceptional occurrences. In addition, CCC users should be mindful of the fact that when the new "Right to Know" law went into effect in January, 2009, many of these records became subject to production merely by being requested (i.e., a subpoena will not be necessary in most instances).

The sections which follow describe the tracking system, forms, procedures, and responsibilities necessary to create and maintain a comprehensive system from a variety of sources.

#### **COMPREHENSIVE PLAN**

The CUSTOMER CARE CENTER (CCC) is an intranet/internet based computer database application that collects, assigns, and tracks progress of incoming customer concerns. This system enables the Department to function efficiently and effectively despite the variety of sources and methods of communicating these concerns

The goal is to utilize the CCC to provide an automated, comprehensive, integrated system that replaces the previous M-206 paper form based procedures. Such a system prevents the loss of data, fragmented records, and incomplete records. Data analysis, searches and correlations are greatly facilitated by a uniform, comprehensive system.

#### **WEB PAGES**

#### **CCC System**

The CCC can be located by going to the Department's web site at: <a href="http://www.dot.state.pa.us">http://www.dot.state.pa.us</a>, proceeding to an individual District's homepage, and clicking on the "Customer Care Center" icon.

#### **Submit New Concern Screen**

The "Submit New Concern" screen is where concerns are to be recorded as received. This

screen is accessed by clicking on the "Submit New Concern" button on the CCC web page.

#### **View Status Area**

Within the CCC is a View Status area. This area allows the user to sort open/closed concerns by responsible person, customer, action, State Route, etc., and at the same time, it provides direct access to those concern entries requiring updates.

#### **Crystal Enterprise Site - Reports**

The Department's Crystal Enterprise web site contains a series of standardized reports for the CCC that have been developed for each District's use and analysis. The Crystal Enterprise website is located at <a href="http://pdbusinessobjects.penndot.lcl:8080/infoviewapp/logon.jsp">http://pdbusinessobjects.penndot.lcl:8080/infoviewapp/logon.jsp</a>. The CCC area of the Crystal Enterprise site includes a folder for each District containing their standard reports. There is also a "Documentation" folder containing user manuals for the CCC System and for the CCC area of the Crystal Enterprise site.

All requests for user access to the CCC area of the Crystal Enterprise site should be routed through the District CCC Coordinator. The District CCC Coordinator must then forward the following information to the IT Services Unit of the Bureau of Maintenance and Operations: the user's name, LAN userid, RACF userid, and what type of access rights the user will require. The two types of access rights are Reader (can only view and print reports existing in the Enterprise folder) or Publisher (can develop and publish reports on the Enterprise folder – includes Reader rights).

## CCC SYSTEM AND OPERATIONAL MANAGEMENT

The IT Services Unit of the Bureau of Maintenance and Operations is responsible for managing and administering the CCC System computer application. The unit is also responsible for developing and implementing appropriate operational policies and procedures for the CCC. The IT Services Unit can be contacted at 717-783-5074.

#### **CCC ACCESS ROLES AND DEFINITIONS**

Everyone with internet access is capable of inputting a concern. At a minimum, Administrative Assistants, all unit secretaries, Assistant District Executives, Services Engineers, Maintenance Managers and Assistant Maintenance Managers should have Commonwealth access to

the system. The following is a list of possible access levels and definitions:

#### **District CCC Coordinator**

It is permissible for a district to assign more than one individual with District CCC Administrator access rights (in order to provide sufficient back up coverage); however, only one of those individuals shall be designated as the District CCC Coordinator. The District CCC Coordinator will serve as the District's primary contact on all CCC issues. BOMO's IT Services Unit is to be kept current on the name of the individual the District has designated as their District CCC Coordinator.

#### **District CCC Administrator**

A District CCC Administrator has access to all concerns entered for all of the organizations (counties and District Office) in their district for editing and deleting purposes. They can also create concern entries. When new concerns are received from the general public through the web page, District CCC Administrators are notified via email to assign the appropriate county or their District Office for action. This is the only administrator level with the ability to delete concern records for their District Office and county offices.

#### District Office CCC Administrator

A District Office CCC Administrator has similar access to the system as a County CCC Administrator. They can create new concern entries. District Office CCC Administrators can also edit all concerns assigned to their District Office (only) for action. They can assign a responsible person who will take action to address the concern. They will be notified via email when a new concern has been assigned to the District Office for action.

#### **County CCC Administrator**

A County CCC Administrator has similar access to the system permissions as a District Office CCC Administrator. They can create new concern entries. County CCC Administrators can also edit (or delete) all concerns assigned to their county (only) for action. They can assign a responsible person and/or Foreman who will take action to address the concern. They will be notified via email when a new concern has been assigned to the county for action.

User Additions, Access Modification, and

#### **Password Resets**

In order to minimize the potential for corruption of the CCC System database, each District should designate no more than three (3) users to have District CCC Administrator access, and the number of users with any of the administrator-level accesses should be kept to the lowest number possible.

All District CCC Administrators have the ability to add, delete, and modify CCC users and administrators for their organizations; however, except in emergency circumstances, this responsibility should be carried out solely by the District CCC Coordinator.

CCC password resets can be accomplished either by having the District IT Coordinator submit a Remedy (problem) ticket to BIO or by calling the BIO Help Desk (at 717-783-8330).

#### Responsible Person

The Responsible Person is someone who will actually take action to address the concern. They can view all concern entries for their organization, but they only have edit capability for all concerns assigned directly to them. They can also create new concern entries for their organization. The responsible person is usually the person who actually assigns the work activities necessary to resolve a concern, and who updates the actions taken to resolve the concern and fills in the completed date, completed by and resolution fields in the CCC. They will be notified via email if a new concern has been assigned to them for action.

At the county-level, this individual should be the appropriate Assistant County Maintenance Manager. At the district office-level, this individual can vary.

#### Foremen

The foremen have edit capability on all concern entries assigned directly to them. They may or may not actually complete any fields. Usually they provide their concern entry actions to the Assistant County Maintenance Manager or the County CCC Administrator to update the system. The foremen also have read capability or all concerns for their county. If they have an email address, they will be notified via email if a new concern has been assigned to them for action.

#### **General Access**

General access is for District Office or county employees who do not fall under any other category but still need read access to the CCC or new concern creation. They can read all concern entries for their organization, but they can only create new concerns. They cannot edit any existing concern entries.

## OPERATIONAL PROCEDURES AND RECORDS

The objective of the following procedures for concern handling (and recordkeeping) is to make certain, no matter the source or method of communicating a concern or inquiry, that a highway maintenance customer generated concern is properly recorded and responsibly evaluated, that the customer is contacted, that timely corrective action is accomplished, and that a complete and accurate record of the matter is retained for future reference. The number, types, sources, and methods of communicating customer service concern varies by maintenance district; although, the bulk of the customer service concerns are made by a citizen who either telephones the maintenance district with their concern or directly enters it through the CCC web page. Minor variations of the following procedures are acceptable so long as they do not adversely affect the reliability and responsiveness of the CCC System.

## PREPARING FOR TEMPORARY SYSTEM OR NETWORK ACCESS FAILURES

In preparation for any temporary CCC access failures, an organization's CCC administrator should always keep a blank hard copy of the New Concerns entry screen available for reproduction. In case of a CCC access failure, reproduced blank hard copies would be used and completed as necessary to fully document any new concerns received during the access failure (plus any corrective action taken on concerns) until the access failure is corrected. Once the access failure is corrected, the concern information documented on the hard copy(ies) would be properly entered into the CCC, and the hard copy(ies) may then be discarded.

#### **RECEIVING AND RECORDING CONCERNS**

The basic concept of recording highway maintenance concerns and inquiries is that the concern or inquiry will be recorded into the CCC regardless of the source or the method used, such as telephone, letter, or police condition report. All concerns called into 1-800-FIX-ROAD (the "Pothole Hotline") should be transferred/entered into the CCC as they are received. Internal memos or reports by Department personnel may also be

entered. Where the highway maintenance concern or inquiry involves winter services during actual winter service operations, it need not be entered into the CCC at that time, but all actions pertaining to that concern must be entered in the Radio Log (for possible eventual transfer to the CCC or for permanent documentation on the Radio Log) as described under "Concern Handling Relative to Actual Winter Service Operations – Radio Log" later in this section.

#### **Field Personnel Recording Concerns**

A pad of blank M-206 Customer Service Record forms should be provided to any personnel who are involved in field operations and may receive concerns in person from customers. The blank M-206 forms can be ordered from the Department's forms warehouse. [If preferred, blank hard copies of the New Concerns entry screen may be provided and used in lieu of M-206 form pads.] Concerns that may be personally observed by field personnel should also be recorded and submitted using an M-206 form.

Field personnel documenting concerns on an M-206 form should forward the page(s) containing the information (for a new concern) to their organization's CCC Administrator as soon as possible. The CCC Administrator should ensure that the concern information documented on the M-206 form(s) is properly entered into the CCC. The M-206 hard copy(s) may then be discarded after the information is entered into the CCC.

#### **Individuals Receiving and Entering Concerns**

Although anyone is capable of entering a concern, it is desirable that all highway maintenance concerns and inquiries be directed primarily to one person, preferably the organization's CCC Administrator. Where this is not feasible, specific designation of who is permitted to receive and record customer concerns and inquiries will be made, and the Maintenance Manager shall make certain these individuals are properly trained and have appropriate access in regard to the function. Alternates should be assigned to ensure the function is adequately performed when workload or absence precludes the primary designee or another alternate from fulfilling the function.

Managers are to ensure that all personnel who receive and record concerns are made aware of the types of concerns and inquiries that require immediate response (e.g., knocked-down stop signs or any condition creating a potentially life-threatening situation) and designate who will

respond. In the case of high priority or emergency items, the Responsible Person may be contacted directly to expedite the corrective action before the concern is entered into the system.

#### SUBMITING/ENTERING NEW CONCERNS

The "Submit New Concern" screen is where concerns are to be recorded as received. The automated "Submit New Concern" screen is to be filled in as completely and accurately as possible by the person receiving and/or recording the concern or inquiry. Each item is important to locating the area of concern, evaluating the urgency for response, identifying the action required as well as the follow-up that might be needed, and for being kept for future reference. A hardcopy may be printed for use in documenting when a concern is received and then later input into the system. Data such as customer information, concern type and location, how and whom received the concern, and who is responsible for completing corrective actions should be entered onto this screen when the concern is initially received. Once a concern is entered into the system, it will be automatically assigned a 15-digit reference number, including the date, the district assigned to action, and 6 random numbers. When the concern is assigned to a responsible individual, a notification will automatically be emailed to that individual. This individual will then be responsible for completion of the concern.

#### **Creation Date and Received Date**

The system automatically populates a Creation Date for each concern record using either the date a concern was directly submitted electronically by the customer (using the CCC Internet website) or the date a concern record is initiated in the system and the information is entered by Department personnel in response to a customer's concern registered by phone, in person, by correspondence, etc.

A Received Date is also established for each concern record. The Received Date is automatically populated by the system (and matches the Creation Date) for concerns directly submitted electronically by the customer. The Received Date is manually entered by the Department user for concerns not directly submitted electronically by the customer, because the concern may have been received from the customer on a date prior to the record being entered into the system.

The Creation Date and Received Date for a concern record cannot be changed by users once they are entered into the system. The District CCC

Coordinator has the ability to correct Received Date typos, but they are required to document those changes by making an entry in the History (comments) field stating the original Received Date, the new Received Date, the name of the person making the change, the date the change was made, and that the change was made to correct a typo error. The District CCC Coordinator is required to provide a request (with proper justification) to BOMO to have any concern record's Received Date changed for any non-typo-related reason. BOMO would then direct BIS to make the change if the justification is deemed sufficient.

### **SEMP Check-Off Field**

When entering information into the CCC System, SEMP-related communications are to be considered for notation. SEMP-related communications should be noted as "Yes" (in the SEMP field) only in those instances when the SEMP communication relates to Department maintenance employees or Department maintenance contractors following, or failing to follow, the Department's SEMP (maintenance) procedures for:

- Controlling material usage in performing winter services,
- Maintaining and operating District stockpiles and garages,
- Controlling erosion and sedimentation during roadway maintenance activities.

The above three procedures are the minimum requirement for items to track as SEMP-related. Districts may identify additional concern topics to track as SEMP-related.

Please note, "Yes" should NOT be selected for the SEMP field when the communication/concern relates to an environmental condition that is caused by a party other than Department personnel or Department maintenance Contractors. If further evaluation indicates that the initial determination for the SEMP field selection was incorrect, that selection should be changed in the system as soon as possible to reflect the results of the evaluation.

### **Org Assigned Date**

The system automatically populates an Org Assigned Date to reflect when a concern record is assigned to a County or District Office, and that date is automatically updated each time that record is subsequently re-assigned to a different District, County or District Office.

### **Estimated Completion Date**

Once a concern is input into the CCC, an 'Estimated Completion Date' will automatically populate to 14 days from the day the concern was input - to correspond with the Department's 14 day objective for resolving a routine (non-emergency) concern. The system will automatically generate an email reminder of the concern to the Responsible Person both five days before the Estimated Completion Date and on the Estimated Completion Date - if the concern has not been resolved (and closed in the system at that time) and no date has been entered in the Revised Est. Completion Date field.

Reference the "Responsible Person Actions" area (later in this section) for procedures concerning entering and modifying a date in the Revised Est. Completion Date field.

### ASSIGNING RESPONSIBLE PERSONS

When a concern is entered into the CCC, the system automatically forwards it to the appropriate organization's CCC Administrator for action. That CCC Administrator must then assign the concern to a Responsible Person. In the counties, this is usually the appropriate Assistant Maintenance Manager. In the District Office, Responsible Persons can be Assistant District Engineers, Secretaries or other employees. Automatic emails will be generated every time a new person is assigned the concern.

### RESPONSIBLE PERSON ACTIONS

The Responsible Person investigates the concern or inquiry to determine what corrective action is necessary and what should be accomplished, along with an evaluation of priority. Those concerns that require immediate corrective action, such as knocked-down stop signs or accident debris in the roadway, obviously need no lengthy evaluations.

Appropriate SAP Plant Maintenance IW24 RI notifications and IW31 work orders need to be created for concerns deemed to require corrective work.

Customer concerns and inquiries will generally fall into one of the following categories, and the response should be as follows:

 A concern or inquiry that does not involve the county maintenance organization or should be responded to at a different organizational level can be forwarded to the district office for completion.

- 2) A concern or inquiry that can be satisfied by a letter of explanation or clarification to the customer should be answered by a letter as soon as possible. Correspondence explaining why no corrective action is necessary or explaining why the corrective action can't be performed at the present time (while listing the future date when the work is scheduled to be performed) should be written and mailed to the customer within 14 days of the concern being submitted to the CCC. A scanned copy of the response should be attached to the subject customer concern within the system.
- 3) A concern or inquiry that requires routine corrective work (and does not involve an emergency condition) should be directed to a foreman (Work Center) to accomplish the necessary work by the Assistant County Maintenance Manager (Planning Group) properly assigning the appropriate work order(s) in creating the CM34 Weekly Plan.
- 4) Concerns involving emergency conditions (e.g., a knocked-down stop sign, or any condition creating a potentially lifethreatening situation) require immediate response, and Maintenance Managers should ensure that their personnel who receive concerns and assign them for corrective action are aware of what situations would require an emergency response.

Once the concern is resolved, the responsible person must enter a completion date, and a brief description of the resolution. NOTE: IF THE CUSTOMER'S EMAIL ADDRESS WAS ENTERED UNDER CUSTOMER INFORMATION, WHATEVER IS INPUT INTO THE RESOLUTION BOX WILL BE AUTOMATICALLY EMAILED TO THE CUSTOMER WHEN COMPLETION DATE IS ENTERED AND SUBMITTED FOR THE CONCERN. PRIOR TO INITIATING THE AUTOMATIC CUSTOMER EMAIL (BY SUBMITTING A COMPLETION DATE), THE COUNTY MAINTENANCE MANAGER (FOR COUNTY-ASSIGNED CONCERNS) OR THE ADE FOR MAINTENANCE (FOR DISTRICT OFFICE-ASSIGNED CONCERNS) SHOULD BE REQUESTED TO REVIEW AND APPROVE THE ENTERED RESOLUTION COMMENTS ADDRESSING NON-ROUTINE OR DISPUTED CONCERNS.

### Repairs are Performed Prior to Receiving a Concern

Occasionally corrective work is performed and completed on a problem (that is described in a concern) before that concern is even received normally a case where either the problem was also identified in another previously received concern, or the problem had been previously noted and scheduled for action in response to routine field views or evaluations by Department personnel. The proper way to close a concern of this nature in the system would be to: enter comments in the Resolution field documenting the nature of the corrective work performed and the date it was completed; if the customer has not provided their e-mail address (to automatically receive the contents of the Resolution field), notify the customer (by phone, fax, postal/delivery service, etc.) of the nature of the repairs and the date they were completed; and then enter the date the customer was notified into the Completed Date field.

NOTE - The date the corrective work was performed is not used for the Completed Date field in this instance, because the work was not actually performed in response to the subject concern submission. Therefore, notifying the customer that the corrective work has already been performed is considered to be the action that actually resolves/completes that particular concern record.

### **Revised Estimated Completion Dates:**

In instances where the organization determines it is necessary for a concern to be completed in a timeframe shorter or longer than the system-generated 14 day "Estimated Completion Date", the preferred date should be inserted in the "Revised Est. Completion Date" field for the concern record. Any additional updates to the estimated completion date that (may) become necessary for that record should also be inserted into the "Revised Est. Completion Date" field

For example, in some circumstances, due to the nature of the repair(s) or action(s) necessary to satisfy a customer concern (e.g., specialized equipment, personnel requirements, material requirements, and/or seasonal or weather-related restrictions), it will not be possible to satisfy all conditions within the initial 14-day time frame indicated by the "Estimated Completion Date". As soon as this becomes known and before the original Estimated Completion Date passes, a new estimated completion date (reflecting the specific date by which necessary action will again be scheduled) should be entered in the field designat-

ed "Revised Est. Completion Date" for that concern record. In the event that complications continue to further postpone the completion of work beyond a previously entered "Revised Est. Completion Date", it will again be necessary to reidentify the extended scheduled date of completion, and that update should then also be entered in the "Revised Est. Completion Date" field. Any additional/subsequent tickle date updates for that record would also be entered in the "Revised Est. Completion Date" field.

The system will automatically generate an email reminder of the concern to the Responsible Person both five days before the Revised Est. Completion Date and on the Revised Est. Completion Date - if the concern has not been resolved (and closed in the system at that time).

Each time an estimated completion date change of any type is implemented (e.g., entering/implementing any estimated completion date other than the original 14 day "Estimated Completion Date"), a brief explanation should be entered in the "History" field (in the "Problem Assignment/Work Progress" area) for that concern record.

### **Estimated Completion Date Chronology Field**

The "Est. Completion Date Chronology" field in a concern's "Problem Information" area is a repository (for "Revised Est. Completion Date" entries) that is automatically populated by the system (with the previous/updated "Revised Est. Completion Date") whenever the "Revised Est. Completion Date" is changed – to provide a complete record of "Revised Est. Completion Date" updates.

### **Initial Customer Contact**

The date of the initial contact with the customer (in response to their concern) is to be entered in the "Initial Contact Date" field for that concern record. The initial customer contact may be in person, or by telephone, e-mail, or letter, but should occur within two working days of the "Received Date" listed for the concern record. The date listed in the "Initial Contact Date" field will be either the actual date of contact (if in person or by telephone) or the date correspondence was sent to the customer (if by e-mail, fax, or postal/delivery service). At the county level, the initial customer contact would normally be handled by the Assistant County Maintenance Manager or the County Maintenance Manager. Any pertinent contact information should be either entered in the "History" "Problem field (in the

Assignment/Work Progress" area) or scanned and attached to that concern record.

### **ASSIGNING WORK TO FOREMEN**

Where foremen have computers available, the Assistant County Maintenance Manager can directly assign concerns to them though the system. Where the foremen do not have ready access to a computer, the Assistant County Maintenance Manager should printout a hard copy of the concern and attach it to the Weekly Plan. In cases where the work is high priority and the concern was submitted after the Weekly Plan was assigned to the foreman, the Assistant County Maintenance Manager should give a hard copy of the concern directly to the responsible foreman (along with any necessary instructions or authorizations for accomplishing the corrective work).

If CCC access is available, upon completion of the work needed to satisfy the customer concern as scheduled or directed, the foreman should enter the report of action, as well as the date and by who completed, into the CCC. The foreman will then notify the Assistant County Maintenance Manager of the concern update, and the Assistant County Maintenance Manager will review and verify the updated record.

If access is not available, the foreman should record this information on the back of the hard copy and return it to the Assistant County Maintenance Manager for review and verification. The Assistant County Maintenance Manager or designee will then input the resolution and completion date into the system

### HISTORY FIELD – PROBLEM ASSIGNMENT/WORK PROGRESS

The "History" field (in a concern's "Problem Assignment/Work Progress" area) should be used to enter any pertinent information that is not part of the final resolution explanation, or has not been scanned and attached (i.e., used for any pertinent information that is not defined to be entered in the "Resolution" field or has not been attached to the concern record).

### **CCC ADMINISTRATOR REVIEW ACTIONS**

The District Office and County CCC Administrators should review their organization's concern entries on no less than a weekly basis. This is to ensure that the organization's concerns are being assigned and completed as required and that erroneous or duplicate entries are removed

from the system in a timely fashion. They should print out a copy of their organization's Tickle Report (listing open concerns) and Initial Contact Date Report prior to the weekly planning meeting. In the case of erroneous or duplicate records, the District CCC Coordinator should be notified as soon as possible of the concern record(s) that need(s) to be deleted and why the deletion is necessary.

Normally, a review of the Tickle Report each week, in conjunction with the weekly planning meeting, is effective and efficient as a follow-up procedure. This permits tickling and coordinating any assistance, equipment requirement, or material needs better than can be done on a daily basis.

The County CCC Administrator should provide those customer concern records (assigned to their county) that exceed the Initial Contact Date response timeframe or which have expired tickle dates to the County Maintenance Manager at the weekly planning meeting unless the County Maintenance Manager prefers to initiate follow-up more frequently.

The District Office CCC Administrator should provide those (District Office assigned) customer concerns that exceed the Initial Contact Date response timeframe or which have expired estimated completion dates to the ADE for Maintenance on a weekly basis unless the ADE-M prefers to initiate follow-up more frequently.

### FOLLOW-UP ACTIONS

The County Maintenance Manager will initiate follow-up through the Assistant County Maintenance Manager. The follow-up will normally be accomplished in conjunction with the weekly planning so that any coordination and scheduling needs can be planned at that time. The County Maintenance Manager should be cognizant of the time criteria applicable to reported highway maintenance concerns and attempt to effect corrective work within these guidelines relative to responding to emergency conditions, the initial contact date, estimated completion date, and the resolution of the concern. He or she should also take steps to ensure the assistant managers and foremen are aware of these guidelines. In those instances where corrective work to remedy a customer-generated concern cannot be accomplished in accordance with the guidelines, the County Maintenance Manager should seek assistance from the District Executive and/or take such other actions that will result in correcting the deficiency such as programming resurfacing, drainage installations, etc.

The County Maintenance Manager may initiate follow-up on customer-generated concerns and inquiries at more frequent intervals and may authorize the County CCC Administrator to advise the appropriate Assistant County Maintenance Manager directly of those concerns with expiring tickle dates in conjunction with this procedure.

## CONCERN HANDLING RELATIVE TO ACTUAL WINTER SERVICE OPERATIONS – RADIO LOG

The Radio Log maintained by Radioperson/Dispatcher in the maintenance districts may serve as a temporary Customer Concern Record during actual winter service operations. During actual winter service operations, customer concerns and any related follow up activities (which manager and/or foreman was notified, the time of notification, the report that corrective action was completed and the time of completion, as well as any other pertinent information) should be entered in the Radio Log. Radio Operators and foremen starting their shift should be made aware of any unresolved winter service concerns from the previous shift so that corrective action can be taken on their shift. All managers, radio operators and foremen should be made aware of the procedure, particularly the need to report when action is completed on a customer concern or inquiry and the need to pass on any unresolved winter service issues to the next shift. The Maintenance Manager should periodically verify that the procedure is being properly followed.

Customer concerns and inquiries entered on the Radio Log unrelated to winter services – such as a downed guiderail – should be forwarded to the organization's CCC Administrator as soon as possible without detrimentally effecting ongoing winter service operations. Radio Log entries of customer concerns directly related to winter service operations that initiate the implementation of adjustments to existing planned operations (i.e., re-routing or adding equipment, changing material application rates/mix ratio, etc.) should be forwarded to the organization's CCC Administrator as soon as possible after the actual winter operations have been completed for a subject event.

Conversely, Radio Log entries of customer concerns directly related to winter service operations that do not require implementation of any adjustments to existing planned operations do not have to be transferred to the CCC. It is permitted to use the Radio Log to permanently document concerns of this type.

The organization's CCC Administrator will ensure that all Radio Log forwarded concerns are entered into the CCC as soon as possible after they have been received.

### RETENTION OF ADDITIONAL RECORDS

The State Route (S.R.) Files contain administrative and maintenance information relative to each particular numbered route. Due to the ability of CCC users to quickly and completely access concern records on an SR-specific basis, information already housed in the CCC is not required to also be retained in the S.R. files; however, any information related to customer concerns not either entered or scanned into the CCC (i.e., photos, additional details, etc.) must be retained in the S.R. files for seven years.

### **CCC SYSTEM REVIEW CHECKLIST**

The Customer Care Center System should be reviewed by the County Maintenance Manager on at least a semi-annual basis to determine that the personnel assigned to perform the various functions within the system are aware of proper procedures, that they are following the procedures, and that the system is functioning correctly. The following questions should be used as a checklist by those responsible for the customer concern system functions. The list can also be used as a means of evaluating procedures by others who conduct reviews of the Maintenance District Offices.

## QUESTIONS FOR CUSTOMER CONCERN CHECKLIST:

### **CCC Administrator**

- Which person is designated as the CCC Administrator?
- Does the CCC Administrator have a blank hard copy of the New Concerns entry screen available for reproduction to use in case of a temporary CCC access failure.
- Who are designated as alternates to maintain the Customer Care Center when

the Administrator is unavailable or absent?

### **Individuals Receiving and Entering Concerns**

- Who has been designated to receive and record customer service concerns and inquires?
- Have field personnel been provided M-206 forms to document customer concerns received in person?
- Do the persons designated to receive and input concerns/inquiries understand which complaints are highest priority, such as knocked-down stop signs and yield signs, etc.?
- Do the persons who are designated to receive and record concerns/inquiries make certain the concern is entered into the system?
- Are letters addressing concerns or inquiries attached to the concern in the Customer Care Center?
- Who processes letters that contain concerns/inquiries?
- Are you satisfied that all concerns/inquiries from any source, and no matter how communicated, are input into the system?
- Are all SEMP-related concerns properly designated.
- If a concern/inquiry is not input into the Customer Care Center, why is it not input?

### **Evaluating Concerns and Assigning Corrective Action**

- Do you evaluate every concern/inquiry for priority?
- If you do not evaluate every concern/inquiry, who is designated to do so?
- What are your criteria for responding to concerns, e.g., priorities, time to effect corrective work, degree of deficiency, etc.
- Are your criteria the same as those in guidelines provided by the Department?
- Has the Assistant County Maintenance Manager been made aware of this criteria?

- Do any foremen evaluate or investigate customer-generated concerns and inquiries?
- Have you made the foremen aware of your criteria?
- Do the Assistant County Maintenance Managers act promptly in evaluating, investigating, or assigning corrective work in relation to customer concerns and inquiries?

### Planning and Scheduling

- Do you follow up on responses to customer concerns and inquiries other than at weekly scheduling meetings?
- Do you schedule corrective work in relation to customer concerns and inquiries on the CM34 Weekly Plan?
- How often is corrective work in response to concerns/inquiries assigned independent of the Weekly Plan?
- Who prints and reviews the Tickle Report on a periodic basis to identify concerns/inquiries not acted on by the estimated completion date?
- How often is the Tickle Report reviewed?
- What procedure is used to follow up on concerns/inquiries for which corrective action has not been accomplished by the estimated completion date?

### Foremen Actions

- Are foremen given the latitude to take corrective action on customer concerns/inquiries on an opportune basis?
- Do the foremen make adequate reports of all actions on the hard copy of the concern?
- Do the foremen enter information on the daily payroll regarding deficiencies which might result in a customer-generated concern that they then observe and correct on their own initiative?
- Do the foremen make entries on the daily payroll when an action to resolve a concern is completed?

### **Analysis of Concern Records and Occurrences**

How many Customer Care records

- (concerns) has your County received this year?
- Have you tried to analyze the concerns by source, type, etc., to determine trends?
- How many Concerns in the Customer Service Record File are based on hazard reports from law enforcement officials?
- Are any Concerns based on concerns/inquiries, articles, or broadcasts of the news media?
- Who monitors accident reports to determine if a highway deficiency may exist as indicated by an accident?
- Are Concerns prepared to reflect deficiencies cited in accident reports?

### Winter Service Operations – Radio Log

- Is the Radio Log temporarily used in lieu of the CCC only for winter services-related concerns and inquiries?
- Who reviews the Radio Log to be sure all winter service-related concerns/inquiries have been acted on and the log entries are completed?
- What procedure is established between the Radio Operator, Assistant County Maintenance Manger, and the Foremen to be sure the action on winter service-related concerns/inquiries is completed despite shift rotations?
- Where and for how long are the Radio Logs kept?
- Are applicable winter service-related concerns/inquiries being forwarded to the organization's CCC Administrator for follow-up entry into the CCC?
- Is the follow-up CCC entry of applicable winter service-related concerns/inquiries being performed?

### **Retention of Additional Records**

 Has any information related to customer concerns not been either entered or scanned into the CCC (i.e., photos, additional details, etc.) or retained in the S.R. files?

### **Conclusions**

 Are all of your organization's concern records maintained in a thoroughly complete and accurate manner?  Have your organization's CCC operations been reviewed on at least a semi-annual basis, and are you satisfied that your organization is maintaining its CCC records in a comprehensive, reliable, and efficient manner?

### 3.10 CREW SPECIALIZATION

The concept of crew specialization should generally be used when assigning activities to foreman and crews. Crews should not perform all of the maintenance activities in their own area throughout the year. Whenever possible, crews should perform activities having similar skill requirements. By performing activities requiring similiar skills, crews will become familiar with the tasks. This familiarity will lead to more efficient and effective operations, uniform results and encourage crew members to take pride in the quality of their work. Two examples of tasks with related skills would be:

- Plant Mix Surface Treatment Mechanized Patching - Scratch Coat
- 2) Liquid Bituminous Surface treatment- Skin Patching

### RESPONSIBILITIES

- 1. Maintenance Manager Divides the county into manageable work areas such that maximum one way travel time generally does not exceed one hour. Assigns a foreman, crew and equipment to one or more related types of tasks. Basic equipment assigned to crews should be permanent and remain with that crew except when scheduled for preventive maintenance by the Equipment Manager.
- Assistant Maintenance Manager During the period of specialized crew operation, Assistant County Maintenance Managers are responsible for the quality of maintenance in their normal assigned areas.
- 3. Foreman Directs crew operations, supervises and trains his crew to gain utmost economy and efficiency, accomplishing the most amount of quality work in the least amount of time. Instills a degree of pride and competitive spirit among crew members concerning the quality and amount of work completed.
- Crew Members Crew members are expected to report to the designated place of assembly by the normal starting time. If

the designated place of assembly is the job site, a full day would begin and end at the job site. If the designated place of assembly is other than the job site, transportation to and from the job site will be provided such that a full day would extend from the time of reporting at the place of assembly to the time of quitting at the place of assembly. By performing related skills most of the time, the crews will become familiar with the tasks. Their familiarity will lead to more efficient operations, uniform results and will encourage the members of the crew to take pride in the quality of their work. Due to an understanding reached during negotiations with AFSCME, the following specific bidding procedure for staffing specialized paving and surface treatment crews has been adopted as Department policy and must be used.

### **SCOPE**

This bidding system applies to paving and surface treatment crews only.

#### **PROCEDURE**

Future permanent assignments to vacancies which occur in county wide paving and surface treatment specialized crews shall be made in accordance with the following provisions:

- Actual complement vacancies which the Department determines are to be filled, shall be filled in accordance with applicable personnel policy and/or collective bargaining agreements.
- 2) The opportunity for assignment to those crews listed above, other than Foreman, operators of Transportation Equipment Operator 4 level equipment, and self-propelled stone or chip spreader and roller operators, will be made by posting for five (5) working days annually or when vacancies occur. After the posting period, in March for the annual posting, the most senior qualified employee from among the applicants from the classification determined by Management to be needed for the position shall be assigned to the crew.
- 3) Employees so assigned to the listed specialized crews shall serve a probationary period of up to one month on the specialized crew. When, in the opinion of Management, the employee's performance is determined to be

unsatisfactory, the employee shall be returned to his former assignment or to a similar assignment and the next most senior qualified applicant shall be assigned to the crew on a probationary basis.

- 4) If there are no applicants for the assignment from among employees in the class determined by Management to be needed on the crew or if no such applicants possess the requisite skills and abilities, assignments shall be made in the inverse order of classification seniority, taking into account the type of work being done and the variables relative to individuals and equipment.
- 5) Seniority for the purpose of this provision shall be classification seniority.
- 6) In counties where the specialized crews "pick up" operators and others as they move from location to location, they may continue to do so. These assignments will not be subject to bidding and notice should be posted indicating this practice.

## 3.11 FOREMAN NUMBER ASSIGNMENT (WORK CENTER)

Plant Maintenance requires the assignment of an identifying number to each Maintenance Manager, the Assistant Maintenance Manager, Equipment Manager and the Foreman in each county.

The number 01 is assigned to the Maintenance Manager. The number 02 is assigned to the Equipment Manager. Numbers 04 through 19 will be assigned to specialized crew Foreman who normally receive their assignments from the Maintenance Manager or lead Assistant Maintenance Manager. Examples of Foreman who would be assigned these numbers are the Sign Foreman and the Bridge Foreman.

The numbers 20, 30, 40, 50, 60, 70, 80, and 90 will be assigned to the Assistant County Maintenance Managers (Maintenance Planner) in each county. The numbers 21 to 29, 31 to 39, 41 to 49, 51 to 59, 61 to 69, 71 to 79, 80 to 89, 91 to 99 will be assigned in that sequence to the foreman (work center) who work under the various Assistant Maintenance Managers in an individual county.

As an example, if Lehigh County has three Assistant Maintenance Managers, numbers 20, 30, and 40, number 20 would have the block of

numbers 21 to 29, number 30 would have the block of numbers 31 to 39 and number 40 would have the block of numbers 41 to 49. The additional numbers would not be assigned but held in reserve for assignment as needed.

The foreman working under these Assistant Maintenance Managers would be assigned a number from their Assistant's block of numbers.

As an example, if the Assistant Maintenance Managers with the 21 to 29 block of numbers had 6 Foreman under him, numbers 21, 22, 23, 24, 25, and 26 would be assigned; numbers 27, 28 and 29 would remain in reserve.

When feasible, reserve numbers should be assigned to new hires. Assigning the number of a retired individual to a new hire puts the new hire in the position of having his production data reported with data previously reported.

In Plant Maintenance, cost and production information is identifiable by a work center number coded on the payroll. Cost and production information can be rolled up to the Assistant Maintenance Manager by using the Maintenance Planner number coded on the payroll.

## 3.12 EROSION AND SEDIMENTATION CONTROL

### **BACKGROUND**

In general, an Earth Disturbance Permit will not be required for most maintenance activities. However, a countywide Erosion and Sedimentation Plan is required for those activities involving the movement of earth.

The standard erosion and sedimentation control plan for road maintenance activities is based on the use of erosion control measures as detailed in the maintenance activity performance standards. In the event a maintenance activity is planned within 50 feet of a flowing stream, appropriate erosion and sedimentation control best management practices (BMP's) will be incorporated into the maintenance activity to protect the stream. Authority to initiate a site specific plan and responsibility to assure compliance with the requirements of the plan rests with the Maintenance Manager.

For routine maintenance activities involving earth disturbance such as side dozing, shoulder cutting and grading, shoulder repair, pipe installation and cleaning, culvert installation and cleaning, day lighting, etc., erosion and sedimentation control BMP's will be incorporated

into work operation in accordance with the approved work activity performance standard. Guidance and additional information is provided in Pub 464 (Maintenance Field Reference for Erosion and Sediment Control) relative to the selection and application of erosion and sedimentation Best Management Practices.

In order to ensure that erosion and sedimentation control BMP's are properly implemented, the County Conservation District and/or the Pennsylvania Department of Environmental Protection (DEP) will periodically inspect Department maintenance activities and forward inspection reports to the Maintenance Manager.

### **POLICY**

It is the policy of the Department to incorporate erosion and sedimentation control BMP's into all maintenance operations involving earth disturbance activities which are likely to cause accelerated erosion and resulting sedimentation.

The Maintenance Manager shall arrange to meet with the County Conservation District once in the spring to review the proposed work plan. Additional meetings may be conducted as required.

The PA Clean Streams Law authorizes the regulation of activities that create or have the potential to create pollution in the waters of the Commonwealth. The DEP Administrative Code 25, Chapter 102 regulates earth disturbing activities such as highway maintenance to prevent accelerated erosion and the resulting sediment pollution.

### **PROCEDURE**

Figure 3.12.1, page 3-23, outlines the erosion and sedimentation control procedures for the Maintenance Manager to follow when planning and implementing maintenance activities involving earth disturbances. This procedure provides maximum flexibility by allowing management personnel to select and implement additional erosion and sedimentation control BMP's only where they are needed. In cases where there are technical questions relative to the design and implementation of erosion and sedimentation control BMP's, the District Environmental Manager shall be consulted. The County Conservation District may also be consulted.

The County Conservation District and/or the

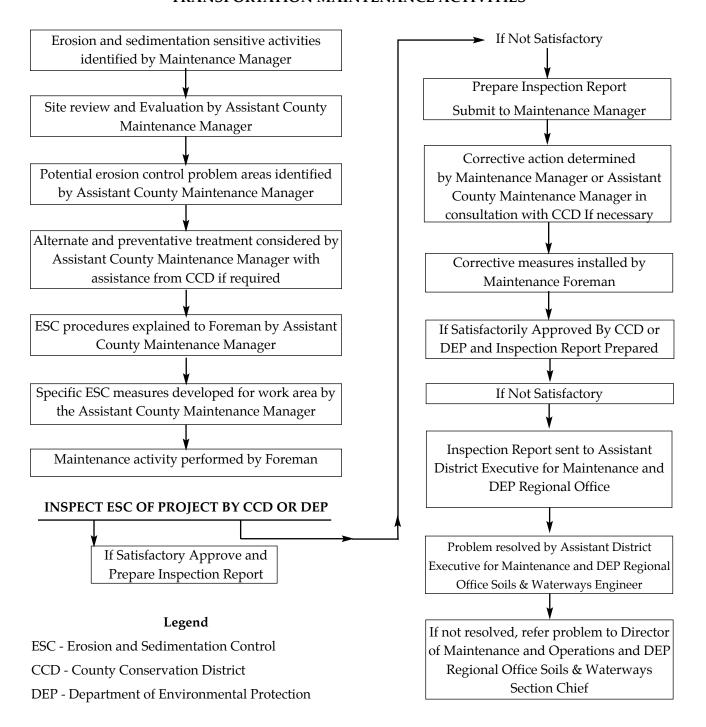
Department of Environmental Protection will periodically inspect Department maintenance activities for the proper implementation of erosion and sedimentation BMP's.

An inspection will be completed. If deficiencies are noted and corrective measures are necessary, a mutually agreed upon deadline will be given to correct the conditions. Reinspection will be conducted. In the event a problem cannot be resolved at the county level, the Assistant District Executive for Maintenance (for the District Executive) and the appropriate DEP Regional Office will receive a copy of the inspection report. These parties will initiate coordination to satisfactorily resolve the problem. If resolution cannot be reached at this level, Soils and Waterway Section Chief or the Water Quality Program Manager of the appropriate Regional DEP office and the Director of Maintenance and Operations (for the Deputy Secretary for Highway Administration) will be contacted to resolve the problem.

In instances where transportation facilities are affected by erosion and sedimentation from properties outside the Department right-of-way, the Maintenance Manager should notify the County Conservation District or DEP Regional office of the problem and request that appropriate action be taken.

### **FIGURE 3.12.1**

## EROSION AND SEDIMENTATION CONTROL PROCEDURES FOR DEPARTMENT OF TRANSPORTATION MAINTENANCE ACTIVITIES



Appendix A contains the Department of Environmental Protection, Erosion and Sedimentation Control Plan for Routine Maintenance Activities.

APPENDIX A		PAGE 1 O
PROJECT NAME:		DATE:
1. LOCATION:		
	(Municipality)	(County)
	BLE FOR CONSTRUCTION AND I	
	le positions if duties are assigned to	
	(Name)	
	(Address)	
	(State)	(Zip)
	(Signature)	
Telephone #: (	)	
3. EROSION AND SEDIM	MENTATION PLAN PREPARER:	
	(Name)	
	(Address)	
	(State)	(Zip)
T. 1 . 1 . 4 . /	(Signature)	
Telephone #: (	)	

PLAN CONTENTS PAGE 2 OF 3

3. MAPS: Attach to this plan those maps necessary to show the length of road to be maintained and general topographic features of the area through which the road travels. At a minimum, all streams and other waters of the Commonwealth crossed or located in close proximity to the road must be identified. Type 3 or municipal road maps may be used for this purpose and kept in the County Office. Complete the applicable sections of the following checklist:

- Work Plan includes projects for the activities noted below.
- The reference project map is made part of this plan.
- The location (or road section) of culvert replacement work, tail ditch repairs and similar work are shown on the work schedule.

3.	PROPOSED ALTERATIONS: Regarding of unpaved shoulders and roadways, replacement of
	existing pipes, removal of sediment from roadside ditches, restacking of stone endwalls, etc.,
	shall adhere to Department of Transportation performance standards.

Maintenance activities under the plan include the following:

711-7112	Unpaved Roads - Shaping	711-7311	Inlet/Endwall Cleaning
711-7113	Unpaved Roads - Restabilization	711-7312	Reshaping/ditch cleaning
711-7136	Pavement Widening	711-7314	Pipe Cleaning
711-7212	Shoulder Grading	711-7324	Pipe Installation
711-7213	Shoulder Stabilization	711-7332	Slope Stabilization
711-7215	Shoulder Cutting	711-7341	Emergency Damage
711-7216	Shoulder Upgrading		

- 4. THE AMOUNT OF RUNOFF FROM PROJECT: This requirement does not apply to most road maintenance projects. If the project involves significant new areas of earthmoving, or if the maintenance activity is correcting an unstable site condition such as a culvert outlet or drainage ditch, refer to DEP's Erosion & Sediment Pollution Control Program Manual for plan information and guidance necessary to meet this requirement.
- 5. THE STAGING OF EARTHMOVING ACTIVITIES: The sequencing of earthmoving activities associated with the maintenance project are detailed in the maintenance activity performance standard.

### PAGE 3 OF 3

6. TEMPORARY CONTROL MEASURES AND FACILITIES FOR USE DURING EARTHMOVING: Vegetated areas may be used to filter sediment from runoff from grading, ditch cleaning, and culvert replacements. The length of the vegetated areas must equal or exceed the minimum distance shown in the following table. Other measures, as indicated in the performance standards, must be used when adequate vegetated areas are not available.

# CROSS SLOPE MINIMUM DISTANCE TO STREAM 10:1 50 5:1 65

 3:1
 105

 2:1
 125

Temporary measures may be removed when upstream areas are stabilized.

- 7. PERMANENT CONTROL MEASURES: Where above standards cannot be met or field conditions indicate severe erosion problems, permanent control measures may require on a site specific basis.
- 8. A MAINTENANCE PROGRAM FOR THE CONTROL FACILITIES INCLUDING DISPOSAL OF MATERIALS REMOVED FROM THE CONTROL FACILITIES OR PROJECT AREA: Erosion and sediment pollution control measures and facilities will be checked periodically. Necessary maintenance work will be performed as required by the Performance Standards to keep the measure or facility in operating condition.
- 9. OTHER

### **EARTH DISTURBANCE PERMIT:**

DEP regulations require earth disturbance permits for projects involving more than 25 acres of earth disturbance. For example, 10.5 miles of unpaved forest roads, with an average of 19.5 feet would equal 25 acres. If the total length of unpaved road to be maintained results in more than 25 acres of earth disturbance, the project must be divided into sections of less than 25 acres. The limits of the sections must be shown on the attached maps. All work, including culvert replacements, tail ditch construction, etc., must be completed and any required interim stabilization measures or facilities must be in place before any work on an adjoining section may begin

## 3.13 COUNTY MAINTENANCE IMPROVEMENT PROCESS (CMIP)

All counties will complete a CMIP process every two years. At the completion of the CMIP workshop, a minimum of two opportunities will be identified from the list of eficiency and effectiveness opportunities identified in CMMT. Closing of the opportunities will be within 120 days of the workshop. Methodology for the closing of the opportunities will be at the discretion of rthe ADEM.

A detailed description for the CMIP process, schedule and workshop steps are posted on the BOMO websites at:

http://dot.state.pa.us/penndot/Bureaus/Intranet/BOMOintra.nsf.

Click on Director's Office, click on CMIP and click on <u>Process - CMIP</u>.

# CHAPTER 4 WINTER SERVICES

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### 4.1 INTRODUCTION

The primary maintenance objective during the winter months is to keep all state roads in a safe and passable condition. Not all roads will be free of ice and snow at all times. Sometimes, snow pack will remain on certain roads according to the approved treatments and priorities. In all cases, service will proceed by priorities of routes as quickly and efficiently as possible.

**Priorities of routes** determine Levels of Service goals for winter operations. Three priorities of routes are used:

- First priority routes: Interstates and limited access highways and ramps
- Second priority routes: Commercially-bordered routes with traffic volumes and patterns that vary by time of day and day of week
- Third priority routes: Routes carrying moderate to minimal traffic.

Levels of Service goals specify the maximum acceptable amounts of snow and ice allowed to accumulate on roadways between cycles of plowing and spreading operations. Due to the dynamics of winter storm events, Levels of Service goals vary according to priorities of routes, time of day, day of week, elapsed time since start of event, and specific local weather conditions. In most instances, the ultimate goal of ice- and snow-free roads will be fully achieved only after a storm event has ended. See Section 4.5.2 for complete definitions of Levels of Service goals.

Planning, preparing, and scheduling of resources must occur far in advance of winter storms. In fact, a successful winter services program is a **year-round activity** and requires a continual **focus on fundamentals**. Preparations for next winter's operations begin on the last day of the previous winter season.

#### **Focus On Fundamentals**

Fundamental resources that must be ready for deployment include:

**People:** Equipment Operators, Foremen, and Managers who possess the knowledge and skills needed to perform their jobs well

**Equipment:** The right types and pieces of equipment properly maintained, available when and where needed to perform winter operations

**Materials:** Sufficient quantities of the right materials for conditions, in the right locations, ready for application as needed

A focus on fundamentals also includes effective scheduling: detailed operational assignments for people, equipment, and materials, so that resources are ready and available for deployment as needed to achieve Levels of Service goals for each route before, during, and after winter storm events.

### Communications

Efficient, accurate, and timely transmission of information before, during, and after winter storm events among parties who need to know, including PennDOT staff and external partners.

#### Situational Awareness

Having accurate and up-to-date awareness of road and weather conditions is an important component of Situational Awareness. Successful snow and ice control operations require continual monitoring of weather conditions, weather forecasts, resources deployed, and Levels of Service achieved on each route. Such monitoring provides awareness of current and changing conditions. This knowledge is indispensable for communications among relevant parties dealing with the winter storm event. For example, in the case of severe weather that warrants closure of a road, PennDOT staff must communicate and coordinate in a timely manner with external partners such as local and state police to reroute traffic.

### **Contingency Planning**

Having plans to address potential challenging situations. Situational awareness is essential to contingency planning. When conditions warrant, Levels of Service decisions can be particularly critical. Temporary redeployment of resources from lower to higher priority routes may be necessary to achieve and maintain Levels of Service on higher priority routes. Diverting resources (people, equipment, materials) from lower to higher priority routes (and then back again) requires advance planning so that disruptions to routine operations are minimal. Situational awareness supports decisions to activate contingency plans.

### **Standardized Roadway Condition Descriptions**

PennDOT defines six winter roadway conditions. These definitions support effective communications among PennDOT staff, its partners, and the motoring public. The six descriptions are:

**Condition 1: Clear** – No snow and ice is bonded or accumulated on the road surface. Bare pavement surface is maintained at all times.

**Condition 2: Clear and Wet** – Bare/wet pavement surface is the general condition. There are occasional areas having snow or ice accumulations resulting from drifting, sheltering, cold spots, frozen melt-water, etc.

Condition 3: Snow and/or Slush Covered with Wheel Tracks Exposed – Accumulations of loose snow or slush ranging up to two inches (2 in.) are found on the pavement surface. Packed and bonded snow and ice are not present.

Condition 4: Snow and/or Slush Covered – The pavement surface has continuous stretches of packed snow with or without loose snow on top of the packed snow or ice.

**Condition 5: Icy** – The pavement surface is completely covered with packed snow and/or ice. There may be loose snow on top of the icy or packed snow surface.

**Condition 6: Impassable** – A road is temporarily impassable. This may be the result of severe weather (e.g., low visibility) or road conditions (e.g., drifting, excessive unplowed snow, avalanche or avalanche potential, glare ice).

### Chapter Organization and Scope

This chapter discusses all phases of ice and snow control operations. As nearly as possible, it chronologically lists all winter-related activities starting with those performed in the spring, continuing with summer and fall activities, and concluding with the winter season. Employees throughout PennDOT, including Equipment Operators, Foremen, County Maintenance Managers, and District and Central Office personnel, perform these activities. In some cases, rental operators and municipal employees executing municipal services contracts also complete these activities – yet are bound by the same guidelines. Where applicable, this chapter identifies by job titles those with primary responsibilities for activities.

Changeable conditions during winter storms require flexibility of operations. Ice and snow control is a highly complex and varying task requiring knowledge and expertise. The types and amounts of deicing materials to be applied, determining plowing versus spreading, and Levels of Service are field decisions and must be made by the County Maintenance Manager or a designated representative in charge of local operations.

Subject to weather conditions and irregular winter schedules, the Department will continue to perform such other maintenance activities as stated in Section 4.5.16, Dark Hours Training and Other Activities Performed during Winter Season. However, because of the major impact that winter storms have upon our society, other maintenance activities are secondary to the ice and snow control program.

IMPORTANT NOTE: These guidelines describe recommended practices that may be adapted to meet field conditions. Deviations from these guidelines may be justified by factors such as weather forecasts, road conditions, material availability, equipment availability and time of day. Preparations of fundamental resources, contingency planning, and timely situational awareness and communications set the stage for good decisions that support effective operations

## 4.2 WINTER RELATED ACTIVITIES DURING APRIL AND MAY

A successful ice and snow control program must be approached as a year-round activity. If adequate preparations have not been completed by the time the first snow falls on the ground, it will be impossible to do the job efficiently no matter how good or experienced the maintenance organization has become.

Figuratively speaking, it may be said that the next winter begins on the day that this winter ends. Beginning winter preparations about nine months ahead allows ample time to focus on the fundamentals, particularly the people, equipment, and materials that must be ready for deployment by the start of the next winter season.

In preparation for next winter, topics addressed during the spring season include:

- Review of operations for the winter that just ended
- · Inspection and storage of equipment
- Inventory and storage of winter materials
- Cleanup of stockpiles and highways
- Review of municipal agreements

### 4.2.1 COUNTY SPRING SEASON REVIEW

The best way to start preparing for next winter is to review what happened last winter. Use After Action Reviews (AARs) to document winter operations. Conduct a County AAR at the end of each winter season, shortly after the last winter storm event while the operational aspects of winter services are still fresh in everyone's minds. Participants include the County Maintenance Manager, Assistant County Maintenance Manager(s), Equipment Manager, County Plant Maintenance Coordinator and other key County personnel designated by the County Maintenance Manager. AARs should be held after each winter event or when specific operational shortcomings or concerns indicate the need for a review. Appendix A includes Winter Operations AAR template.

AARs reveal what worked well and what did not. AAR findings should trigger short-term corrective actions and contribute to long-term planning. An example of a short-term corrective action is ordering and installing a replacement engine for a snow blower. Problem areas and opportunities for improvement that require more time, resources, and planning often involve:

Equipment routing, cycle times, and scheduling of personnel

- Materials supply and application rates
- Rental agreements and municipal contracts
- · Shift schedules
- Call-out procedures
- Situational awareness
- Contingency planning
- Quality and reliability of temporary personnel

Address any longer-term items or issues identified during the spring AARs and resolve them prior to the start of the next winter season, whenever possible.

The County Maintenance Manager must send a memo outlining the results of the County AAR to the Assistant District Executive for Maintenance by April 15th. Documenting and sharing what each county learned about improving winter operations will better prepare the Department for next winter.

### 4.2.2 DISTRICT SPRING SEASON REVIEW

The Assistant District Executive for Maintenance should review the results of the County AARs. A District AAR is to be completed no later than May 15th. The Assistant District Executive for Maintenance, District Equipment Manager, all Assistant District Maintenance Managers and all County Maintenance Managers should attend. Appendix A includes Winter Operations AAR template.

The District AAR should evaluate District ice and snow control operations. Use the AAR to identify best practices, particularly new and innovative practices. Items noted in the county reviews that require District action should be addressed at the appropriate time. As with County AARs, topics covered during District AARs should include:

- Equipment routing, cycle times, and scheduling of personnel
- Materials supply and application rates
- Rental agreements and municipal contracts
- · Shift schedules
- Call-out procedures
- · Situational awareness
- Contingency planning

The Assistant District Executive for Maintenance is to send a summary of the District AAR to the director of the Bureau of Maintenance and Operations no later than May 31st. Incorporate information from the District AAR into the annual Winter Leadership presentation, as appropriate (see Section 4.3.7).

## 4.2.3 WINTER EQUIPMENT INSPECTION AND STORAGE PREPARATION

The months of April and May are the best times to inspect snow removal equipment. This allows time to evaluate the condition of the equipment and to schedule needed repairs and maintenance so that the equipment is in proper working condition for the next winter season

The District Executive determines the equipment inspection protocol. This may involve a set inspection procedure to follow each year, or the inspection procedures may be left to the County Maintenance Manager to decide. In the latter case, inspection methods will vary depending on the type of winter and the age and general condition of each County's snow removal equipment. Document results of inspections, including needed repairs and maintenance. A Winter Equipment Checklist included in Appendix B may be useful for this purpose.

County Equipment Managers are responsible for scheduling repairs and maintenance so that equipment is in good working order by the start of the next winter season. The District Equipment Manager should monitor progress and verify that all needed repairs have been completed. Additional information can be found in the latest version of the Equipment Manager's Manual, Publication 177.

### 4.2.4 WINTER MATERIALS

Qualified personnel are to inventory all winter materials at the stockpile where they reside in accordance with the current SAP Plant Maintenance standards. Material moved between stocking areas shall be "transferred" in SAP Plant Maintenance and "issued" from current materials when used. The following are key milestones:

- Complete physical inventory by May 31st
- Complete data input into the SAP Plant Maintenance system by June 25th
- Complete adjustments and reconcile with SAP Plant Maintenance inventories by June 30th

To determine the amount of salt required for the next winter season, calculate an average salt usage for the previous five years. Use this 5-year average as a baseline capacity. Subtract the amount of salt on inventory as of June 30th from this baseline. Provide the difference

between the baseline and the inventoried amount to BOMO for use in establishing a bid package. Counties are responsible for maintaining salt inventory levels throughout the winter season as follows:

- Create purchase orders to acquire and maintain fill quantities equal to 75% of available working capacity or 5-year average, whichever is lower (including inventoried amounts), from November 1st through January 15th
- Maintain 60% working capacity or 5-year average through February 1st
- Maintain 30% working capacity or 5-year average through March 1st
- Maintain 10% working capacity or 5-year average through April 1st

## 4.2.5 SPRING CLEAN UP OF MAINTENANCE STOCKING AREAS

Following SEMP guidelines, maintain stocking areas in a neat and orderly condition at all times. All County maintenance personnel are responsible for the upkeep of stockpiles.

Assistant County Maintenance Managers are responsible for ensuring that stockpiles meet the Department's quality assurance standards. The annual spring cleanup of stocking areas deserves special emphasis. At this time, clean and repair bins and storage buildings, as needed, before transferring remaining salt and other environmentally sensitive materials into them from stockpiles without permanent storage buildings (see Section 4.2.6). Clean and repair salt storage pads at stockpiles without permanent storage buildings as needed. Soil- and salt-staining cleanup must comply with SEMP guidelines. Salt laden aggregate produced by the cleaning of stockpile grounds both during and after the winter season which cannot be recovered and reused will be disposed of using residual waste handling procedures.

## 4.2.6 TRANSFER OF REMAINING SALT TO COVERED SALT STORAGE BUILDINGS

Every District has several covered material storage buildings. As soon as the winter materials inventory and spring cleanup are completed (see Sections 4.2.4 and 4.2.5), transfer of all environmentally sensitive materials from stockpiles without permanent storage buildings should begin. Any stockpiles located within 500 feet of wells or streams are to be emptied first, with the other stockpiles following in a logical sequence.

Transferring salt and other environmentally sensitive materials to permanent storage buildings will eliminate a potential pollution problem, keep the materials in a usable condition, and help in the general cleanup and appearance of stocking areas. Material moved between stocking areas shall be "transferred" in SAP Plant Maintenance and "issued" from Current Materials when used.

## 4.2.7 CLEANUP OF ANTI-SKID MATERIALS FROM HIGHWAYS

Spring is the time for cleaning and removing anti-skid materials from highways, bridge decks and expansion joints, drainage facilities, raised medians and islands, joints, inlets, scuppers, gutters and drainage courses. This should be done as soon as possible after the last winter storm of the season. Clean up and disposal of waste materials must comply appropriate SEMP policies and procedures, as applicable.

Failure to conduct a proper anti-skid cleanup operation:

- Leaves the highways in an unsightly condition
- Creates the potential for roadway runoff pollution to surface waters
- Blocks drainage facilities, leading to damage on roads and shoulders
- Reduces the effectiveness of herbicides (spray falls on anti-skid deposits instead of potential growth areas)
- Delays traffic line painting

Depending on the amount and type of work involved, anything from hand brooms and shovels to tow brooms and self-propelled mechanical sweepers can be used for anti-skid cleanup. The Department is not responsible for sweeping state routes within city or borough boundaries.

### 4.2.8 MUNICIPAL AGREEMENTS

It is Department policy to contract winter maintenance services for certain state roads to municipalities on an annual basis. Municipal agreements have proven to be an extremely effective tool in providing timely winter service. In many cases, due to the nature and locations of the roads serviced, municipalities can provide a faster response than the Department.

County Maintenance Managers propose roads for municipal agreements. These roads must be noninterstates and, in most cases, located within the boundaries of the municipality that will provide the service. State roads are good candidates for municipal maintenance if they:

• Intersect major state-maintained routes

- Branch out within a municipality, causing stop and go conditions
- Require turning movements within the municipal boundaries

**NOTE**: High traffic volume roads passing directly through two or more municipalities are not good candidates for municipal agreements.

Any municipality proposed for agreement must be able to provide the proper equipment, necessary personnel, chemicals, and anti-skid materials needed to meet the Department's Levels of Service goals (see Section 4.5.3), as these goals fully apply to service providers under municipal agreements. Payments to municipalities are by direct deposit only. Municipal agreements must be carefully screened -- this policy is not to be interpreted as blanket authority to place every state road under municipal agreement.

Each District should provide the name, title, and business phone number of the person responsible for coordination of the District's municipal agreements to the Bureau of Maintenance and Operations. Rates for municipal agreements, which are set yearly, vary depending on the type of road serviced and local, historical and climate-related data. Rates along with other details are sent by letter to each District Executive no later than June 30th. Municipal agreements must be renewed by September 15th. See Pub 23, Chapter 10: Municipal Agreements, for more information.

Snow lane miles serviced by municipalities are to be deducted from county totals before estimating the number of snow removal trucks needed for each County (see also Section 4.3.1).

## 4.3 WINTER-RELATED ACTIVITIES DURING JUNE, JULY AND AUGUST

Winter Services is a year round priority for PennDOT. The following sections explain what activities must be accomplished during the summer months to ensure that the Department is prepared for an effective winter season. Having a comprehensive equipment plan, along with preparation of snow routes and development of proper training materials, are all part of the strong fundamentals that help ready the Department for winter. Thinking ahead to determine the ratio of Department, municipal and rental equipment is very important. Planning for contingencies is also a key part of winter preparation. Above all, effective communication both within the Department, and externally to other key stakeholders, helps to keep the winter services strategy on track.

Included in this section is information about:

- Department, municipal and rental equipment allocation
- Guidelines for emergency and rented equipment
- County snow map preparation
- Equipment Operator certification
- Preparation of the District-specific Winter Leadership presentation

# 4.3.1 GUIDELINES FOR THE ALLOCATION OF DEPARTMENT, MUNICIPAL, AND RENTAL EQUIPMENT

This section explains how the optimum number of winter service vehicles is calculated. Each District must develop an effective combination of Department, Municipal and Rental Equipment. Equipment allocations are based on specific procedures as summarized below.

The allocation of trucks for snow removal services is calculated by a combination of the type and miles of highways, coupled with traffic density in each particular county. Truck assignments run from a low of 20 snow lane miles for interstate roadways in the most urbanized counties to a high of 45 snow lane miles for roadways that are non-NHS roads in most rural counties. An example spreadsheet with formulas is available on the PennDOT shared drive at the following location:

P:\penndot shared\Bureau of Maintenance and O p e r a t i o n s \ M a i n t e n a n c e Division\Pub23Update\MECE.ExampleTruckAllocatio n

Procure additional standby rentals where possible. Standby rentals are to be called into service during extended weather events. See Section 4.3.2 for more information.

**Snow Lane Mile definition:** A snow lane is a travel lane -- that is up to 12' wide and 1 lineal mile long. Travel lanes that are wider than 12' should be counted as additional snow lane miles, as shown in this chart (next page):

0 - 12 Feet	1 Lane
13 - 24 Feet	2 Lanes
25 - 36 Feet	3 Lanes
37 - 48 Feet	4 Lanes
49 - 60 Feet	5 Lanes
61 - 72 Feet	6 Lanes
73 - 84 Feet	7 Lanes
85 - 96 Feet	8 Lanes
97 - 999 Feet	9 Lanes

Truck Allocation Formula			
II' 1 C (	Miles Per Truck		
Highway System	Rural Areas	Urban Areas	
Intersate	30	20	
NHS	35	25	
Non-NHS - ADT Greater than 2,000	40	30	
Non-NHS - ADT Less than 2,000	45	35	

If after the above calculations are made the total number of Department snow removal trucks available are fewer than the number allowed, the difference may be filled by rentals from private individuals or corporations under the Rented Equipment ITQ process.

### 4.3.2 RENTED EQUIPMENT PROGRAM

Counties have the option to rent road equipment from the private sector through an Invitation to Qualify (ITQ) process. See Pub 23, Chapter 18: Rented Equipment, for detailed instructions for renting equipment.

In some cases, PennDOT competes with local businesses or municipalities in securing rental equipment. Offering specific routes to rental Equipment Operators may help a District develop a reliable source of rental equipment.

Additional rental trucks can also be assigned to replace Department trucks in case of breakdown. These additional rental trucks may not exceed 10% of the total number of available Department trucks. Do not schedule these trucks to any state route or note on snow maps, but hold them in reserve for emergencies or as a backup in the event of equipment failures.

## 4.3.3 EMERGENCY SNOW REMOVAL EQUIPMENT NOT UNDER RENTED EQUIPMENT PROGRAM

In the event of severe winter snow storms when an emergency is declared by the Governor, or if the District Executive or designee has approved and authorized an emergency procurement, the District may utilize the procedures for "Emergency Procurements" as detailed in Chapter 1 of Publication 358 PennDOT's Purchasing Manual, which provides encumbrance information text for emergency rental equipment; this verbiage is to be included in the header of the emergency type purchase order.

The major difference between this type of emergency procurement and a Rented Equipment Program agreement is that the Rented Equipment Program agreement is entered and placed on file before the winter snow removal season starts and can be activated automatically, when required. The emergency equipment referred to in this section is located and utilized at the time an emergency occurs.

### 4.3.4 DEPARTMENT GRADERS, SNOW BLOWERS AND ANTI-ICING TRUCKS

Graders, snow blowers and anti-icing trucks are to be used when and where required. They are not included in the truck allocation formula.

### 4.3.5 COUNTY SNOW MAP PREPARATION

Each summer, the County Maintenance Manager designates an individual to prepare snow maps for the upcoming winter season. Several inputs are included in the development of effective county snow maps, such as

prior winter performance including any trouble spots; upcoming winter route priorities, widened or newly added sections of roadway, and guidelines for the allocation of Department equipment; current status of Municipal Agreements for equipment; and plans for rental equipment. The following assumptions guide the development of the snow maps:

- 1) That a general storm condition exists and all roads will be maintained 24/7.
- 2) That all regularly scheduled snow removal equipment, Department, and scheduled rental equipment are working.

County snow maps will be prepared using the PennDOT GIS mapping application and the Microsoft Excel snow route templates for the current year, available on the PennDOT shared drive at the following location:

P:\penndot shared\Bureau of Maintenance and Operations\Maintenance Division

Contingency mapping should also be developed to identify route specific information and equipment to be used to support Interstate operations when required. Contingency plans should be included in the Dry Run process. See Sections 4.4.2 and 4.4.13 for more information about contingency planning and dry runs.

## 4.3.6 EQUIPMENT OPERATOR CERTIFICATION

Department policy requires that all Operators be certified to operate the equipment safely and maintain it properly. The County Maintenance Manager must ensure that sufficient numbers of workers are trained and certified so that snow removal equipment can be operated as required according to the County Winter Shift Schedule. If sufficient Operators cannot be found at the County level to fully staff winter schedules, the County Maintenance Manager must report this situation to the Assistant District Executive for Maintenance. The County Maintenance Manager may recruit, train, and certify CDL holders from other organizations within the District to be used on an as-need/when-available basis. If this is not possible, the District Executive may approve additional rental equipment or submit a BHR request for additional personnel.

Summer months are a good time to train Operators in the basics of snow removal operations. While this season of the year prevents the actual plowing of snow, it does not preclude training and testing on such items as:

- Trucks, graders and loader operations
- Mounting and adjusting the plow

- · Familiarity with plow and spreader control
- Driving skills involving turning and backing
- Clearance judgment with the front and/or wing plow mounted

Equipment Operator Instructors can offer this type of training.

## 4.3.7 WINTER LEADERSHIP PREPARATION PRESENTATIONS

Annual presentations by the County Managers will cover equipment readiness, personnel, command and control, and other topics relating to each County's winter plan.

County Managers preparing for this presentation will find copies of the PowerPoint presentation, the Excel Data sheet, and instructions on how to assemble the presentation available in a folder for the corresponding year on the PennDOT shared drive at the following location:

P:\penndot shared\Bureau of Maintenance and Operations\Maintenance Division\WinterLeadership

BOMO staff will arrange the date for the County/District presentations by July 15th.

## 4.4 WINTER-RELATED ACTIVITIES DURING SEPTEMBER, OCTOBER AND NOVEMBER

The months of September, October, and November are critical to preparations for oncoming winter operations. Fall season activities affect other seasons' work and deal with the full span of resources and capacity available to PennDOT to perform its winter services. This section details the responsibilities and necessary actions that prepare the Department to handle routine and emergency services when winter arrives.

The section opens with two essential topics: situational awareness and contingency planning. Both of these topics require strong up-front efforts so that downstream activities benefit. For situational awareness, the fall tasks deal with assuring that processes for gathering timely, relevant and accurate information are understood and in place. To disseminate that information, adequate communication equipment and knowledgeable staffing must be available when needed. Contingency planning is the process that prepares PennDOT to effectively handle unexpected, non-routine, or emergency situations – and such situations include all aspects of winter services.

The section continues by describing the elements of fall season preparations necessary for safe and effective operations during both routine and extreme winter conditions, including:

- Fall meetings and communications within PennDOT and with external partners
- Weather reporting, forecasting, and emergency procedures
- Personnel-related activities such as standby time and shift planning
- Equipment and routing including dry runs
- Material types, storage, and supply

#### 4.4.1 SITUATIONAL AWARENESS

Situational awareness means having knowledge and understanding of the current state of conditions and resources that promote timely, relevant, and effective decision-making. Situational awareness for winter activities includes:

- Being fully informed about weather forecasts
- Ensuring timely communications with all Department participants, external partners, and the public
- Having complete understanding of procedures and actions necessary to provide accurate assessment of a winter event
- Fostering a perspective that enhances the ability to address developing events

County and District Offices are to develop plans and procedures for providing timely and accurate information to ensure situational awareness for Department personnel, external partners, and the motoring public regarding winter storm events. Sections in this chapter provide guidance for creating situational awareness:

- PennDOT Area Command
- Weather Forecasting
- Emergency Procedures
- Proactive Call Procedures
- Radio Operation

Field personnel are responsible for a variety of situational awareness activities:

- The County monitors field conditions and communicates current conditions thru the District Incident Command Center (ICC) if activated or thru the appropriate Regional Traffic Management Center (RTMC).
- The District consolidates all County reports and sends information to Area Command, if the Incident Command Center (ICC) is activated.
- The District establishes trigger points to initiate the actions needed to activate the Highway Advisory Radios, Variable Messages Signs and other highway devices in accordance with the Incident Response guidelines (Publication 23, Chapter 9).

Examples of information required for communication of the current situation:

- Personnel Available number of personnel and the number currently on-duty; manpower status reports
- Equipment Types and number of equipment required and the types and number in service
- Materials Current material totals listed by County
- Current conditions defined using the Standardized Roadway Condition Descriptions (see Appendix D)
- Communication protocol and phone numbers for Department personnel and external partner organizations

BOMO provides current Winter Road Condition Reporting guidelines at the start of each winter season. (See Section 4.4.5, PennDOT Area Command – Road and Weather Condition Reporting.) The guidelines are available on the PennDOT shared drive at the following location:

P:/PennDOT Shared/VGB

### 4.4.2 CONTINGENCY PLANNING

Contingency plans are courses of action developed in advance to accommodate unexpected, emergency, or non-routine events. Contingency planning is necessary preparation to address winter storm situations that are not part of the established winter operations plan.

Scope of Contingency Planning: Preparation for unanticipated winter events can be accomplished through developing "What if" scenarios that provide timely and best choice alternatives to current plans. Such scenarios should address critical weather events, emergencies, and any event that would cause deviation from established winter operations. The scenarios should state who is responsible for each action item,

including who makes the decision to implement the contingency plan, what action item is to be accomplished, and the timeframe in which the actions are to be performed or completed. Full descriptions of changes of procedures and operations are to be included in the scenarios for all relevant personnel and external partners.

Document contingency plans, update them annually as necessary, and test them periodically to determine the most workable processes. Communicate contingency plans annually to all appropriate parties, both within the Department and with external partners.

Triggers for Implementing Contingency Plans: Contingency plans are implemented when local conditions require use of resources and service responsiveness exceeding established winter operational plans. Local conditions such as the following may be triggers for implementation:

- Traffic queues due to crashes or weather-related road closures
- Major winter storm events and other weather emergencies
- Changes in available resources including personnel, equipment, materials, and routing and scheduling
- Unavailable or reduced communications capabilities
- · Decreased level of situational awareness

In extreme emergencies, the Governor has the authority to activate the Pennsylvania Emergency Management Agency Emergency Operations Center and the Pennsylvania National Guard by declaring a disaster or state of emergency.

The following provides additional details on typical categories that require contingency planning:

### Traffic Queues Due To Crashes or Weather-Related Closure

Each county contingency plan must include strategies for dealing with traffic queues in the event of crashes or weather-related road closure. Items to address are diversion routes, stranded motorist procedures, and communications with external partner organizations (see Incident Response guidelines, Publication 23, Chapter 9).

### Personnel and Scheduling

Contingencies for personnel available to operate Department owned equipment include:

- Hiring temporary winter Operators
- Using Maintenance Repairmen or those with other classifications within the County organization who maintain a Commercial Driver's License (CDL) and Department certification
- Scheduling other non-maintenance PennDOT employees who possess a CDL and equipment certification (e.g., District line painting and/or bridge inspection crews)

### Equipment

Contingency equipment is generally obtained from the private sector through the rented equipment ITQ (see also Section 4.3.2). Counties can contract for both routed rentals to supplement the Department owned fleet and emergency/standby rentals. The ITQ includes qualified vendors willing to provide loaders, graders, snow blowers and other equipment as well as trucks with plows and spreaders or anti-icing units. In some areas, it is possible to obtain equipment from one of the three BOMO training sites to supplement the County fleet.

### Materials

Materials contingency planning provides for an acceptable level of stock in the needed location at the time required. Materials contingency planning requires a process to monitor inventory levels during winter months to insure replacement stock is ordered, received, and available for the next or extended storm event. Additionally, the contingency plan must include a documented procedure to determine when and in what amounts transfers of materials within a County or District are warranted. Constant monitoring of inventory levels enables accurate situational awareness and allows decisions to be made as early as possible.

Contingencies in this area may involve:

- Change of material choice or treatment strategy such as using a salt/anti-skid mix rather than 100% salt to stretch existing inventory levels
- Use of liquids as anti-icing agents or pre-treating applications at the spinner

**NOTE:** Temperature will play a role in the decision making process when choosing materials for a specific location or event (see Section 4.5.3 Levels of Service).

As part of materials contingency planning, consider establishing reserve storage facilities.

### **Routing and Diversion Plans**

Routing contingencies include diversion plans for priority routing during events that cause operations to deviate from established winter plans (see Sections 4.5.2, Priorities of Routes, and 4.5.3, Levels of Service).

Routing contingency or diversion plans:

- Identify the alternate routing
- Identify the location of additional or support resources that can be diverted to priority routes:
  - o when assigned equipment is not available
  - o when service falls below Levels of Service goals due to storm conditions or
  - o when additional equipment is needed to establish plow train operations
- Identify coverage responsibilities when equipment is reassigned to supplement forces on other routes

One of the important questions that routing contingency plans will answer is, "Will existing units from the assigned location cover additional miles, or will support from lower priority routes be moved up?"

### Communications

Providing for effective communications during an emergency or other extreme winter event must be an integral part of contingency plans. An effective plan includes built-in redundancy in communications equipment and alternatives for contacts, should initial avenues for communication fail.

#### **Situational Awareness**

Accurate and timely situational awareness is an especially important component of contingency planning, as situations may be in a continual state of flux (see Section 4.4.1, Situational Awareness).

Ensuring contingency plans are implementable: Counties should conduct tabletop exercises and field exercises if practical, that ensure that contingency plans are understood and workable by all personnel. Counties should rehearse contingency plan actions as part of their annual winter preparation process.

One resource for contingency planning guidance is:

 Mercer County Replacement / Augmentation Policy/Protocol for Interstate Trucks (available on the PennDOT shared drive)

## 4.4.3 FALL SEASON DISTRICT MAINTENANCE MEETING

During October or November, each District holds a fall season District Maintenance Meeting. The Assistant District Executive for Maintenance conducts the meeting, attended by District maintenance staff, County Maintenance Managers, and Assistant County Maintenance Managers. The purpose of the meeting is to discuss current statewide policies and procedures to be followed throughout the coming winter.

The Assistant District Executive for Maintenance sends notification of the date of the fall season District Maintenance Meeting and details of the agenda to the Director of the Bureau of Maintenance and Operations.

## 4.4.4 FALL SEASON COUNTY MAINTENANCE MEETING

Each County holds a fall season County Maintenance Meeting no later than December 1st, following the fall season District meeting. The County Maintenance Manager conducts the meeting. Meeting attendees include all county personnel with winter operations duties. The Assistant District Executive for Maintenance should attend and participate in the meeting.

A District representative presents relevant information from the District meeting to County meeting attendees.

Additionally, elements of winter operations plans, contingency plans, and other aspects of winter services applicable to the local conditions are the primary topics for discussion.

Suggested agenda items include:

- The AAR referred to in Section 4.2.1 County Spring Season Review
- Priorities
- · Shift schedules
- · Leave schedules
- Union issues
- Call out procedures
- Equipment Operator availability
- Equipment care
- Spreader calibration
- Plowing and spreading techniques including materials application rates
- Non-snow removal activities
- Environmental considerations and SEMP guidelines
- Radio communications

- Review CMMT and other County, District, and BOMO measures that relate to winter operations
- · Contingency plans
- Situational awareness
- Weather forecasts and forecasting services
- Training opportunities as available
- Other items at the discretion of the County Maintenance Manager

As preparation for the fall season County meeting, the County Maintenance Manager should ensure that items from the spring AAR meeting are reviewed (see Section 4.2.1, County Spring Season Review). Outstanding items from the spring should be addressed, as necessary, in the fall meeting.

Based on the outcomes of the fall meeting, all winter services planning, equipment assignments, schedules, and personnel assignments are to be completed in accordance with each district's winter preparedness date.

## 4.4.5 PENNDOT AREA COMMAND – ROAD AND WEATHER CONDITION REPORTING

The Bureau of Maintenance and Operations established the PennDOT Area Command to serve as a focal point for communicating statewide information concerning roadway conditions and PennDOT operations during emergencies and major winter storm events.

The mission of the Area Command during adverse weather conditions and/or emergencies is to:

- Provide PennDOT's management with Interstate and other high priority route roadway surface conditions, pending weather events that may affect the motoring public, and the status of District and County operations
- Ensures that the motoring public is advised of roadway travel conditions

The PennDOT Area Command monitors the Interstate winter roadway conditions from November 1st through April 30th. It operates during statewide emergencies and as directed by Department management.

PennDOT Area Command telephone number is (717) 783-5437, 5343 or 5355; fax number is (717) 787-7839.

BOMO's Maintenance Program Section Manager is responsible for coordination and operations of the Area Command. Other sections within the Maintenance Division of BOMO provide timely and accurate information to management including Interstate roadway conditions, pending winter weather events that may affect the motoring public, and status of District and County operations.

### The PennDOT Area Command:

- Responds to the Districts' needs and requests, and compiles accurate and timely information for use by the Department executive staff, State agencies and facilities, and public information agencies.
- Ensures that all relevant information (weather forecast, road conditions, and local observations) is shared across the District and County boundaries to assist in maintaining operations.
- Provides coordination when the Protocol for Interstate Closures and Restrictions is enacted to restrict traffic in local areas as outlined in the policy (see Appendix E, Protocol for Interstate Closures and Restrictions.)

Each District must submit interstate condition reports to the PennDOT Area Command using the Road Condition Reporting System (RCRS). Use the Standardized Roadway Condition Descriptions (see Section 4.1, Introduction and Appendix D) to report roadway conditions.

Additional Area Command information can be found in Chapter 9, Emergency Operations.

### 4.4.6 CONTACTING EXTERNAL AGENCIES

Communication with external partners and stakeholders is a critically important part of an effective winter services plan. Key deliverables are:

### Meeting with State Police or Other Designated Authorities

Each fall before November 15th, each County having Interstate highways is to conduct a meeting with the State Police and other designated authorities. The purpose of the meeting is to:

- Discuss procedures that were in effect during past winters
- Make adjustments, as necessary, to past procedures to enhance communications and responses for the coming winter
- Work out any other problem areas prior to the coming winter season
- Communicate established detour routes for the interstate system, limited access highways, and other routes as applicable

The County Maintenance Manager conducts the meeting and the Assistant District Executive for Maintenance attends the meeting. As appropriate, also invite the principals of major trucking companies that have terminals near the local Interstate highways to this meeting.

This meeting presents an excellent opportunity to discuss the standardization of winter material treatment for Interstate highways, especially where Interstates cross county lines. When servicing Interstate highways that cross county lines, similar materials, application rates and procedures should be used where possible to achieve consistent roadway conditions.

After the initial meeting is held, good communications and working relations must be maintained. Additional meetings can be scheduled, if required.

### **Correspondence With School Superintendents**

Each September, each County Maintenance Manager is responsible for corresponding with local school superintendents to establish communications procedures and review school bus safety rules. These letters should:

- Thank the school superintendents for past cooperation
- Express PennDOT's concern for the safety of school children who travel by school bus
- Include the County Maintenance Manager's office phone number
- Most importantly, stress applicable safety rules of school busing contained in the Pennsylvania Motor Vehicle Code

A sample school bus letter is included in Appendix F.

### 4.4.7 WEATHER FORECAST SERVICE

BOMO has a statewide weather forecasting contract to forecast winter events and provide advance warning. Each District/County can also contract for localized/regional weather forecasting. For additional information regarding the current statewide weather contracts please contact the Winter Services Manager in BOMO.

Possible additional sources of weather information include:

- The National Oceanic and Atmospheric Administration (NOAA). These reports provide updated weather information 24-hours per day. NOAA website can be found at: http://www.noaa.gov/wx.html
- AccuWeather

- · The Weather Channel
- · Local media
- Meteorological departments at colleges/universities
- Any other reliable source

The Department can also utilize PennDOT's existing information systems (Roadway Weather Information Systems [RWIS], radio, or telephone) as tools to establish contact with adjacent counties and states for storm tracking capability.

### 4.4.8 EMERGENCY PROCEDURES

The Department has established procedures that are activated during emergencies caused by severe winter weather, flooding, or other disasters.

The Bureau of Highway Safety and Traffic Engineering maintains a call list for use in such emergencies. The call list is available on the PennDOT shared drive at the following location:

P:\penndot shared\VGB\AREA COMMAND

The list includes:

- District and County telephone numbers
- Home addresses and telephone numbers of designated Central Office, District and County personnel
- Telephone numbers of other pertinent agencies such as the Weather Bureau, Emergency Management Agency, and State Police

*NOTE:* If you use a hard copy of this call list, be sure to keep it current -- the list may change at any time.

Each District has Mobile Equipment Teams (MET). Equipment operators, mechanics, and foremen who are able to leave their home Districts or Counties to work in other areas of the state during emergencies are assigned to MET. The County Maintenance Manager also designates equipment as available for use by the MET. If resources are insufficient for an emergency situation, a request for additional manpower or equipment may be made to the BOMO Director.

Both receiving and sending organizations are responsible for supplying information and accomplishing activities associated with MET functions.

### Receiving Organizations must prepare:

- Resources needed manpower and equipment
- Logistics information, crew meet locations, times, radio and telephone contact information

- Plan of operation
- · Approximate duration of activation
- Identification of available resources including materials and equipment parts
- Administrative procedures for payrolls and expenses as well as AAR completion

### Sending Organizations must prepare:

- Assessment of their own needs and forecast for the next 48 hours
- Shift and manpower information
- Identification information and types of equipment being deployed
- Radio and telephone contact information
- · Questions for receiving organization

See Appendix G, MET Checklists for Receiving and Sending Organizations, and refer to Chapter 9 Mobile Equipment Teams, Section 9.2 for further information.

### 4.4.9 PROACTIVE CALL PROCEDURE FOR ADVERSE WEATHER

Counties must implement a proactive call procedure to keep neighboring Counties informed in advance of approaching adverse weather conditions. The County Maintenance Manager or designee located in the County affected by the weather system shall make a "Proactive Call" to provide advance notice to the adjoining County maintenance office(s) that the weather system may affect.

The County Maintenance Manager is responsible for developing and making available to relevant staff a written proactive call procedure. The proactive call procedure should:

- Include adjacent county contact information
- Describe strategies to facilitate information exchange
- Identify specific staff responsible for making proactive calls
- Provide guidance for determining when the proactive calls should be made
- Include guidance on the types of information to be conveyed during the call

### 4.4.10 RADIO OPERATION

During the winter season, County radio station desks must be staffed adequately to provide necessary communications during winter storm events. Radio Operators must be familiar with the County roadway network and winter operational procedures. In most Counties, during the peak winter season, 24/7 coverage is required. The responsible Assistant District Executive for Maintenance must approve deviations from this coverage.

Radio Operators' duties are to:

- Keep alert for emergency calls either over the radio or from other reliable sources
- Conduct their work in conformance with the most recent Department policy regarding logging calls, call outs, radio procedures (see Chapter 19, Radios), and use of the Customer Care Center's customer complaint forms (see Chapter 3, Section 3.9 Highway Maintenance Customer Service Handling)
- Be familiar the County communication plan
- Have the skills and resources to implement the relevant sections of the County communications plan.
- Follow District procedures for reporting current road conditions in RCRS during storm events.

Radios mounted in cars or trucks coordinate maintenance operations and communicate with the District and County Headquarters. Use radio equipment for Department purposes only. Radio messages and conversations not related to highway maintenance are not permitted.

### 4.4.11 STANDBY TIME

Standby time requires partial pay for Equipment Operators and in return guarantees their availability when called upon. An employee on standby is required to remain at home during the standby period and be available for emergencies. Standby time is not considered "hours worked" for the purposes for overtime calculations nor is the employee on standby when being paid for call time.

The use of standby time should be part of the County's winter plan and strategies. Judicious use of this planning tool can ensure that resources are available to respond to winter storms during holidays. Standby time enables responsiveness to winter events while holding costs down if the anticipated event does not occur.

Adherence to the Master Agreement criteria is required when using the standby time option.

#### 4.4.12 SHIFT PLANS

The County Maintenance Manager is responsible for developing shift plans prior to the Fall Season County Maintenance Meeting (see Section 4.4.4). The Department's goal is to have sufficient Operators and equipment to maintain 24/7 coverage for all snow routes during winter events.

### **General Scheduling Guidelines**

Prior to and during extended winter storms or emergency events, County Maintenance Managers should communicate shift plans to relevant employees. All employees assigned to winter maintenance, especially Equipment Operators, are subject to call on a 24-hour basis. All employees are obligated to keep their supervisors aware of where they are and how they can be reached during off-duty hours.

Supervisory personnel must exercise care in granting leave to employees during the winter months so that adequate forces are available to handle winter storms. Such attention to staffing is especially important during the hunting season.

### **Multiple Shifts**

Multiple shifts are a proven method of reducing overtime expenditures while extending ice and snow control operations beyond the normal daylight working hours. Therefore, although not mandatory, a two-shift operation during the winter months is recommended for counties that experience frequent (30 or more) winter storms each year.

Guidelines for preparing multiple shift plans are as follows:

- County Maintenance Managers should consider historical weather patterns for their regions when deciding whether and how to use multiple shifts.
- The County Maintenance Manager will place crews on shifts in accordance with the current Master Agreement or Local Agreement.
- Most Counties will have snow removal trucks operating on or off shifts with prior notification.
- Recommended shift starts are:
  - o First shift starts between 4:00 a.m. and 6:00 a.m.
  - o Second shift starts between 10:00 a.m. and 4:00 p.m.

- Depending on conditions in each particular County, schedule a third shift or a limited number of patrol vehicles during the late night and early morning hours. Primary responsibility for this third shift will be to cover the Interstate and limited access highways. Arrange for the third shift to quit at the same time the first shift starts. The third shift should share relevant information regarding roadway conditions and other items of importance with the just starting first shift. Such scheduling of shifts also enables an uninterrupted operation in the event of a storm.
- The County Maintenance Managers determine equipment allocations and personnel assignments for all shifts. The goal is to provide 24/7 coverage for identified snow routes if at all possible during an event.
- Supervisory personnel must be provided for all shifts. Mechanics must be assigned to the first and second shifts to provide support during storm events.
- Very often during winter months, construction or other personnel engaged in seasonal activities are assigned to maintenance. Utilize these personnel as acting Assistant County Maintenance Managers, Foremen, or Radio Operators. In Counties where the Master or Local Agreement allows, it is possible to extend Interstate coverage to seven days per week by supplementing the regular work force with the extra assigned personnel and by using irregular (non-Monday to Friday) schedules.

### 4.4.13 DRY RUN

After equipment route assignments have been completed in accordance with equipment allocation guidelines (Section 4.3.1) and snow maps (Section 4.3.5), each Foreman shall ride the assigned route of every piece of snow removal equipment in his or her assigned section with each Operator. To ensure effective dry runs:

- Use the Dry Run Checklist (see Appendix J).
- Conduct dry runs in daylight and where possible dark hours. This practice will assist the Operator in noting items or situations that can be easily overlooked during dark hours operations.
- Include Temporary Operators in the dry run process.
- Identify all drains, roadside obstructions, depressions, and posted bridges with potential obstructions that may interfere with plowing operations. Mark these objects or obstructions with either flexible delineator posts or center mount delineators mounted on channel posts.

 Discuss contingency plans during the dry run process (see Section 4.4.2, Contingency Planning).
 Operators should be permitted time to become familiar with additional route assignments to ensure an understanding of the contingency plan and how the plan will be implemented.

## 4.4.14 CALIBRATION OF WINTER EQUIPMENT - DEPARTMENT AND RENTAL

All truck and spreader combinations, both Department owned and rented, shall be calibrated every year. Calibration is necessary to ensure that the equipment is working as specified and that proper amounts of solid chemicals, liquid chemicals and/or abrasives are discharged at each setting. This information is then used in conjunction with the guidelines for material application rates to select the proper auger setting for the desired application rate. (See Section 4.5.5, Material Applications and Plowing Procedures.) Important notes on calibration are:

- Each District Office has a training presentation entitled "Spreader Calibration." This presentation shows the exact details on how calibration is performed. Personnel performing calibration tasks should view the presentation before beginning calibration.
- Complete calibration by the date established under the current CMMT Measure 13 guideline.
- Most Counties will calibrate with salt since salt is the most expensive deicing material and is the focal point of environmental concerns. However, calibration can be done using sand or other abrasive materials if the truck is used on routes where salt is not spread.
- Department personnel shall calibrate nonmunicipal rental trucks equipped with spreaders. The rental equipment owners may be paid for the period when these trucks are being calibrated. Municipalities servicing state roads under lump sum municipal agreements are responsible for calibrating their own equipment. Department personnel may assist the municipalities with their calibration programs if requested.
- Spinner speeds are to be restricted so that no spinner will spread more than an eight foot width of material when the truck is stationary.
- Maintain calibration records in accordance with the SEMP directives.

## 4.4.15 MAJOR IMPROVEMENTS OF STOCKING AREAS BY DEPARTMENT FORCES

Due to the mild weather during the months of September, October, and November, Department forces have the opportunity to accomplish major improvements to stocking areas (e.g., grading, cutting stockpile access roads).

Improvements such as grading, roadway work, and pad construction require the scheduling of specialty equipment (pavers, dozers) and considerable manpower. Coordinate schedules to prevent interference with ongoing roadway and bridge operations.

Prior to making improvements to any facility, check with the District Facility Administrator to ensure compliance with Labor and Industry guidelines.

When planning or making stockpile improvements, use PUB 281 guidelines.

#### 4.4.16 STORAGE FACILITIES

The following list of material storage facilities includes a brief description of the buildings currently used by the Department. Refer to Publication 235, Equipment Operator Instructors Manual, for the proper loading and storage techniques.

### **Dome Storage**

The Department uses high capacity plywood shingled (or in some cases concrete) dome shaped storage buildings. The building provides complete covered storage and keeps the salt in a dry and free flowing condition. When loading and unloading, keep the material under the building roof to the extent possible to mitigate leaching or runoff that can occur as a result of salt spillage.

Sizes and loading capacities for dome storage buildings are approximately:

Diameter Size	Capacity
60'	1,000 Tons
80'	1,800 Tons
110'	3,500 Tons
116'	5,000 Tons

Take care when reaching these capacities, which are considered as maximum for loading with a truck/frontend loader combination. If possible, trucks delivering salt to dome structures should have shorter dump bodies to increase maneuverability, allowing the truck bed to be raised inside the dome building. *NOTE*: Upon request, the salt suppliers may be able to arrange for trucks with shorter dump bodies to deliver to the locations that have dome salt storage structures.

When loading the wood dome buildings, salt should never be stored against the panels that comprise the building shell.

In accordance with SEMP guidelines, salt residue outside the building must be shoveled and swept into the building.

### **Barn Type Storage**

The barn type salt storage building is ideal for sites using less than 1500 tons of salt per year. Capacity of the 44′9″ x 25′9″ building is approximately 450 tons. This building provides complete covered storage and is considered superior to older bay type storage buildings. Do not overload the building so that salt spills out past the building entrance.

The building must be placed on a bituminous pad. The Department is usually responsible for the construction of the bituminous pad. A private contractor selected through a competitive bid process constructs the building.0

### **Bay Storage Bins**

Bay storage bins are best suited for sites using less than 1500 tons of salt per year. Bins generally have a storage capacity of approximately 75 tons per bin. Depending on the amount of salt to be stored, multiple bins can be constructed.

General dimensions of these buildings are 20' x 30' per bin with a vertical clearance of about 15 feet. Because of this relatively low vertical clearance, all salt must be dumped in front of the building and carried in by a front-end loader.

The front of this building is open, and when the building is full, the salt is partially exposed. Therefore, follow these environmental protection guidelines to guard against leaching and runoff:

- Extend the bituminous pad on which the building is placed for a distance of 20 feet past the front of the building.
- Do not overload the building so that salt spills out past the front of the building.
- When fully loaded, cover the front of the salt pile with tarpaulins.
- Keep the immediate area around the building clean of salt spillage that will normally occur when

loading the building with trucks. This is especially important for the pad surface in front of the building.

### Crib Storage

Until permanent roofed storage is constructed for all salt storage locations, crib-type storage is acceptable for stockpiles using under 1,000 tons of salt per year.

Very often, it is possible to construct this type of storage using salvaged lumber and metal. The dimensions can be adjusted to store from 200 to 1,000 tons of salt.

Because crib storage is not roofed, follow these environmental protection guidelines to guard against leaching and runoff:

- Extend the bituminous pad a minimum of 20 feet past the front on the crib.
- Do not overload the crib.
- Cover the salt must with tarpaulins at all times.
- Keep the immediate area clean of spillage that occurs when loading the crib or trucks.

### 4.4.17 WINTER MATERIAL STORAGE AND ENVIRONMENTAL CONSIDERATIONS

When storing winter materials as described below, ensure all SEMP and Stockpile Quality Assurance guidelines are followed. *NOTE:* Recycling waste must be in accordance with SEMP guidelines.

### **Anti-Skid Material**

Anti-skid material by itself can be stored in any accessible area of the storage site. Segregate anti-skid material from other materials, keep it in manageable quantities, and store it in a location that gets maximum exposure to the sun to help guard against freezing.

For safety reasons, form the anti-skid piles with no overhangs or irregular shapes.

### **Treated Winter Materials**

Treat stockpiles of anti-skid material with either bagged calcium chloride or salt to help prevent freezing. The County Maintenance Manager makes the decision to treat or not to treat anti-skid materials with calcium chloride or salt.

When treating with bagged calcium chloride, the recommended rate is 60 pounds of calcium chloride per

ton of anti-skid material. When treating with salt, the recommended ratio is one ton of salt for each ten tons of anti-skid material.

Depending on the climate, the amount and type of anti-skid stockpiled, and the percentage of moisture content, the recommended quantities of calcium chloride or salt may need adjustment. Some counties located in the southern section of the state go through winter with little or no treatment of anti-skid stockpiles while some other higher elevation northern tier counties may have to increase the suggested quantities.

Another method of protecting anti-skid piles from freezing is to cap the pile with calcium chloride. When capping the pile, cover the outer surface of the stockpile with a 2-pound application of calcium chloride per square yard of surface area. The calcium chloride hardens and forms a cocoon type protection for the anti-skid material. This method of capping the anti-skid pile can be used by itself in mild climates. In extremely cold climates, this method may be used in conjunction with calcium chloride or salt treatment as described above.

If anti-skid is treated by any method, protect the environment by controlling leaching and runoff from the chemicals used. All mixed material shall be handled in the same manner as salt, following SEMP guidelines.

#### Salt

Salt deliveries start in the fall and all initial fill requirements should be received by November 1st. Thereafter, as the salt is used, deliveries continue throughout the winter to replenish supplies.

During the initial stocking and the following deliveries, take special care to minimize adverse environmental effects by loading and piling all salt in the approved manner and keeping salt storage locations neat and orderly.

Salt may not be delivered to any location that is not properly prepared in accordance with the Department's most recent policy and quality assurance requirements for salt storage areas.

### Premixed Solid Salt and Calcium Chloride

The County Maintenance Manager may decide to use premixed salt and calcium chloride on the Interstate system and certain other high priority roads.

The addition of calcium chloride to salt attracts moisture from the air, which enables the mixture to melt ice and snow when temperatures drop below 20°F. While the property of pulling moisture from the air is beneficial in melting ice and snow, it also causes the mixture to harden when stored at stockpile sites. Because of this, the premixed material should be stored

in either a dome building or a roofed storage bin. When placed in a storage bin, the exposed outer surface of the material must be covered with tarpaulins.

### **Bag Storage of Calcium Chloride**

Bagged calcium chloride is to be stored on pallets and, whenever possible, stored in a dry, well-ventilated building.

Bagged calcium chloride is to be used in the same order that it is received.

### **Liquid Deicing Chemicals**

Liquid deicing chemicals require a storage vessel made of a non-corrosive material such as polyethylene. Depending on the type of chemical solution, periodic agitation or circulation may be required. The storage vessel should be thoroughly flushed with water whenever the type of chemical being stored is changed.

### 4.4.18 SAMPLING OF MATERIAL

All materials shall be tested for conformance to contract specifications. Current contract information is available from the Department of General Services website (http://www.dgs.state.pa.us/)

### **Liquid Deicing Chemicals**

Liquid deicing chemicals must contain the specified chemical concentration level. The liquid deicing chemicals contract requires the vendor to test two (2) one-quart representative samples prior to placing the material in the storage tanks. The chemical concentration of the product can be determined by testing the specific gravity of the material using a hydrometer and then comparing the result to a corresponding value on a chart supplied by the vendor. The liquid material stored in the vessel must be clearly marked on the outside of the vessel as per SEMP and/or Model Stockpile policy.

### Solid Salt

Sodium chloride should be visually inspected at the time of delivery. Two (2) one-quart samples that are representative of a cross section of the delivered material should be forwarded to the Bureau of Construction and Materials Laboratory.

### **Anti-Skid Material**

Anti-skid should be visually inspected at the time of delivery. Obtain samples and follow the current contract testing requirements.

### **4.4.19 SNOW FENCE**

Department policy requires mitigating snow-drifting conditions on traveled portion(s) of the highway. This sometimes requires interaction with homeowners.

### **Entering Private Property**

Section 414, State Highway Act 1945 PL 1242 supports the Commonwealth's right to enter private property for purposes of placing snow fences where deemed necessary by the District Executive to minimize snow drifting on the traveled portion of the highway.

The County Maintenance Manager is responsible for obtaining authorization to enter private property and/or providing notification to the property owner.

The process for entering private property is:

- Make personal contact with the property owner to explain the problem and the necessary corrective action.
- Request that the property owner sign an Authorization to Enter Form (RW-397A) which assists in protecting the Department. This form can be found in the County or District office. Refusal of the property owner to sign the form does not prevent the Department from taking corrective action. Should the property owner refuse to allow the Department to enter the property to correct a problem, a certified letter detailing the nature of the problem, corrective action planned and the date for the work to commence shall be sent to the owner.

Caution should be exercised on private property to prevent damage to any trees, shrubs, etc., when placing or removing snow fence. The property should be left in a clean, undamaged condition.

### Snow Fence Installation/Removal/Storage

The Department's representative shall lay out and mark the area where the snow fence is to be installed. The Highway Maintenance Foreman should contact PA 1-CALL to identify utilities. Snow fence(s) should not be placed more than 100 feet from the right of way.

Install and remove snow fence in accordance with the following schedule:

- Install after November 1st and remove by April 15th. The County Maintenance Manager can opt to leave the snow fence up year round when installed on Department owned R/W.
- Extensions beyond April 15th can be granted with written permission of the property owner(s).
- Snow fence shall be stored at the stockpile.

### **Natural Plantings (Live Snow Fence)**

The use of natural plantings along roadsides (live snow fence) is an accepted method to mitigate snow drifting. Possible strategies are to:

- Solicit cooperation from local municipalities to require land owners/developers to include plantings in their buffer zone plans to curtail drifting
- Request farmers to leave corn stalks standing where the land adjoins a state highway
- Plant non-spreading grasses or shrubs in locations that are prone to drifting. Refer to the District Roadside Coordinator for plant species recommendation and plant pattern and location.

# 4.5 WINTER ACTIVITIES DURING DECEMBER, JANUARY, FEBRUARY AND MARCH

Effective winter operations build on a strong foundation of year-round preparations. Fundamental resources, including people, equipment, and materials, must be in place and ready to deploy before the first snowfall of the season. Efficient deployment of resources requires advance planning, including scheduling personnel, allocating Department and rental equipment, and arranging timely deliveries of materials. Good working relationships with external partners must be established before winter begins, including other government agencies, municipalities, law enforcement agencies, emergency responders, school districts, and vendors. Sections 4.2, 4.3, and 4.4 address these topics.

A winter storm is a dynamic event that unfolds over hours and days. Changing conditions during a storm require continual monitoring. Information about ongoing operations, including roadway, traffic, and weather conditions, must be shared within the Department and with external partners. Timely communications provide the situational awareness that enables adjustments to snow fighting tactics as needed to achieve the Department's Levels of Service goals, including implementing contingency plans when conditions warrant.

This section describes how careful planning and the right resources properly deployed produce a successful ice and snow control program. Topics addressed include:

- Objectives of winter operations and definitions of key terms and concepts
- Priorities of routes

- · Levels of Service
- Materials applications (salt, anti-skid, anti-icing)
- · Plowing and spreading procedures
- Equipment (plows, spreaders, blowers, graders, anti-icing trucks)
- Cleanup of roadways and stockpiles, and care of equipment and materials

### 4.5.1 OBJECTIVES AND DEFINITIONS

The primary maintenance objective during the winter months is to keep all state roads in a safe and passable condition. Operations will proceed according to priorities of routes as quickly and efficiently as possible, but within the limitations imposed by weather conditions, availability of resources, environmental concerns, and employee safety requirements.

The Department will make every effort to achieve its stated Levels of Service goals. However, natural emergencies (e.g., regional or statewide blizzard, flood or extremely low temperatures, ice storm causing downed power lines/trees, major bridge closing due to ice jam) and unforeseen situations (e.g., salt shortages, diesel fuel supply/quality issues, homeland security events, crashes) may preclude the Department from fully achieving all Levels of Service goals. Department Managers and Supervisors should use their judgment based on experience and training in conducting proactive and/or remedial work to overcome roadway snow and ice hazards. As each storm is unique and varies as to intensity, precipitation type, duration and track, it is important to emphasize that these are guidelines to assist Department staff in making sound, consistent, informed and practical decisions in the exercise of their respective snow and ice control duties and responsibilities

Recognizing that there are limits to materials, equipment, and manpower available to address each winter event, the Department addresses roads in priority order. Higher priority routes take precedence. When conditions warrant, contingency plans established in advance should guide temporary diversion of resources from lower to higher priority routes to maintain Levels of Service for those higher priority routes.

These guidelines apply to PennDOT forces and to municipal winter service agreement providers and contractors who act on behalf of and are remunerated by the Department. Here are definitions of some key terms and concepts:

A **spreading storm** is a winter storm having up to 2 inches accumulation of snow, sleet, or freezing rain, or a combination of the three. Application and reapplication of deicing and/or anti-skid materials will occur when warranted during the course of the storm. Plowing may be required to clear snow or slush from the highway during the storm and/or after the storm has ended.

A **plowing storm** is a winter storm having an accumulation of greater than 2 inches of snow, sleet or freezing rain or a combination of the three. Plowing will be the predominant activity to remove snow and/or ice from the highway. Application of deicing and/or antiskid materials will normally occur at the beginning of the storm to prevent the bonding of snow and/or ice to the pavement surface. Reapplication of deicing materials and/or anti-skid may be needed during the storm as warranted to insure traction by vehicles and/or to prevent bonding of snow and/or ice to the pavement surface.

**Levels of Service** are the amounts and types of resources (materials, equipment, and personnel) and work processes applied to highways to achieve the stated goals.

Safe passable roadways are free of as much ice and snow pack as is practical and can be traveled safely by motorists at reasonable speeds. (NOTE: A safe passable roadway must not be confused with "dry pavement," "bare/wet pavement," or "wet" pavement, which is essentially free of all snow, sleet, and ice from shoulder to shoulder. It is not realistic to provide bare pavements on highways during winter storm events and the Department does not have a policy to provide them.)

Reasonable speed is the speed at which a vehicle can travel without losing traction. During and immediately after a winter storm event, a reasonable speed will most likely be lower than the posted speed limit. Motorists should expect some inconvenience and should modify their driving practices to suit road conditions.

### **Roadway Condition Descriptions**

PennDOT defines six winter roadway conditions. These definitions support effective communications within PennDOT and with external partners and the motoring public. The six descriptions are:

 Condition 1: Clear – No snow and ice is bonded or accumulated on the road surface. Bare pavement surface is maintained at all times.

- Condition 2: Clear and Wet Bare/wet pavement surface is the general condition. There are occasional areas having snow or ice accumulations resulting from drifting, sheltering, cold spots, frozen melt-water, etc.
- Condition 3: Snow and/or Slush Covered with Wheel Tracks Exposed – Accumulations of loose snow or slush ranging up to two inches (2 in.) are found on the pavement surface. Packed and bonded snow and ice are not present.
- Condition 4: Snow and/or Slush Covered The pavement surface has continuous stretches of packed snow with or without loose snow on top of the packed snow or ice.
- Condition 5: Icy The pavement surface is completely covered with packed snow and/or ice.
   There may be loose snow on top of the icy or packed snow surface.
- Condition 6: Impassable The road is temporarily impassable. This may be the result of severe weather (e.g., low visibility) or road conditions (e.g., drifting, excessive unplowed snow, avalanche or avalanche potential, glare ice).

Appendix D shows photos of roadway conditions.

### 4.5.2 PRIORITIES OF ROUTES

To prioritize levels of service, PennDOT has three categories for roadways as follows:

First priority routes include all interstate and limited access highways and ramps designated as MFC-A or MFC-B in accordance with Federal MFC Classification criteria. All interstate and limited access highways have preference in equipment assignments and service excluding emergency requests by the State Police or PEMA.

**Second priority routes** are classified as MFC-C. Selected MFC-C highways may be designated to receive first priority service with the approval of the District Executive.

Third priority routes are classified as MFC-D AND MFC-E. Local conditions may qualify selected MFC-D routes to receive second priority service with the approval of the County Maintenance Manager.

**NOTE:** By November 1st, each District and County should have designated priorities for all routes; priority designations guide winter services.

### 4.5.3 LEVELS OF SERVICE

The following information provides guidelines for levels of service:

### **First Priority Routes**

First priority routes shall be maintained in an operable condition (Condition 3 or better) with a minimum of two traffic lanes passable in each direction.

The planned schedule to service the interstate system shall be based on an average interval of two hours to manage a moderate snowstorm. Plowing and spreading should continue until traffic lanes are free of snow and ice full width. To maintain these Levels of Service, resources may be temporarily diverted from lower priority routes.

Service to non-interstate limited access highways is secondary to the interstate system. Depending on local conditions, longer service intervals (cycle times) may be warranted as resources are temporarily diverted to maintain Levels of Service to the interstate system.

Traffic lanes of first priority routes should be cleared of ice and snow (Condition 2 or better) as soon as practical after the storm has ceased. Shoulders should also be plowed as soon as practical after the storm has ceased.

### **Second Priority Routes**

Second priority routes are typically commercially bordered and accommodate volumes of concentrated traffic during a short duration followed by a steady flow during the daylight hours with noticeable reduction after dusk.

Service should be adjusted according to time of day and day of the week as appropriate. For example, major efforts should be directed toward peak travel time for commuters, commerce and school buses.

The service goal for second priority routes is to maintain the driving lanes reasonably clear of ice and snow (Condition 4 or better) during daylight and peak travel times. During off-peak periods, snow accumulation up to 4" may be acceptable. When conditions warrant, resources may be temporarily diverted to second priority routes from other routes to achieve these goals.

### **Third Priority Routes**

Third priority routes typically carry moderate to minimal traffic.

The service goal for third priority routes is to maintain a passable condition (Condition 5 or better), primarily by plowing. Materials may be applied to bridge decks, hills, curves and intersections when conditions warrant. A hard packed surface, or up to 5" of snow accumulation, may be acceptable on third priority routes. Severe snowstorms, high wind conditions, or diverted resources may result in temporary closures (Condition 6). Road closures are not to extend beyond 24 hours.

Third priority routes accommodating school buses should be scheduled for additional servicing as required.

# 4.5.4 STORM WARNING/CALL-OUT PROCEDURES

The County Maintenance Manager shall establish

storm-warning call out procedures to activate the maintenance organization when adverse weather is imminent. These procedures will specify a method of notifying the County Maintenance Manager or a designated assistant, with authorization to call out Operators and rented equipment immediately.

Appropriate documentation should be entered in the radio log. See Section 4.4.10, Radio Operation, for specific duties. Weather forecasts from the contracted Department or District forecast service and those broadcasted by the media are potential storm warning sources, as well as communications from adjoining counties, districts, and states.

# 4.5.5 MATERIAL APPLICATIONS AND PLOWING PROCEDURES

This section details the guidelines for snow removal on priority routes:

### Suggested Application Rate Guidelines for First and Second Priority Routes

Surface		An	ti-Skid/Salt N	Mix	NcCl (Salt)	
Temperature Range (°F)	Rate of Precipitation	25/75	50/50	75/25	Solid	23% Liquid Salt brine
Kange ( 1)		lb/LM	lb/LM	lb/LM	lb/LM	lb/LM
Above 25°	1/2" or less per hour	120	150	180	100	45
710000 25	greater than 1/2" per hour	130	160	200	120	55
15° - 25°	1/2" or less per hour	160	200	260	140	64
13 - 23	greater than 1/2" per hour	170	180	220	160	73
10°-14°	1/2" or less per hour	190	220	300	straight salt not recommended straight salt not recommended	
	greater than 1/2" per hour	160	180	200		
Below 10°	1/2" or less per hour				straight salt not recommended	
Delow 10	greater than 1/2" per hour		cation rate dec		straight recomn	salt not nended

### **First Priority Routes**

### **Plowing Operation**

Plow trains are a recommended plowing method for use on firs priority routes and should be spaced close enough to prevent vehicles from disrupting the plowing pattern. Plow train trucks should be positioned as shown in the drawings located in Appendix I. The last truck is responsible for material applications if a plow/spread operation is in order.

### **Spreading Operation**

First priority routes may be treated with straight salt or salt mixed with a chemical enhancer. A salt/anti-skid mix can be used when road surface temperatures are below 15°F, as straight salt and salt/chemical applications are less effective at lower temperatures.

Local management decides to use straight salt, salt/chemical, or a salt/anti-skid mix; however, there are application rate guidelines for first and second priority routes. Factors such as weather forecasts, road conditions, material availability and time may justify deviations from these guidelines.

When road surface temperatures are below 15°F, the ability of chemicals to react and the effectiveness of individual or combinations of deicing materials are difficult to predict. Here are some possible combinations to apply:

- A straight salt application may be effective with heavy traffic, sunlight and calm air.
- If available, a premixed combination of 5 parts salt to 1 part calcium chloride may prove effective, or a liquid chemical deicer may be mixed with salt by field personnel.
- Mixtures of anti-skid material and salt ranging from 1, 2 or 3 parts of salt to 1 part of anti-skid can be used at low temperatures, with the mix shifting more heavily to anti-skid as the temperature drops. Salt/anti-skid mixes provide traction until salt reaction takes place. Under certain conditions, the granular nature of salt may provide traction until melting action takes place.
- Liquid enhancers may be used as pre-wetting agents to augment the activity of the salt. Rate of usage for liquid chemicals should be as per the manufacturer's recommendations.
- Ultimately, field personnel must decide the final selection of deicing materials or a combination of materials based on availability and experience.

### **Pre-wetting Salt**

All Department trucks will have pre-wet capabilities by fall 2010. For a chemical to act as a freezing point depressant, the chemical must go into a solution. Adding

liquid accelerates the effectiveness of the chemical. The type of liquid and methods used to pre-wet salt vary depending on the resources. Suggested application rates for the liquid range from 6 to 12 gallons per ton of salt. To achieve the greatest benefit from a pre-wetting agent, the pavement surface temperature should be no less than 25°F. Pre-wetting salt at a surface temperature below 25°F has minimal impact on increased efficiency. At temperatures above 25°F, liquid provides an efficiency gain by reducing the bounce and scatter of the material.

### **Second Priority Routes**

### **Plowing Operation**

Plowing operations should be scheduled to give priority to routes heading into major work areas in the morning and outbound routes in the afternoon hours.

### **Spreading Operation**

Salt or anti-skid/salt mix may be used on second priority routes to accommodate high volume traffic as conditions warrant (anti-skid/salt mixture is recommended). Drainage facilities may require additional spring-cleaning of anti-skid buildup.

The application rate guidelines shown above for first priority routes apply to second priority routes also. Deviations from these guidelines may be justified by factors such as weather forecasts, road conditions, material availability and time.

### **Pre-wetting Salt**

See First Priority Routes description above.

### **Third Priority Routes**

### **Plowing Operation**

Plowing is the primary method for clearing snow and ice from third priority routes.

### **Spreading Operation**

Because plowing is the primary method for clearing snow and ice from third priority routes, continuous material applications over the entire roadway length are generally not necessary or advisable. Spreading materials should be confined to critical areas such as long or steep hills, sharp curves, or other hazardous locations. It is important to spread critical areas as soon as noticeable snowfall (1/2" to 1") has accumulated in order to enhance traction. Anti-skid/salt mix should be used on these parts of third priority routes; straight salt should not be used.

The following application rate guidelines are recommended for third priority routes. Deviation from these guidelines may be justified by factors such as weather forecasts, road conditions, material availability or time. The County Maintenance Manager must preapprove application rates that exceed the recommended application rate.

### **Pre-Wetting Salt**

Although not recommended, pre-wetting of salt on third priority routes shall be left to the discretion of management.

Third Priorit	ty Route App Guidelines	olication
Anti-Skid/Salt Mix (AS) (S)	75/25 AS/S Mix	50/50 AS/S Mix
Not Temperature Dependent	270 lbs.	200 lbs.

Surface temperature below 10°F: recommend straight anti-skid applications. It is permissible to add a small amount of salt to anti-skid to keep the material from freezing.

These application rates are based on a single Snow Lane Mile application.

### 4.5.6 ANTI-ICING

Anti-icing is the application of a chemical freezing point depressant to prevent bonding between frozen precipitation or frost and a pavement surface. To work as a preventive, the first application of anti-icing should occur two hours or more prior to the start of a winter storm. Anti-icing becomes less effective as the solution is diluted by water from precipitation or snow/ice melt.

At temperatures below 15°F, falling snow is generally dryer which allows it to blow over the roadway surface. Under these conditions, anti-icing is not recommended.

The decision to perform anti-icing may be made by using the Department's Anti-Icing Decision Tree contained in Appendix C.

Anti-Icing Appli	cation Guidelines
Liquid	NaCL (Salt)
Chemicals	23.3%
Relative Humidity	Any Snow Event
Surface Temperature	45 Gallons per Snow
25° and Above	Lane Mile
Surface Temperature	64 Gallons per Snow
15°-24°	Lane Mile
Surface Temperature 14° and Below	Pre-treatment at lower temperatures could lead to trapping the first snow on the roadway surface and is not recommended.

### 4.5.7 TYPES OF STORMS

The Department has two main categories of winter events: spreading storms and plowing storms. Each requires a different approach, as indicated below:

### **Spreading Storm**

A spreading storm is a winter storm having up to 2 inches accumulation of snow, sleet, or freezing rain, or a combination of the three. Statistics show that approximately 50% of all storms statewide are spreading storms.

Local management makes plowing decisions for spreading storms. Generally, plowing may be required to clean snow or slush from the roadway, because excess accumulation of slush tends to dilute chemical application prematurely. A simultaneous plowing/spreading operation leads to more efficient overall performance. See Section 4.5.5 for suggested application rate guidelines for first and second priority routes.

Equipment lane mile assignments are based on a spreading storm and may be adjusted to allow for the development of plow trains if the storm progresses into a plowing event.

### **Plowing Storm**

A plowing storm is a winter storm having an accumulation of greater than 2 inches of snow, sleet or freezing rain or a combination of the three. Operations may also include spreading materials such as anti-skid. Both state-owned and rental equipment may be called out simultaneously during the plowing storm.

County contingency plans to handle a prolonged storm may require a revision of scheduled shifts and standard working hours, and the diversion of equipment from lower to higher priority routes. See Section 4.4.2, Contingency Planning, for more information.

The Department's objective is to have all snow routes staffed 24/7 during each event. Effective snow plowing requires alert, properly rested Equipment Operators. During extended storm events, the Department's goal is to relieve Equipment Operators after 12 hours of operation; when conditions warrant, this may be extended to a maximum of 16 hours.

### 4.5.8 SPREADING TECHNIQUES

Material application rate guidelines provide calibration targets to aid in controlling material use and effectiveness. Operators must consider both quantity of material dispensed and width of spread for maximum efficiency. Material choice and application rates are field decisions and dependent on current conditions.

Some important spreading techniques include:

- Apply materials on the high side when spreading banked curves.
- In some locations, for operational safety, spread materials only while traveling uphill.
- Spreading materials prior to the increased morning traffic period may provide traction until temperatures and traffic increase, allowing chemical reaction to begin.

- Spreading straight abrasives at dusk provides traction, particularly if temperatures are dropping and traffic is diminishing.
- Operators should monitor material applications for effectiveness and adjust rates for successive applications.
- Spinner adjustments will control both width and direction of spread. (Spreader modifications can be made to accommodate trucks assigned to the left lanes of interstates; auger direction is reversed and spinner is mounted on right.)
- When spot spreading bridge decks or isolated areas, Operators should apply materials to the approach as well as target area. Traffic will assist in spreading, through the tracking of materials.

See Section 4.5.5, Material Applications, for more information.

### 4.5.9 SPECIALTY EQUIPMENT

Under certain conditions, the Department uses specialty equipment.

### **Snow Blowers**

Snow blowers can be used to remove deep snow, clean interchanges, gore areas, bridge decks and areas that require the movement of large volumes of snow.

### Graders

Useful in plowing operations, graders can also remove ice and packed snow because of the down pressure that can be applied to the under carriage blade. Negatives are that they are slow when compared to trucks, and cannot spread deicing materials. Recommended plowing responsibilities for graders are clearing interchange areas or working as part of a plow train. Available graders should be used to plow back unpaved shoulders.

### **Large Loaders**

Each County should establish rental agreements for large loaders. The primary winter function for these loaders is to help clear road closures caused by drifting or other conditions.

### **Anti-Icing Trucks**

Anti-icing trucks are designed for pre-treating the roadway surface prior to the start of a storm event. Liquid chemicals may also be used to maintain pavement conditions during an event. Prior to reapplying additional liquid chemical, accumulated snow/ice should be removed.

### 4.5.10 MAILBOXES AND DRIVEWAYS

Snow removal in residential areas may require communication and cooperation with homeowners. Two specific examples are:

### Mailboxes

Because the post office has certain placement requirements regarding the location of mailboxes, the Department does not prohibit property owners from placing mailboxes within the limits of the legal right-of-way. Since these mailboxes are not placed under permit regulations, technically they are encroachments, and remain at the risk of the property owner. Therefore, the Department is not liable for damages to mailboxes caused by snow removal when they are located within the limits of the legal right-of-way.

Where a potential problem with a mailbox exists, the Operator should explain this policy to the property owner in a courteous manner. Normally, if mailboxes are placed as far beyond the shoulder of the highway as the postal worker can reach from his/her vehicle, and the mailbox rests on a firm upper support, the box should be able to withstand the windrow of snow from the plow.

Operators should exercise care and use slower plowing speeds when working in areas where mailboxes are present to avoid damage if possible.

### Driveways

Although windrowing snow in front of private driveways cannot be eliminated, Equipment Operators should use reasonable care when plowing residential areas to minimize homeowner inconvenience. Slower speeds can reduce windrows.

If Department employees observe a person depositing snow onto a highway, they should contact local police. There are several state laws and statutes that prohibit persons from depositing snow onto the highway from driveways and sidewalks. Local police have the authority to enforce these laws and address this problem.

### 4.5.11 WIDENING AND CLEANUP

The time for widening and cleanup operations is after the travel portion of the roadway has been properly treated. To minimize overtime, employees normally perform these activities during regular shifts. Widening activities will open drainage systems, providing a place for both snowmelt and future snowfall.

The following areas may require additional attention as part of the widening and cleanup operation:

• Turning lane pavement sensors

- Median barriers and guide rail
- Flange areas within railroad crossings
- Super elevated curves
- Bridge expansion dams
- Inlets and drainage devices
- Gore areas
- Intersections
- Areas of sight distance concerns
- Interstate crossovers
- Potential drift areas
- Bridge decks *NOTE*: Removal of excess snow from bridge decks decreases the "dead load" and reduces icing conditions created by freeze-thaw cycles.

### 4.5.12 FROST HEAVE

Frost heave is a result of freeze-thaw cycles that can occur often during the winter months. Frost heave causes vertical movement of highway sections most often at bridge approach slabs and paved shoulders.

All Department personnel engaged in roadway work or patrols during the winter season should remain alert to report frost heave conditions to the County Maintenance Manager as soon as they are noticed.

# 4.5.13 REVIEW OF EQUIPMENT DAMAGE OR BREAKDOWN

Following each winter storm, Equipment Operators and Highway Maintenance Foremen are responsible for cleaning and checking their equipment and for reporting any repairs required to the County Equipment Manager and the appropriate Assistant County Maintenance Manager. Equipment Managers, upon receiving equipment damage reports, should schedule repairs for the equipment and provide County Maintenance Managers with copies of their repair schedules.

# 4.5.14 CARE AND CLEANING OF EQUIPMENT

The Department has a large investment in equipment, and to protect this investment, the following applies:

 After each storm, Highway Maintenance Foremen should provide Equipment Operators with the opportunity to steam and wash any piece of equipment that is exposed to either chemicals or anti-skid materials. Equipment assigned to any stocking area that does not have cleaning facilities should be sent to stockpiles with cleaning facilities.

- NOTE: Wash water from equipment cleaning should be directed to the appropriate runoff control or drainage area according to the SEMP environmental stewardship program.
- Equipment Operators should monitor plow blades during use, inspect them after each use, and replace them whenever necessary.
- Equipment Operators should check plow and plow assist valves for proper operation after each use.
- Tire chains must be properly maintained.
- At the end of the snow removal season, the County Equipment Manager is responsible for ensuring that all winter equipment is thoroughly cleaned to prevent corrosion from any chemical residue. Augers are to be coated with a protective material for summer storage. All vehicle bodies, snowplows and spreaders are to be routinely inspected.
- District and County management personnel responsible for the proper maintenance of equipment should inspect all equipment periodically to assure that necessary repairs are scheduled and completed to maintain a state of readiness.

### 4.5.15 ISSUE OF WINTER MATERIALS

SAP/Plant Maintenance System tracks winter material issue and receipt. Timely reporting is very important to ensure accurate inventory controls. Each Operator is to maintain tracking documents for each 24-hour period. ZIPY Payroll issues can be charged by individual Operators or combined into one entry on the Foreman Payroll (ZIPY).

Foremen should visually inspect each stockpile location weekly and following storm events to confirm accurate inventory records in SAP. Accurate inventory records permit timely ordering of replacement stock. The following information should be recorded on a Winter Materials Issue form:

- County
- Date
- Time out/Time returned
- Operator
- Equipment number
- Start/end mileage
- Stockpile number

- Material loaded (salt, anti-skid, liquids, etc.)
- Distance spread
- Application rate
- Material returned (salt, anti-skid, liquids, etc.)
- State routes treated

# 4.5.16 DARK HOURS TRAINING AND OTHER ACTIVITIES PERFORMED DURING WINTER SEASON

It is Department policy to make a concerted effort to manage our resources wisely and to maintain a level of productivity that is consistent with current Department goals. This is particularly critical during the winter months.

Clearly, there will be extended periods during the winter when mild weather permits work other than snow removal. Managers must assign projects for non-daylight shift workers. During the winter season, work schedules should maintain productivity while retaining the required flexibility to deal with interruptions caused by inclement weather.

The following are examples of potential productive dark hour work assignments:

### Winter/Snow Removal

- Mix salt/anti-skid
- Repair tire chains
- Transfer material
- Repair spreaders/augers
- Receive winter materials
- Perform storm cleanup/widening
- Conduct snow/ice patrol
- Clean sumps
- Install/remove/repair plows/blades
- Check spreader calibration
- Clean bridges/sidewalks
- Cut bleeders/scuppers under guide rail

### **Equipment-Related Activities**

- Clean equipment
- Perform preventive maintenance on equipment
- · Transfer equipment
- Paint equipment
- Sharpen cutting tools
- Build bodies for pickup trucks
- · Implement equipment repairs
- Prepare summer equipment
- Start all equipment at stockpiles

### Training In the Following Areas

- CDL
- Defensive driving course
- Hazardous materials
- CPR/first aid
- · Risk Management
- Right-To-Know
- · Planning and scheduling
- Operator
- Safety
- · Work zone traffic control
- SEMP/ISO14001
- Maintenance activity procedures

### Stockpile/Garage/Administrative

- Perform general housekeeping
- Repair storage facilities
- Refinish picnic tables
- Paint office area

### **Supplies**

• Paint signs

- Paint trash barrels
- Build tool sheds
- Construct picnic tables
- Tie Gabion baskets
- Straighten guide rail
- · Hold foremen meetings
- · Conduct building maintenance
- Perform Keep PA Beautiful activities
- Check and maintain stockpiles
- Make pre-cast slabs
- Dismantle guide rail
- · Paint garage area
- Repair/install fences

### Roadway/ Bridge Work

- Prepare for daylight activity
- Restore truck escape ramps
- Survey guide rails
- · Maintain scenic overlooks
- · Perform other bridge maintenance
- Maintain roadside picnic area
- Remove old station markers
- Sweep bridge water tables
- Cut brush
- · Sweep high-volume intersections
- Remove illegal signs from right-of-way
- · Remove graffiti
- · Maintain roadside rest areas
- Survey/repair right-of-way fences
- · Survey lighting

- Handle emergency pothole patching
- Inventory roadway features
- Open/clean drainage courses, ditches, inlets, outlets
- Conduct rain/wind patrol
- Replace/repair signs/posts
- · Remove rock slide removal
- Remove trash/debris
- Clean up accident residue
- Conduct sign surveys
- Heat kettles for crack/joint sealing

# 4.6 STOCKPILE PLANNING AND DEVELOPMENT

The numbers and locations of stockpiles are important strategic concerns of the Department. Operations can be conducted most efficiently and in an environmentally sensitive way when stockpiles are properly situated. This section addresses stockpile location planning and land procurement. While not necessarily annual winter services activities, stockpile changes must be handled in a consistent way, reflecting the priorities of the Department.

# 4.6.1 STOCKPILE LOCATION PLAN GUIDELINES

Density factor tabulations permit the direct determination of the snow lane miles to be serviced from a stockpile based on the County's density factor. The density factor may be obtained by dividing the total snow lane miles by the square miles within the county. The calculation, performed by BOMO, is based on the premise that a County with a high density of roads per square mile should be able to service more lane miles from each stockpile location. There is a minimum lane mile assignment of 135 snow lane miles per stockpile and a maximum of 225 snow lane miles per stockpile with a straight-line relationship in between. The last step of the calculation is to obtain the allowable number of stockpiles per County. This is done by dividing the snow lane miles per stockpile into the total county snow lanes listed on the Highway Features Inventory Printout. The PennDOT County Office is not counted as a stockpile.

Certain other factors such as poorly placed existing stockpiles, which cannot be vacated, roadway configuration and distribution, large metropolitan areas, rivers, state forest areas, terrain, etc., can also have an influence on the number of stockpiles that a County requires. These factors must be considered on an individual County basis, but the number of stockpiles computed from the formula plus the County Office is adequate for most counties.

After the allowed number of stockpiles is calculated, the Assistant District Executive for Maintenance and the County Maintenance Manager must review county maps to decide where the stockpiles should be located. After this is determined, it will be primarily up to the District to locate available land and initiate the purchasing process. While reasonable efforts are to be made to retain operationally and environmentally acceptable sites, it may be necessary to vacate rental sites. The plan showing the final stockpile distribution should be completed, approved by the District Executive and used by the County Maintenance Manager to plan stockpile acquisition and development.

Stockpile location plans should be on file at the District Maintenance Office and at each County Office.

# 4.6.2 LAND PROCUREMENT AND STOCKPILE DEVELOPMENT

The Department's ultimate goal is to own or have under long-term lease (20 years or more) all permanent maintenance stocking areas. A permanent stocking area is defined as a stockpile site used year-round by maintenance forces for stocking roadway materials, parking equipment, and assembling personnel.

Each County has an approved stockpile consolidation plan. This plan shows the number and location of all stockpiles required for the efficient operation of the County. Section 4.6.1 contains guidelines relating to the establishment of a stockpile location plan. Counties dependent on rental stockpiles should try to eliminate one or more rental stockpiles per year by budgeting for the purchase of at least one stocking area in accordance with the approved County stockpile consolidation plan.

Purchases should proceed by priority with rental sites having potential environmental problems or high rental fees eliminated first. By following these steps, the Department will eliminate poorly located rental stockpiles that cannot be properly developed because of the high costs of major improvements. Strategically located state-owned sites are preferred, where the costs of major and capital improvements can be justified.

Requests to purchase stockpile sites are to be in accordance with Publication 284: PennDOT Facilities Manual.

# **Appendix A - Winter After Action Review Template**

### Appendix A – Winter AAR Template

## Winter Operations After Action Review

Event Date: \_\_\_\_\_

Organization (county, district, etc.):						
Type of Storm Event:						
Winter Service Goal:						
What were the outcomes/ What actually happened?						
What worked well that wo	What worked well that we want to continue?					
Please fill in the chart below:						
Problem identified or observed	Action to resolve the problem	Responsible Party	Deadline			

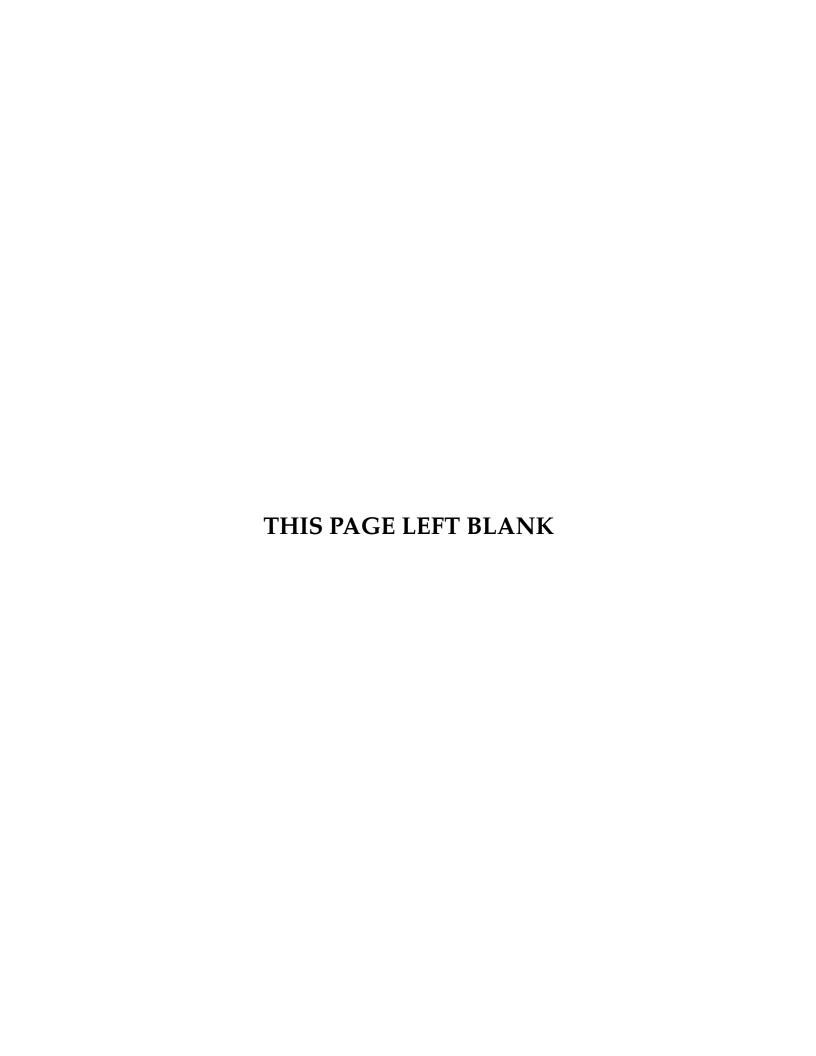
# **Appendix A - Winter After Action Review Template**

Appe	ndix A – Winter AAR Temp	olate
What procedures or operation	s can improve prior to the	e next storm event?
Additional Comments:		
Additional Comments.		
Facilitator		
Signature/Title:		Date:
Attendees:		
Name	Classification	Phone Number

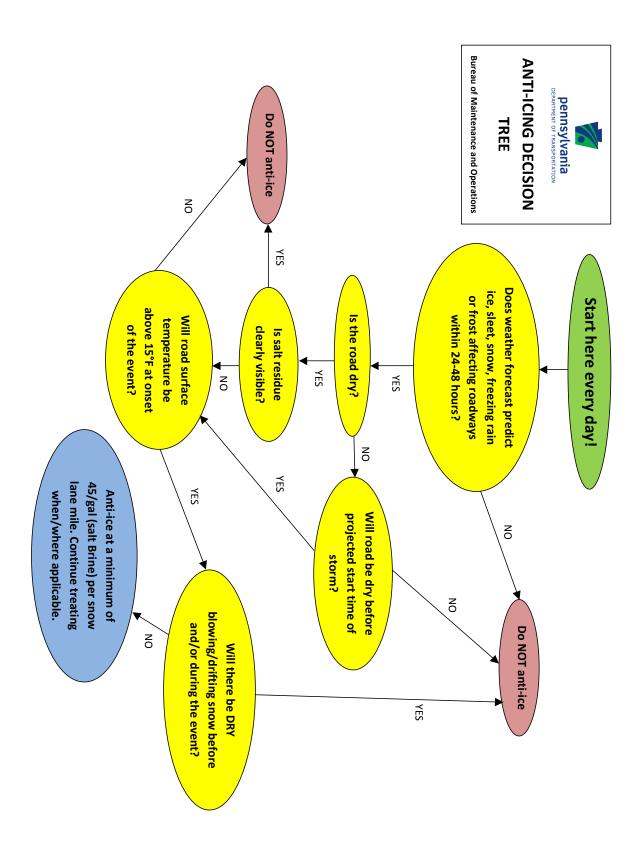
Name	Classification	Phone Number

# **Appendix B - Winter Equipment Checklist**

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NG Comments  NG NG Comments  NG NG Comments	Operator - A Shift: Operator - B Shift: Foreman's Initials:  NG Comments G NG Spreader: X X		NG	G	auger turning right way		NG	G	plow face (wing)
Operator - A Silit: Operator - B Shift: Foreman's Initials:  NG   Comments   G   NG	Operator - A Shift: Operator - B Shift: Foreman's Initials:  NG   Comments		×	×	Spreader:		×	×	Wing:
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Operator - B S Foreman's Init	Operator - A S Operator - B S Foreman's Init								
Operator - B S	Operator - A S Operator - B S				Foreman's Initials:			er:	Spreader Numb
pelatoi - A S	Operator - A S				ВS			er:	Wing Numb
					Operator - A Shift:			er:	Plow Numb
Truck Number: Date:					Date:			er:	Truck Numb



# **Appendix C - Anti-Icing Decision Tree**



# Appendix C - Stockpile QA Evaluation and Review

# ANTI-ICING DECISION TREE DIRECTIONS

- Use this decision tree once per day and/or whenever the current weather forecast is significantly updated.
- If the decision tree recommends against anti-icing and then conditions change, reevaluate the decision based on the new situation.
- If there is a winter storm forecast for sleet, snow, freezing rain or frost which will adversely affect driving conditions, it is desirable to have some form of salt residue on the road. If there is no or very little salt residue on the road surface, anti
- icing is recommended, except under the following conditions:If the event is forecasted to start as rain.
- If the road surface temperature is below 15°F.
- If blowing/drifting DRY snow is forecast prior to or at the onset of the storm.
- Some judgment is required to decide if the storm event will be sufficient to cause driving problems. However, you should always err on the side of anti-icing, as it is a very cost effective treatment.

# GENERAL PRINCIPLES OF ANTI-ICING

- Anti-icing can commence at least 48 hours in advance of the forecasted start time of a winter storm where practical. Bituminous pavements should be anti-iced first, then Portland Cement Concrete pavements. Higher priority routes should be anti-iced last as this reduces the potential for "dust-off".
- Once the decision to anti-ice has been made, the (45 gal/SLM minimum) rate may need to be increased to double the normal value to compensate for circumstances that would otherwise deplete the salt residue below a value likely to be effective. These circumstances include applying salt brine more than 24 hours before the anticipated event, roads that have surfaces on which normal anti-icing rates have been observed to be ineffective and sleet and/or freezing rain are anticipated.
- One key to a successful anti-icing program is to have quality salt brine as close to 23.3% solution as possible. Another key is to calibrate the anti-icing equipment at the beginning of and several times during the winter season.

  At this time, research indicates that up to 10% calcium chloride
- At this time, research indicates that up to 10% calcium chloride, magnesium chloride or agricultural based organic deicers may be added to salt brine. Concentrations above that level may cause the salt to precipitate out of solution.

  Agricultural based organic deicers like Geomelt, Ice Bite, ect,

# **Appendix D - Standard Roadway Conditions**

COMMON DESCRIPTIONS: In order to attain a common understanding of winter road conditions, the following conditions and definitions have been established.

**Condition 1: Clear -** No snow and ice is bonded or accumulated on the road surface. Bare pavement surface is maintained at all times.



**Condition 2: Clear and wet -** Bare/wet pavement surface is the general condition. There are occasional areas having snow or ice accumulations resulting from drifting, sheltering, cold spots, frozen melt-water, etc



**Condition 3: Snow and/or slush covered with wheel tracks exposed -** Accumulations of loose snow or slush ranging up to (2 in.) are found on the pavement surface. Packed and bonded snow and ice are not present.



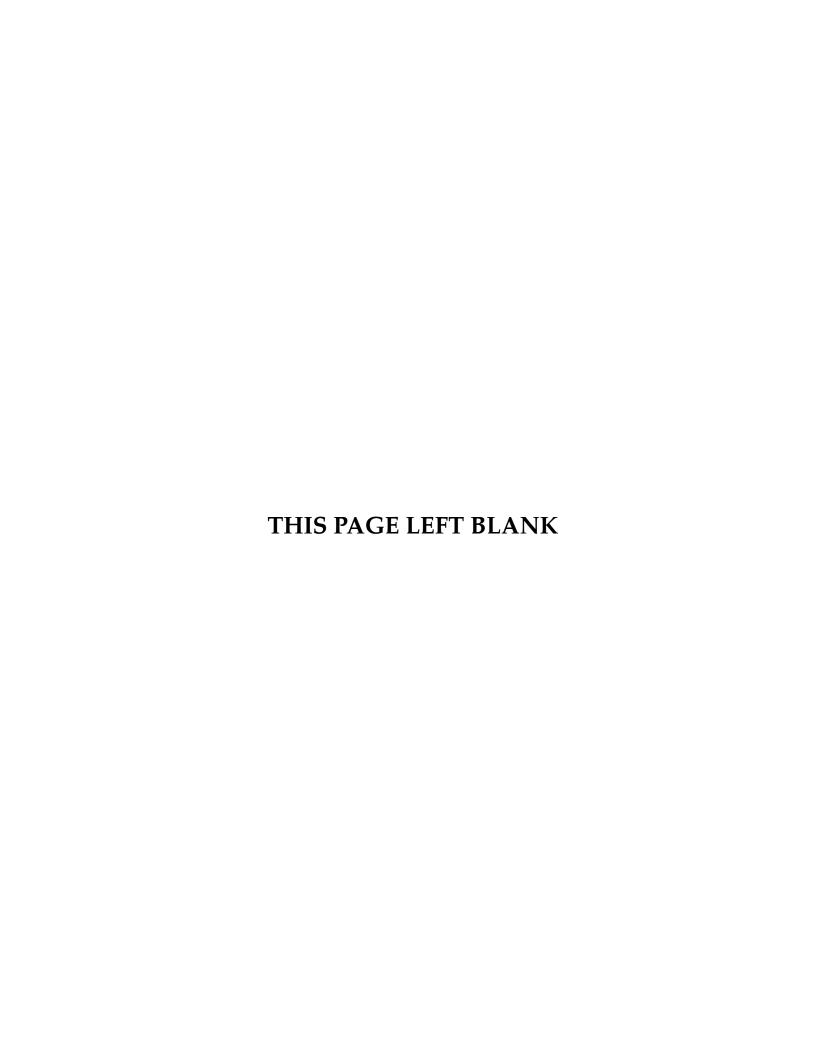
**Condition 4: Snow and/or slush covered -** The pavement surface has continuous stretches of packed snow with or without loose snow on top of the packed snow or ice.



**Condition 5: Icy -** The pavement surface is completely covered with packed snow and/or ice. There may be loose snow on top of the icy or packed snow surface.



**Condition 6: Impassable -** The road is temporarily impassable. This may be the result of severe weather (low visibility, etc.) or road conditions (drifting, excessive unplowed snow, avalanche potential or actuality, glare ice, etc.).



Pennsylvania Department of Transportation

STANDARD OPERATING GUIDELINE (SOG) FOR THE CLOSURE AND RESTRICTIONS OF INTERSTATE HIGHWAYS

Revised 05/06/08

# STANDARD OPERATING GUIDELINE (SOG) FOR THE CLOSURE AND RESTRICTIONS OF INTERSTATE HIGHWAYS

### BACKGROUND:

- 1.The Pennsylvania Department of Transportation's (PennDOT) standard of care on Interstate highways is to maintain them in such a condition as to keep them open to traffic at all times, and if necessary, to redirect resources to affected areas to accomplish this mission. Even so, it may become necessary to temporarily close or block access to Interstate highways in anticipation of snow and ice and/or to remove snow, ice, wreckage, or hazardous materials, to assist stranded motorists and vehicles, or for other reasons. This SOG is intended to outline the procedures for establishing and communicating restrictions and closures on the Interstate system. Additionally, weather, road, or other conditions may warrant restrictions of travel to ensure safety to the motoring public and to facilitate removal of obstructions, snow, and ice from the highways.
- 2. Pennsylvania Consolidated Statutes Title 35, *Health and Safety*, establishes and governs Emergency Management in Pennsylvania. This protocol provides supplementary information "for the specific purpose of establishing Interstate closures and restrictions". Where conflicts occur between the documents, Title 35 shall govern.
- 3. Title 75 provides the guidance for prohibiting or restricting traffic. Section 4902 (b) states: "The Commonwealth and local authorities with respect to highways and bridges under their jurisdictions may prohibit the operation of vehicles and may impose restrictions as to the weight and size of vehicles operated upon a highway or bridge whenever they determine that hazardous traffic conditions or other safety factors require such a prohibition or restriction." Section 6109 allows enforcement of restrictions placed on a given highway. "Prohibiting or restricting the use of highways at particular places or by particular classes of vehicles whenever the movement of the vehicles would constitute a safety hazard." The PSP can close a highway because of crashes, hazardous material situations, blockage by debris, or collection of perishable data associated with accidents. Unless otherwise directed, medical and emergency response personnel are exempt from these closures, and additional exceptions may be granted by the PSP Incident Commander. PennDOT can close a highway because of road and weather conditions including blinding snow or rain, debris slides, or flooding. In cases of highway closure, immediate communication and coordination must occur between PennDOT's Deputy Secretary for Highway Administration (or his designee), and the PSP Incident Commander via PSP EPLO to ensure this information is exchanged in a timely manner. The Pennsylvania Emergency Management Agency (PEMA) State Emergency Operations Center (SEOC) facilitates this communication.
- 4. Title 75, The Vehicle Code, Section 4902, allows PennDOT additional latitude to prohibit the operation of vehicles or impose restrictions as to the weight or size of vehicles operated upon a highway or bridge whenever they determine that hazardous traffic conditions or other safety factors require such a prohibition or restriction. Section 6108 of The Vehicle Code defines that in the event of a declared National, State, or local emergency, the Governor shall have the power to so modify the provisions on any or all highways in this Commonwealth to be effective at any or all hours of the day or night with respect to any or all types or classes of vehicles.
- Closures, actions and restrictions in this SOG are categorized as either preemptive or responsive.

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# STANDARD OPERATING GUIDELINE (SOG) FOR THE CLOSURE AND RESTRICTIONS OF INTERSTATE HIGHWAYS

### PREEMPTIVE CLOSURES, ACTION AND RESTRICTIONS:

6. Preemptive closures, action or restrictions may be initiated when an imminent severe weather event has the potential to exceed PennDOT's ability to maintain passable roadways, for national security concerns (e.g. Presidential travel), or for the health and safety of the public in evacuations. The preemptive closure decision will be made by the Secretary of Transportation or his designee.

### WEATHER-RELATED PREEMPTIVE CLOSURES:

- 7. Weather-related closures will be in response to forecasts and based on moving storm systems' impact on neighboring states through which storms are tracking or have already passed. Other preemptive closures will be made in response to requests by other Commonwealth or Federal agencies. Such requests must be processed through and documented by PEMA. Weather information from neighboring states will be gathered by PennDOT's Transportation Area Command Center (ACC) and communicated to the SEOC, PSP Watch Center and the Secretary of Transportation or his designee. Preemptive closure for weather reasons may be considered if any of the following conditions are expected:
  - The rate of snowfall is expected to exceed three inches per hour for a sustained time period
    of at least four hours.
  - At least ½ inch of ice is expected to accumulate during any two-hour period.
  - Snowfall of at least eight inches will be accompanied by winds greater than 20 miles per hour, where drifting and restricted visibility are expected.

There are many other factors considered as part of this decision making process. These factors include, but are not limited too, geographic region, time of day, traffic flow, available resources and the current state of activation. The above criteria are intended to initiate consideration of implementation of closure, action or restriction and not to REQUIRE such action.

- 8. The Secretary of Transportation or his designee will coordinate with the Director of PEMA or his designee to seek a Governor's declaration of emergency prior to a weather-related preemptive closure. Every effort should be made to reach the preemptive closure decision at least four hours prior to the arrival of the storm. This lead time will allow PEMA to contact state agencies that have assets that can be leveraged to mitigate the incident in a timely manner. The closure decision will include a description of the physical extent of the closure. At a minimum, the closure should include the area where the above listed condition(s) is expected. From this area, the limits should be expanded to best utilize pre-established detour routes (as determined by PennDOT, PEMA, PSP, County emergency management, and municipalities), available roadside services, and areas of safe-haven.
- 9. Public warnings of potential closures will be issued as soon as the closure decision is made. These warnings will be coordinated by the Governor's Press Office and disseminated through appropriate agency press offices and PennDOT district Community Relations Coordinators. Messages will warn of impending winter weather, and the possibility of restrictions or closures of the Interstate. The PennDOT website, winter road condition hotline, Intelligent Transportation System devices, and media outlets will be used to communicate these messages. PEMA will communicate warning notices to county emergency management personnel, including the appropriate 911 or Public Safety Answering Points (PSAP's), and will initiate warning messages through the use of EMNets. PEMA will also communicate warning notices to traffic operations centers in adjacent states, including TRANSCOM.

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# STANDARD OPERATING GUIDELINE (SOG) FOR THE CLOSURE AND RESTRICTIONS OF INTERSTATE HIGHWAYS

- 10. PSP and municipal authorities will direct physical closures, and are responsible for enforcement of the closures. If state resources have been exhausted, the National Guard may assist PSP and local authorities in this activity at the direction of the SEOC. Physical closure of access points will begin 30 minutes prior to the anticipated time of storm arrival. This will allow traffic currently on the route to clear, and relieve some of the burden on detours and roadside facilities. Drop gates may be installed on access ramps to facilitate these closures. Regarding gate deployment, priority should be given to areas where drifting and other winter conditions are particularly difficult to control, where the manpower to enforce closures is difficult or slow to obtain, or where there are few emergency access/egress points.
  - 11. As physical closures begin, warning messages will be replaced by closure messages including the extent (limits) of the closure. Through coordination with PEMA, the Emergency Alert System may be used to broadcast closure warnings along with the other methods of communication mentioned above.

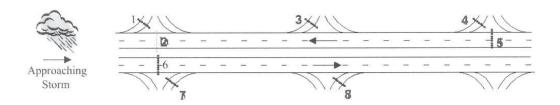


Figure 1 - Closure Sequence

For weather-related closures, access points will be closed in the order shown in Figure 1, as directed by on-site PennDOT and/or PSP authorities. The following summarizes each closure:

Closure 1 – Access ramp closest to the approaching storm where the direction of travel is toward the storm.

Closure 2 – Temporary closure on the mainline past the last exit of the closure area where the direction of travel is toward the storm.

Closures 3 and 4 – Access ramps, where the direction of travel is toward the storm, will be closed in order moving away from the storm.

Closure 5 – Mainline closure, where the direction of travel is toward the storm, beyond the last accessible exit at the beginning of the closure. After Closure 5 is completed, Closure 2 will be removed.

Closure 6 – (For responsive closures only.) Mainline closure, where the direction of travel is away from the storm, beyond the last accessible exit at the beginning of the closure.

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# STANDARD OPERATING GUIDELINE (SOG) FOR THE CLOSURE AND RESTRICTIONS OF INTERSTATE HIGHWAYS

Closures 7 and 8 – Access ramps, where the direction of travel is away from the storm, will be closed in order moving away from the storm.

### OTHER PREEMPTIVE CLOSURES:

12. Preemptive closure decisions for national security concerns, evacuations, or other reasons will be made by the Secretary of Transportation or his designee. As with weather-related closures, closure decisions should be reached well in advance, and will include a description of the physical extent of the closure. Agency responsibilities are the same as weather-related closures, except that PennDOT maintenance personnel may be available to establish physical closure of access points.

### PREEMPTIVE ACTION/RESTRICTIONS:

- 13. Preemptive action may include the posting of an advisory speed limit using variable message boards, highway advisory radios and media broadcast messages. The decision to take these actions will be at the discretion of the Secretary of Transportation or his designee. This decision should follow consultation with the PSP EPLO.
- 14. Weather-related preemptive restrictions may be initiated in response to forecasts and based on moving storm systems' impact on neighboring states through which storms are tracking or have already passed. Other preemptive will be made in response to requests by other Commonwealth or Federal agencies. Such requests must be processed through and documented by PEMA. Weather information from neighboring states will be gathered by PennDOT's Area Command Center (ACC) and communicated to the SEOC, PSP Watch Center and the Secretary of Transportation or his designee. Preemptive for weather reasons may be considered if any of the following conditions are expected:
  - The rate of snowfall is expected to exceed three inches per hour for a sustained time period
    of at least four hours.
  - At least ½ inch of ice is expected to accumulate during any two-hour period.
  - Snowfall of at least eight inches will be accompanied by winds greater than 20 miles per hour, where drifting and restricted visibility are expected.

There are many other factors that may be considered as part of this decision making process. These factors include, but are not limited too, geographic region, time of day, traffic flow, available resources and the current state of activation.

### RESPONSIVE RESTRICTIONS:

- 15. At any time, the Secretary of Transportation may authorize the use of an advisory speed limit on the Interstate system to minimize the likelihood of vehicle crashes, and to promote the ability of PennDOT forces to complete their mission. This measure may be considered any time the Standardized Roadway Condition is Three or greater (see Attachment). This decision should follow consultation with the PSP EPLO.
- 16. The Secretary may also choose to restrict any class of commercial vehicle from travel on any portion of the Interstate. Restricting double trailers should be considered any time the

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# STANDARD OPERATING GUIDELINE (SOG) FOR THE CLOSURE AND RESTRICTIONS OF INTERSTATE HIGHWAYS

Standardized Roadway Condition is Three or greater. Restriction of all commercial vehicles may be considered any time the Standardized Roadway Condition reaches Four, and may be enacted any time the Standardized Roadway Condition is Five or greater, or at the discretion of the Secretary of Transportation. This decision should follow consultation with the PSP EPLO.

17. The physical limits of speed and vehicle type restrictions will be set at the affected area. Restrictions will be communicated in the same manner as road closures (with the exception of the Emergency Alert System), and will be facilitated and monitored by the PSP.

### RESPONSIVE CLOSURES:

- 18. Responsive closures will be initiated when weather events, natural disasters, crashes, or terrorist activity render a roadway unsafe or impassable. During severe weather events such as snow or ice storms or heavy rainfalls, the County Maintenance Office will closely monitor the status of all highways within their county using intelligence provided by equipment operators and other field staff. This monitoring and reporting will be done in conjunction and cooperation with several resources, and situational awareness must be maintained at all times through the Area Command at PennDOT's ACC, PSP Watch Center, PEMA, and the local district offices.
- 19. The TCC will monitor the local, regional, and statewide conditions and weather patterns, evaluate closure requests made by the districts, and make a recommendation for closure or restriction to the Area Commander (Director of the Bureau of Maintenance and Operations). The Area Commander will pass the recommendation through the Chief Engineer to the Deputy Secretary for Highway Administration (or designee). Closure will be considered when Standardized Roadway Condition Five has been observed and is expected to exist for two hours or longer, or Condition Six has been observed and is expected to exist for 30 minutes or longer.
- 20. If possible, the potential for responsive closures should also be publicly announced in advance, to allow motorists to vacate the restricted highways. Public notification will be handled similarly to preemptive closures, and PEMA will communicate responsive closures to county emergency personnel and traffic operations centers in adjacent states, including TRANSCOM. As with preemptive closures, the National Guard, assisting PSP or municipal authorities, will establish physical closure of access points. If closures are necessary in the absence of a Governor's declaration, the logistical support of blocking Interstate ramps, directing traffic to detour routes, and removing stranded motorists will be a coordinated effort between PennDOT, PSP, local police agencies, and emergency responders. Access points will be closed beginning with the first access ramp beyond the closure limit, followed by the mainline closure point, and finally the remaining access ramps in the direction of travel. This is identical to the sequence shown in Figure 1 for the travel direction away from storm.

### REOPENING:

21. The Secretary of Transportation will make the decision to re-open the highway once it is deemed passable and safe. The ACC will provide supporting information for the decision by

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# STANDARD OPERATING GUIDELINE (SOG) FOR THE CLOSURE AND RESTRICTIONS OF INTERSTATE HIGHWAYS

gathering all information from the county, District, PSP Watch Center and PEMA on the readiness of the roadway. Communication about the re-opening of the highway should be broadcast in the same manner as the restriction, and should include information on any temporary or long-term travel restrictions or traffic control. Physical reopening may occur prior to public notice. This decision should follow consultation with the PSP EPLO. PSP may be requested to serve as pilot vehicles to facilitate reopening.

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Attachment

STANDARDIZED ROADWAY CONDITION DESCRIPTIONS
In order to attain a common understanding of winter road conditions, the following conditions and definitions have been established.

Condition 1: Clear - No snow and ice is bonded or accumulated on the road surface. Bare pavement surface is maintained at all times.



Condition 2: Clear and wet - Bare/wet pavement surface is the general condition. There are occasional areas having snow or ice accumulations resulting from drifting, sheltering, cold spots, frozen melt-water, etc



Condition 3: Snow and/or slush covered with wheel tracks exposed - Accumulations of loose snow or slush ranging up to (2 in.) are found on the pavement surface. Packed and bonded snow and ice are not present.



Condition 4: Snow and/or slush covered - The pavement surface has continuous stretches of packed snow with or without loose snow on top of the packed snow or ice.



Condition 5: Icy - The pavement surface is completely covered with packed snow and/or ice. There may be loose snow on top of the icy or packed snow surface.



Condition 6: Impassable - The road is temporarily impassable. This may be the result of severe weather (low visibility, etc.) or road conditions (drifting, excessive unplowed snow, avalanche potential or actuality, glare ice, accidents, vehicles stuck on the road, etc.).

I recommend that this guideline be implemented as the formal guideline for the closure and restriction of Pennsylvania interstate highways.

Allen D Biehler, P.E., Secretary
Pennsylvania Department of Transportation

Allen D Biehler, P.E., Secretary
Pennsylvania Department of Transportation

Body D9
Robert French, Director
Pennsylvania Emergency Management Agency

Lt. Colonel Frank E. Pawlowski
Acting Commissioner
Pennsylvania State Police

Maj. General Jessica I Wright, Adjutant General

Date

7/30/08

Date

PLEASE RETURN SIGNED DOCUMENT TO THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION.

Pennsylvania Department of Military and Veterans Affairs



# **Appendix F - School Bus Letter**

((County Street Address)) ((County Town)), PA ((County Zip)) ((Date))

Subject: Winter Transportation of School Students ((Supervisor)) ((School Name)) ((Office)) ((Address)) ((City)), ((State)) ((Zip))

Dear ((Salutation))

The winter season is again approaching. We are asking for your help in coordinating our efforts to remind school bus operators about the winter safety rules and regulations as they apply to transporting students to and from school safely.

We are deeply concerned about the safety of the traveling public, especially when it concerns the safety of our young school students.

Through combined efforts, a good rapport can be established between the Department, School District and most important the school bus drivers. We request that you remind all of your school bus drivers, whether in-house or contracted, of the most essential rules of safe winter school bus operation, some which are as follows:

- 1. Keep windshields, driver's side windows, passenger doors and mirrors completely clear at all times.
- 2. Keep window defroster vents clear of all obstructions that may hamper their operation.
- 3. Inspect tires for tread wear and correct inflation. Make sure tires are within specifications for Vehicle Code
- 4. Depending on your local area, use tire chains, tire chain devices, or "Mud and Snow" rated tires on drive wheels.
- 5. When following a snowplow truck, stay back 200 feet.

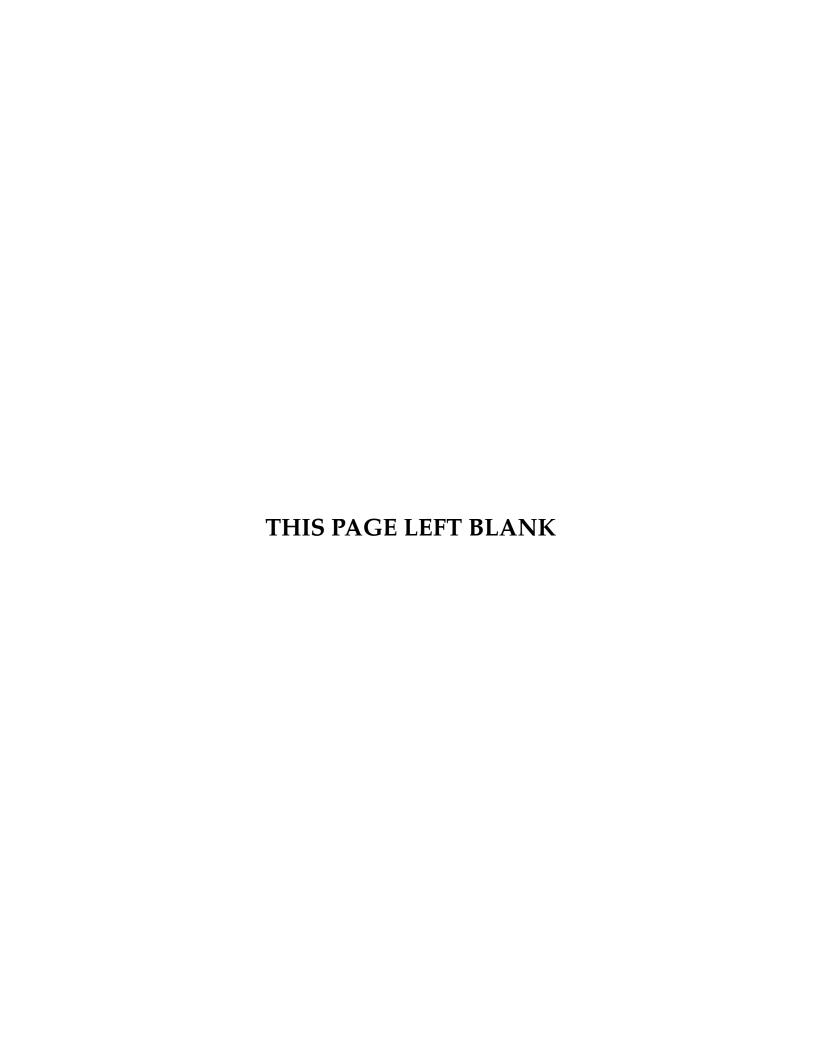
We assure you that it is our objective to keep the state highways as clear of snow and ice as possible. However, during severe winter conditions, we may not be able to clear all highways before the buses start their routes. Our equipment is routed in such a manner that it generally takes a minimum of two (2) hours to complete one pass on all the highways for a specific piece of equipment. Also, equipment breakdown or personnel shortages may cause delays in having any given highway cleared as quickly as we would like. Therefore, it is imperative that school bus drivers use every safe driving precaution (i.e., increased stopping distance, driving in reduced gear, reduce speed, etc.) to assure the safety of their passengers during inclement weather.

Through a cooperative effort, we can reduce the effect of hazardous driving conditions when busing school children. The Department is committed to keeping the roads safe and they ask for your cooperation in our efforts.

Should you have any questions, please contact Maintenance Manager, telephone number.

Very Truly Yours,

Maintenance Manager



Activation of Mobile Equipment Team's

In order to activate the MET, the direction must come from the District Executive or their designee. The ADE-M is responsible for all coordination. Requests should first be made within the District to the ADE-M. No equipment or manpower should be moved to another county without the approval of the ADE-M or the designee. If the resources are insufficient, the request can be made to other Districts through the Director for BOMO.

Receiving Organization MET's

For the Organization receiving the MET, they should be prepared with the following:

- o Identify the resources needed:
  - o Manpower Equipment Operators, Foreman, Assistants, Mechanics
  - o Equipment Trucks, Loaders, Backhoes, Graders, Fuel Truck, etc.
- o The number of employees (certifications) needed for the event
- o The number and types of equipment needed for the event
- o The approximate duration of activation for the event
- Accommodations for the employees that are coming to assist in the event
- o Coordinate cash advancements needed for the incoming employees
- o Time and Location that the incoming crews will meet
- o Supervisor or contact for the incoming crews
- o Phone #'s and radio call #'s for their contacts
- o Specific plan of attack (How, What & Where) for the incoming crews
- o Establish the working hours for the incoming crews
- o Insure all resources are available such as materials and fuel supplies
- o Coding for all payrolls and expense vouchers
- o Ensure that there are sufficient replacement parts for wear items such as plow blades, grader blades and teeth for hoe buckets
- o Completion of an AAR to establish what went well and where improvements can be made

REQUESTING	REQUESTING	
ORGANIZATION:	OFFICIAL:	

Number of Employees Needed for Event:	<u> </u>	
Equipment Needed	Certifications Needed	
		_
		4
		_
		_
		╛
Approx Duration of Event:		
Working Hours:		
Supervisor or Contact:		
Phone & Radio Call #'s		
Meeting Time & Location:		
Coding for Payroll and Expense Vouchers:		
Accommodations for Incoming Employees	Yes No	
Cash Advances Needed For Incoming Employees		
Sufficient Replacement Parts Available		
Necessary Materials and Supplies Available		
AAR Completed		

Plan of Attack (How, What, & Where):

Sending Organization Mobile Equipment Team's

For the Organization sending the MET, they should be prepared with the following:

- Assess current status of needs and forecast for immediate 48 hours
- In winter, follow District protocol for shifts (A & B Shifts)
- Names and employee numbers of those being deployed
  - Send sufficient # of supervisors for # of individuals being deployed
- Equipment types and numbers for those being deployed
  - o Ensure Equipment is completely fueled before deployment
  - o Verify if Fuel is available at the receiving county
- Special needs, if any, for employees and equipment being deployed
  - o Are lowboys needed to move equipment, will they be required to stay or return to their home county
- Phone #'s and radio call numbers for crews Voice Group Protocol
  - o Send hand held radios for use off network if required
- Provide employees with the following:
  - o Contacts for the organization that is receiving the crews
  - o Map of the area were the crew is deployed and directions
- Contact from the sending organization
- If necessary, assist receiving organization with hotel accommodations, expense and hotel vouchers
- Questions to ask receiving organization:
  - o Are there enough critical resources available such as fuel, salt, anti-skid, subbase, rock etc. for the task(s) at hand
  - o Do they need any resources sent with the crews when they respond
  - o If there are equipment breakdowns, will the receiving organization be responsible for repairs or will the equipment be sent back to the county of origin

SENDING ORGANIZATIO	on:	SENDING OFFICIAL:	
Number of En	nployees Sent:		
Employee #	Name	Certifications	
Approx Durat	ion of Event:		
Sending Orga	nization Contact:		
Receiving Org	ganization Contact:		
Crew Phone &	k Radio Call #'s:		
Meeting Time	& Location:		
Accommodati	ons Needed for Employees	Yes No	
Cash Advance	es Needed for Employees		
Are Sufficient	Replacement Parts Available		
Are Necessary	Materials and Supplies Available		
Will Receivin	g Organization Handle Repairs		

## **Appendix G - MET Checklist**

Number and Type of Equipment Sent:			
Equipment	Type	Equipment Number	

Special Needs for Equipment or Employees Being Deployed:	

Revision 1-9/24/07

## Appendix H - Dry Run Checklist

#### **DRY RUN CHECKLIST – ROADWAY CONDITIONS**

DATE			COUNTY	
OPERATOR			STATE ROUTE	
FOREMAN			BEGIN SEG/OFF	
ASST. CMM			END SEG/OFF	
	uired for each State Route in each fo			
	OFFSET. For offset identification, indic , "M" if near the middle of the segme			nazard by using "B" if near the beginning
of the segment	, with theat the initiale of the segme	:111, (	or E il liear the end	of the segment.
	DRAINAGE FACILITIES OR O	THE	ER AREAS THAT N	EED DELINEATORS
	SURFACE AN	ID S	HOULDER POTHO	DLES
	ROADSIDE OBSTRU	ICTI	ONS (SUCH AS M.	AILBOXES)
			<del></del>	
			<del></del>	
	<del>_</del>			· · · · · · · · · · · · · · · · · · ·
	WEIGHT RESTRI	CTF	ED SEGMENTS / B	RIDGES
	WEIGHT RESTRIC	CIL	D SEGIVILIVIS / D	MIDGES
	I	LOV	W WIRES	
	OVER	≀НА	NGING LIMBS	
	<u> </u>			

## Appendix H - Dry Run Checklist

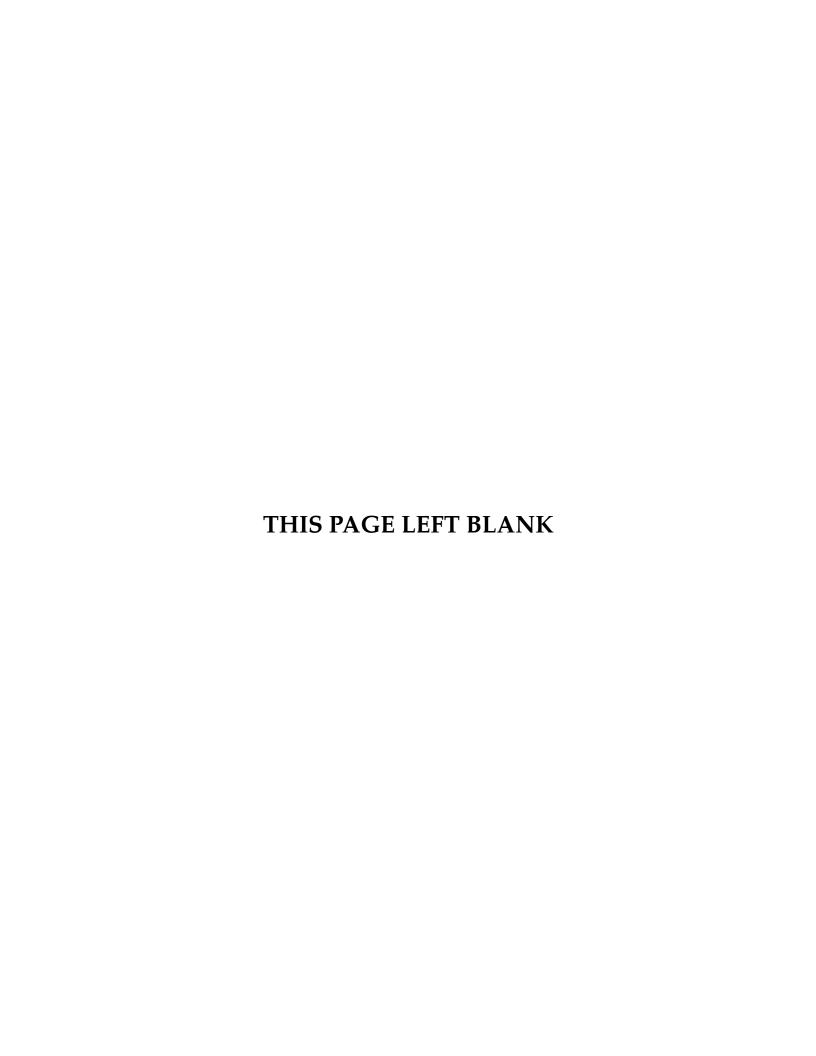
#### **DRY RUN CHECKLIST – ROADWAY CONDITIONS**

POSSIBLE WATER OR ICE PROBLEMS (BASED ON AREAS PREVIOUSLY S	ERVICED)
	-
GUIDERAIL (HITS, ROTTED POSTS, ECT)	
GOIDEIN NE (11113), NOTTED 1 0313, E017	
	•
LOW SHOULDERS (INCLUDE APPROXIMATE LENGTH AND DEPTH OF LC	W AREA)
ADDITIONAL COMMENTS	

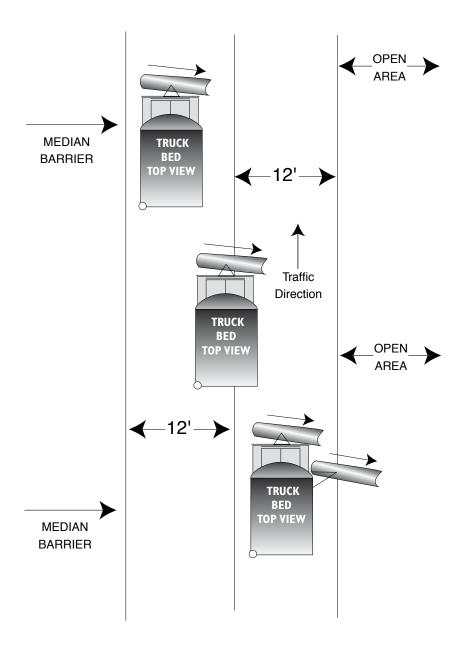
## Appendix H - Dry Run Checklist

#### **DRY RUN CHECKLIST – EQUIPMENT**

DATE		COUNTY			
ASST. CMM		STOCKPILE			
EQUIP NO.		PLOW NO.			
SPREADER					
SECTION SNC	DW MAP WITH ASSIGNED STATI	E DOLLTES DRIODITIE	:c	YES	NO
	ND ROUTES COLOR CODED TO	,			
INDICATED A	ND ROOTES COLOR CODED TO	INCLUDE TOTAL LAN	IE IVIILES.		
HAS SPREADI	ER BEEN CALIBRATED AND IS CA	ALIBRATION CARD IN	I TRUCK?		
EMERGENCY	<b>EQUIPMENT IN CAB (FIRE EXTI</b>	NGUISHERS, TRIANG	iLE,		
INSURANCE (	CARD, OWNERS CARD, BRIDGE	PERMITS)?			
			_		
IS TRUCK RAI	DIO EQUIPPED?		_		
INSPECT AND	OPERATE SPREADER (NOTE AN	NY DEFICIENCIES ON	M-614)		
INSPECT AND	MOUNT PLOW (NOTE ANY DE	FICIENCIES ON M-61	.4) _		
MOUNT TIRE CHAINS AND INSPECT. CHECK FOR SPARE CROSSLINKS. CHECK ALL RUNNING AND EMERGENCY LIGHTING.					
HAVE ALL OBSTACLES AND OBSTRUCTIONS ON ASSIGNED ROUTES BEEN PROPERLY DELINEATED?					
ARE ALL POSTED BRIDGE PERMITS AVAILABLE?					
HAS ASSIGNED OPERATOR BEEN TRAINED ON THEIR ROUTE AND PROPER SNOW REMOVAL?					
HAS THE EQUIPMENT BEEN CLEANED AND RECEIVED MAINTENANCE BY THE OPERATOR?					
OPERATOR SIGNATURE DATE					

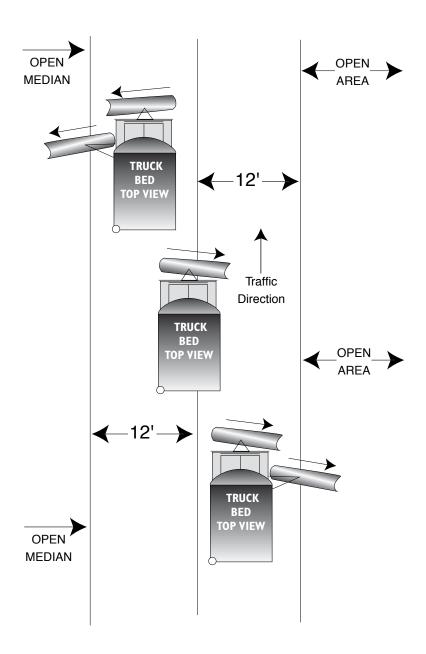


# **Appendix I - Plow Train Drawing PLOW TRAIN WITH RIGHT WING**



Use overlapping passes to avoid leaving windrows in the traveled portion of roadway. Spreading patterns will depend on type of equipment (Tyler or Conventional) and areas to be cleared. Spreading with the first truck will assist in clearning snow from median barrier, ensure that while spreading your other trucks are not removing deicing chemicals. Adjust your spread pattern to maximize the chemicals used.

## Appendix I - Plow Train Drawing PLOW TRAIN WITH LEFT WING



Use overlapping passes to avoid leaving windrows in the traveled portion of roadway. Spreading patterns will depend on type of equipment (Tyler or Conventional) and areas to be cleared. Spreading with the first truck will assist in clearning snow from median barrier, ensure that while spreading your other trucks are not removing deicing chemicals. Adjust your spread pattern to maximize the chemicals used.

PUB 23 (7-10) Chapter 5: Shoulders

## CHAPTER 5 SHOULDERS

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PUB 23 (7-10) Chapter 5: Shoulders

#### 5.1 GENERAL

The term "shoulder" refers to the graded area or surface adjacent and parallel to the traveled way, whose purpose is to give lateral support to the road surface and to be used by traffic in emergency situations. Shoulders should be stable enough to support normal traffic loading, and their surfaces should be adequately sloped to provide for the quick removal of surface water from the roadway into the drainage system.

Shoulder drop-offs can present a hazard to the motoring public. Drop-offs greater than two inches, whether created by maintenance operations or routine edge deterioration, should be scheduled and addressed as resources permit. Signing and or delineation may be required in the event repairs can not be completed in the short term. See Publication 408 section 901.3 (j) for guidance in this area.

Shoulder maintenance can be performed throughout the year but the most desirable times are when sufficient moisture is present to provide maximum compaction and densities. This phase of highway maintenance is of major importance, because the failure of a pavement often starts at the joint between the roadway and shoulder. Shoulder maintenance also includes the areas just outside the normal shoulder, but not beyond the legal right-of-way limits such as approaches to the roadway at side roads on the state system, turnouts for school bus stops, and graded surfaces adjacent to rural mailboxes. At entrances to private drives and places of business, the Department will not be responsible for the maintenance of theses areas within the normal shoulder width. Maintenance in these cases shall be by the owner (Ref. 5.8).

## 5.2 SHOULDER MAINTENANCE SCHEDULE

The Department Maintenance Manager should plan the routine maintenance of shoulders in accordance with a detailed seasonal schedule. The following is a list of items which may require completion during each season of the year. It is meant as a guide in the development of the county seasonal work plans.

#### SPRING:

- (1) Field inspection of shoulders by county maintenance personnel to determine the amount and type of maintenance work required and the priority of that work.
- (2) Conduct inventory of concrete shoulder patching and joints that will need to be sealed in the fall.
- (3) Patching of bituminous paved shoulders.
- (4) Grading, rolling and the application of dust palliatives to earth or stabilized shoulders to attain proper grade and slope, and to remove false, or secondary, ditches or gutters.
- (5) Cutting high shoulders and refilling scoured areas to ensure proper drainage, and to provide for the safety of the motoring public, with priority given to routes on scheduled surface treatment programs.
- (6) Posting of low and/or soft shoulder areas on medium and heavily traveled roads, in the interest of traffic safety.

#### **SUMMER:**

- (1) Continue cutting high earth shoulders.
- (2) Continue routine grading and rolling of sod, earth or aggregate shoulders and replacing of lost shoulder material where needed.
- (3) Rebuilding and stabilizing shoulders with aggregate where possible.
- (4) Surface treatment when needed on stabilized, paved and combination shoulders.
- (5) Removing all false ditches along shoulders.
- (6) Mowing of sod shoulders.
- (7) Raising low spots on paved shoulders.
- (8) Making permanent repairs to the surface and/or base on paved shoulders.
- (9) Resurfacing paved shoulders.
- (10) Continue applying dust palliatives.
- (11) Continue routine inspection of all shoulders.
- (12) Patch concrete shoulders.
- (13) Upgrade shoulders where necessary.

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#### **FALL:**

- (1) Continue cutting high earth shoulders.
- (2) Continue routine grading and rolling of all earth shoulders.
- (3) Replace shoulder material to assure proper cross-section of shoulder.
- (4) Stabilize spots that show signs of erosion and instability.
- (5) Completion of improvements and major repairs.
- (6) Sealing all cracks and the joint adjacent to rigid pavement. Care shall be taken as to not cover edge of pave/fog line with sealant.
- (7) Continue routine inspection of all shoulders.
- (8) Seal joints on concrete shoulders.

#### WINTER:

- Grading and adding of material to all shoulders that have become excessively rutted, when weather and soil conditions permit.
- (2) Patching potholes in paved shoulders.
- (3) Continue routine inspection of all shoulders, paying particular attention to ice conditions caused by improper shoulder grade and/or encroachments onto PennDOT right-of-way.

## 5.3 SHOULDER CATEGORIES AND MAINTENANCE

The several types of shoulder surfaces may be broadly grouped into the following four general classifications:

- 1) Earth shoulders.
- 2) Stabilized shoulders.
- 3) Paved shoulders.
- 4) Combination shoulders.

The proper maintenance procedures are different for the various types of shoulder surface. These procedures will be explained in the following sections. A brief description of each type will be given first.

#### 5.4 EARTH SHOULDERS

Most earth shoulders are capable of supporting vegetation; this covering normally will be established by natural growth without artificial seeding. Granular material may be added to the native soil to give increased stability to the surface. The amount of granular material added must not be enough to interfere with the natural drainage runoff. An earth shoulder should have a minimum slope of 3/4 inch per foot and maximum slope of 1 1/2 inches per foot of width.

Earth shoulders are not practical on heavily traveled roads. However, on local service roads and rural roads, an earth shoulder provides a relatively stable surface and will resist erosion. Where earth shoulders are used on a road, certain portions should be upgraded by the addition of aggregate. Some of these locations are at roadside turnouts, mailboxes, entrances to driveways, the insides of some curves, and intersections. When an improperly constructed drive entrance or approach causes a drainage or any other undesirable condition, the owner should be contacted and advised of his/her responsibility to correct the condition.

An earth shoulder should be maintained with a **minimum** cross slope of 3/4 inch per foot. A flatter slope will not assure rapid runoff of surface water.

Maintenance of earth shoulders consists of the following operations:

- 1) Mowing.
- 2) Repair of ruts, holes, and low spots to the graded contour.
- 3) Cutting or grading high areas to return to proper cross slope.
- Providing stabilized areas at roadside rest locations, mailbox turnouts, and at all other critical locations.

Earth shoulders should be mowed as required, but a minimum of twice a year—late spring and mid-fall—to keep vegetation sufficiently low for safety. The Foreman responsible for the mowing of earth shoulders should coordinate the operation of picking up litter along the roadside before the mowing operation. This will reduce the chance of the mower hitting an object, causing damage to employees and/or equipment and private property.

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Damage to an earth shoulder in the form of ruts caused by traffic or erosion should be repaired by scarifying, adding select material if needed and compacting to conform to proper shoulder cross slope. Holes and other low spots in a shoulder should be repaired in a similar manner.

If ruts continue to occur on the inside portion of an earth shoulder, the original soil adjacent to the roadway should be removed to a average depth of 6 to 8 inches, the full width of the rut, usually 2 to 3 feet. The trench should then be backfilled with a mixture of granular material and soil. For extreme or persistent rutting, the addition of bituminous material to the affected area should be considered. Upon completion of the compaction of the added material, the new portion of the shoulder should be flush with both the adjacent roadway and the remaining portion of the shoulder.

The surface of an earth shoulder has a tendency to become too high as a result of the growth of vegetation, the collection of anti-skid and foreign material and the action of frost. It is sometimes possible to remove the effects of frost heave by compacting with a three (3) wheeled roller when weather conditions permit.

When rolling will not depress a high shoulder sufficiently, it is necessary to regrade or "cut" the shoulder. If proper precautions are taken, this work can be done by graders without serious or permanent damage to the root structure of the sod present. The remaining root system will soon cause the sod to regrow. Grading should be followed up by rolling, except in extremely wet or muddy areas.

Graded aggregate or similar stabilizing material may be added at certain times of the year where necessary to prevent rutting of turnouts for roadside rest areas, scenic overlooks, and mailboxes, taking care not to raise the shoulder or flatten the shoulder slope. During the winter and extended periods of bad weather, these locations may require special attention.

#### 5.5 STABILIZED SHOULDERS

A stabilized shoulder usually consists of coarse, graded aggregate spread on or incorporated into the existing natural soil. If the aggregate is spread in a separate layer, it is usually laid on a prepared subgrade. Typical aggregates that are suitable for stabilizing are limestone, slag, gravel, or reclaimed

asphalt (RAP). When RAP material is used the requirements of the General Permit WMGR090R018 apply. (Material will be obtained from a permitted stockpile and documentation kept of the quantity shipped). Chemical and bituminous materials **may** be used to stabilize granular materials. When RAP materials are used, compaction and sealing are **required** by the general permit.

In some cases, stabilization may be obtained simply by the progressive addition of granular material. In other cases it may be necessary to add some graded aggregate and binder and use mechanical mixing equipment.

The degree of stability of the shoulder depends on the soil/aggregate mixture used. The addition of a well-graded granular surfacing material to a natural earth shoulder will provide stability and produce a good all-weather shoulder. After the first application of aggregate, it may be necessary to make spot replacements of this material from time to time.

Stabilized shoulders should be constructed and maintained with minimum slope of 3/4 inch per foot of width and a maximum slope of 1 1/2 inches per foot of width. Care should be taken to see that this slope is maintained because shoulders with too little slope will tend to retain water. This water/moisture will soak through the shoulder material and tend to create soft spots. If it is noted during an inspection after a rain that a section of shoulder is holding water, that section should be marked and corrective action taken as soon as is practical. During a heavy rainfall, surface water will run across an unpaved shoulder with a slope that exceeds 1 1/2 inches per foot with enough speed to cause erosion.

Occasional grading and rolling of a stabilized shoulder is required to keep the inside edge of the shoulder at the same level as the outside edge of the pavement and also to move and redistribute loose material to fill ruts. Stabilized shoulders are kept smooth and at the approximate correct cross-section by routine grading and periodic replacement of worn or lost material, the shoulders should be reshaped periodically in order to remove the buildup of anti-skid and foreign material.

Maintenance of stabilized shoulders includes the following:

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- 1) Cutting
- 2) Grading
- 3) Replacement of material
- 4) Reshaping
- 5) Rolling
- 6) Control of erosion
- 7) Application of dust palliative

The most important purpose of routine grading is to prevent the formation of ruts at the edge of the roadway pavement. When such ruts are allowed to form and remain, the edge of the pavement is easily damaged because of the loss of lateral support. Also, during periods of wet weather, ruts/holes will hold water, causing the subgrade and base under the roadway to become saturated, thus producing surface failures. Also important is the prevention of low shoulders which reduce the amount of lateral support provided at the edge of the pavement and could also be a safety factor.

Frequent grading of stabilized shoulders will be required where the shoulder material has poor binding quality, where traffic is relatively heavy, and where a narrow roadway carries a large volume of truck traffic. For routine procedure of the grading and cutting operations, see the foreman's manual.

Another reason for building up a shoulder is the necessity of raising the shoulder when the roadway is resurfaced. To improve an existing stabilized shoulder for this reason, the old surface should be scarified with material added to it, and finally the graded surface should be properly compacted.

If granular material is added to shoulders during a period of dry weather the moisture content must still be at the proper level to achieve optimum compaction. Water or chlorides should be added to the shoulder material before the final grading and compacting. This treatment of chlorides is also good for providing added stabilization where the shoulder material tends to lose fines quickly. Chlorides can be mixed into the aggregate before placing.

If ruts continually recur in an area on the inside of a curve, it may be cost effective to pave the affected area. This is one of the most effective ways of reducing maintenance of the shoulder and the edge of pavement. Such pavement should be a minimum of five inches deep and one to two feet wide consisting of a base course and wearing surface.

The tendency of surface water to erode shoulder material is most severe on steep grades where water flows along the shoulder rapidly and at the low point on a long sag vertical curve where a large amount of water must flow across the shoulder. In order that there will not be excessive erosion of a stabilized shoulder on a steep grade, a uniform cross slope of the proper amount must be maintained for the entire width of the shoulder. The surface water will then be able to run off the shoulder at a suitable velocity along the entire length of the shoulder. If a false ditch or gutter is allowed to form along the outer edge of a shoulder or if a rut is allowed to develop between the pavement and the shoulder, a large amount of water will be concentrated on a small portion of the width of the shoulder until it exerts enough force to break through a weak spot. Such action has been known to wash away a long portion of a shoulder during a single storm. This is especially true where a secondary ditch along guiderail sections prevents the even flow of water over the embankment. A special effort must be made to provide a uniform shoulder grade along all guiderail sections performing side-dozing operations to remove the ridge of anti-skid and foreign materials. Stabilized shoulders that continue to erode after other normal maintenance methods have been tried should be paved as a last resort.

#### 5.6 PAVED SHOULDERS

As the term implies, a paved shoulder is one having a special wearing course. This course may be composed of portland cement concrete, bituminous concrete, penetration macadam, or bituminous surface treatment. The slope of a shoulder of portland cement should be 1/2 inch per foot of width. For bituminous concrete, penetration macadam, or a bituminous surface treatment, the minimum slope should be 3/4 inch per foot of width and the maximum slope should be 11/2 inches per foot of width.

Maintenance of a paved shoulder is similar in many ways to that of a roadway of the same surface type, although the degree of importance is different.

Paved shoulders have been provided on many secondary roads where the volume of traffic is heavy and through urban areas where shoulders are needed to permit vehicles to park and to enter or leave driveways. Also, along such high-speed highways as those of the interstate system, PUB 23 (7-10) Chapter 5: Shoulders

shoulders are paved for improved safety and ease of day to day routine maintenance.

The methods of maintaining paved shoulders correspond to those set forth in this manual for surfaces of similar types. The maintenance of paved shoulders includes the following operations:

- Patching with plant mix bituminous material (hot)
- 2) Surface treatment
- 3) Repair of base failures
- 4) Skin patching
- 5) Sealing cracks and/or joints

When paved shoulders are patched with bituminous material, care should be taken to see that the surface of the patch is even with the surrounding surface. The material used for patching a paved shoulder should be the same as the material of the existing shoulder. The correct procedure to be used in patching a paved surface of a certain type is described in detail by performance standards and also standard concrete patching procedures.

When the bituminous surface on a paved shoulder becomes lean or dry, or oxidizes, the surface should be sealed or surface-treated with liquid bituminous material. The bituminous material will be covered with crushed stone, slag or crushed gravel. This treatment can also be employed to raise a paved shoulder that has had minor settlement. Where the settlement of the shoulder is so great that all the material required to raise it cannot be applied by the method just described in a single surface treatment, a bituminous concrete mixture should be applied using appropriate methods and procedures.

The performance standards provide additional information in regard to the preparation, class of bituminous materials and aggregates used in surface treatment, and the proper procedure for applying the materials.

When shoulders are repaired by surface treatment the finished surface must be flush with the edge of pavement and should slightly overlap the pavement edge.

When the failure of a paved shoulder is due to the failure of the base, the repair procedure outlined in the appropriate performance standard should be followed. In general, repairs of this type include the following operations:

- 1) Scarifying
- 2) Removing and replacing unstable material
- 3) Reshaping the base material
- 4) Compacting material to obtain correct grade and slope

When the failures are caused by water trapped in the subgrade, the use of french drains or underdrains is required. The use of subsurface drainage is covered in detail in the drainage structures section of this manual.

Skin patching should be used under the following conditions: in areas where there is insufficient bituminous material or dryness (oxidation), on bituminous surfaces where raveling or spalling is evident, or on limited areas where there is map or alligator cracking. The importance of skin patching cannot be emphasized enough because of its ability to revitalize a shoulder surface and prolong its life at an economical cost.

Cracks and/or joints in portland cement concrete and bituminous concrete will be sealed as prescribed for each in the respective performance standard. The weakest point in a paved shoulder and the place where most failures start, is the joint between the roadway pavement and the paved shoulder. "Pumping" often develops when joints are not kept sealed and water is allowed to enter. Special attention should be given to the maintenance and sealing of this joint. During winter months, the freeze-thaw cycle has a tendency to break the joint.

#### 5.7 COMBINATION SHOULDERS

In a combination shoulder the surface for a width of 3 to 4 feet adjacent to the pavement is of a higher type than that of the remainder of the shoulder width. Such a shoulder is usually provided on the median side of a dual highway where the amount of traffic does not justify full width stabilization or paving. Without the better surfacing next to the pavement there would be continued rutting and drop-off of the shoulder along the edges of the pavement. A combination shoulder may be constructed by placing a stabilized or paved strip along the inside pavement edge of an earth shoulder, or by placing

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a paved strip along the pavement edge of a stabilized shoulder.

The maintenance of combination shoulders is identical to that for shoulder constructed of similar materials. The nature of maintenance on a portion of shoulder used for an entrance to a driveway or that alongside a mailbox does not differ greatly for normal shoulder maintenance. However, the extent of the repair and maintenance operations may be quite different.

## 5.8 ENTRANCES TO DRIVEWAYS AND SIDE ROADS

Whenever a public road intersects a paved highway, the approach to the side road should be stabilized or paved by the Department to the limits of the right-of-way of the through highway. Whether stabilization or paving is required will depend on the amount of traffic using the side road.

At each approach, the normal shoulder width should be maintained by maintenance forces in the performance of regular routine shoulder maintenance operations. At entrances to private drives and places of business, the Department "will not be responsible for the maintenance of these areas" within the normal shoulder width. Maintenance in these cases shall be by the owner.

The presence of even one improperly constructed entrance along a highway makes it difficult to provide maintenance of the shoulder. Moreover, poor or improper drainage at the entrance often is a direct cause of failure of the road surface, and an improperly constructed entrance sometimes creates a hazard to the traveling public by directing surface water/ice onto the highway pavement. When an improperly constructed drive entrance or approach causes drainage or any other undesirable condition, the owner and District Permit Office should be contacted and advised of his/her responsibility to correct the condition.

## 5.9 MAILBOX APPROACHES AND ROADSIDE REST AREAS

It is necessary at these locations to stabilize shoulders with suitable material and to provide regular maintenance. Proper shoulder slope must be maintained for the full width of the shoulder to insure adequate drainage. The slope should be as previously indicated for a particular shoulder type discussed in this manual.

#### 5.10 ENVIRONMENTAL CONCERNS

Environmental concerns such as wetlands, erosion control, and waterway pollution are to be addressed in the disposal of all excavated and waste materials and in all other actions related to this activity.

All environmental policies, either by PennDOT, D.E.P. or others in effect at the time are to be adhered to by maintenance forces.

PennDOT Publication 464 should be reviewed for BMP's (Best Management Practices), both installation and maintenance of erosion control devices related to shoulder cutting as well as other earth disturbance activities. Under SEM Program objective 433/434 Establish/Maintain SEM Program objectives and targets waste reduction and resource conservation matters apply, along with water quality control matters.

# CHAPTER 6 UNPAVED SURFACES

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#### 6.1 INTRODUCTION

A number of miles of roads in Pennsylvania are unpaved. Maintenance of these roads is very important, for they must carry local traffic between farms and villages. These roads must also serve as links connecting the paved arteries that carry the main streams of traffic.

#### **TYPES OF UNPAVED SURFACES**

The surface of some unpaved roads consist of natural earth. Other surfaces are mixtures of aggregates and clay. The aggregates may be sand, stone, gravel, crushed slag, chert, red dog, or cinders.

A road with a surface of natural earth is constructed by performing simple grading and shaping with the necessary provisions for drainage.

A sand/clay road is maintained by mixing sand and clay in the proper proportions. This type of surface is considered superior to a natural earth road, because a sand/clay road is more resistant to rutting and softening under traffic during periods of wet weather. A better type of road surface for all kinds of weather could be constructed of soil, sand and larger mineral aggregate, such as gravel, stone or slag.

#### 6.2 MAINTENANCE SCHEDULE

Frequent inspection of unpaved roads is required for good maintenance. The surface of an unpaved road must be graded and compacted as required. The surface must be shaped so that surface water will move quickly from the roadway to established waterways. Rapid surface drainage is dependent on smoothness slope and stability. The maintenance of a proper crown or superelevation is essential for good drainage. Each drainage structure must be inspected to determine if it needs to be cleaned, repaired or replaced.

Additional details on unpaved road activities are available in the Performance Standard Section of Publication 113 (Foreman Manual) and BMP's from Pub 464.

#### **DISTRESS TYPES**

Unpaved roads have two primary distress types. These are surface deterioration and surface deformation.

Common types of surface deterioration are:

**Dust** - In addition to being a nuisance, potential safety hazard, and major source of complaints, the production of dust results in a loss of fine, binder aggregates. Fine aggregates hold or bind the larger aggregates in place. The loss of fines reduces the stability of the road surface and leads to other types of distress.

While too much moisture will reduce stability, some moisture is necessary in unpaved road surfaces to provide cohesion between fine aggregate particles. During dry and windy weather conditions, the moisture necessary for cohesion of the fine aggregate is lost by evaporation. Traditionally, dust control has been provided by the treatment of unpaved roads with materials such as calcium chloride, liquid asphalt, salt brine, or water.

Raveling - The loss of the coarser aggregates under traffic is referred to as raveling. In an aggregate surfaced road, fine and course aggregates interlock to form a dense stable surface. The fine aggregates fill the voids between the coarser aggregates and hold or bind the coarse aggregates in place. When fine binder aggregates are lost either as dust or by erosion, the coarse aggregate becomes loose and then can be worn away by the action of traffic. The correction of raveling involves grading or blading with the addition of binder material to improve the gradation of the surface material.

**Slipperiness** - Aggregate surfaces containing excessive amounts of fine aggregate and soil have a tendency to become slippery during wet weather. This condition can be corrected by adding coarse aggregate and by blading and grading.

Common types of surface deformation include:

**Rutting** - Ruts are longitudinal depressions in the wheel paths. Rutting is caused by a combination of factors that include high moisture content in the soil beneath the road surface, inadequate thickness of the surface course, and traffic loads. The correction of rutting requires adding coarse aggregate, grading and rolling. Drainage improvements may also be required.

Corrugations - Corrugations are a series of ridges and depressions across the surface of the road that are perpendicular to the centerline. The lack of cohesion and vehicle speed appears to be major causes of corrugations. Blading only is not a satisfactory repair technique. The cohesive qualities of the surface materials must be improved. This requires remixing to obtain a well-graded mixture that contains a reasonable percentage of fine, binder aggregates. Therefore, correction requires the addition of material to improve gradation, scarifying, grading and rolling.

**Depressions** - Depressions are localized low areas, one or more inches below the surrounding surface. Depressions are caused by traffic, settlement, excessive moisture content and improper drainage. Since depressions tend to collect water, the condition is aggravated with shoving and rutting of the wet surface material by traffic. Correction requires filling the depressions with well graded aggregate, grading and rolling. Drainage improvement will also be required.

**Potholes** - Potholes are generally caused by an excessive moisture content, poor drainage, and poorly graded aggregates. Repairs normally involve spot grading. Spot "patching" with crushed aggregate can also be performed as a short-term corrective measure. Do not use hot or cold patching. Drainage improvement will also be required.

#### MAINTENANCE OPERATIONS

There are eight principal operations in maintaining smoothness and surface drainage:

- 1) Grading and blading
- 2) Scarifying and reshaping the surface to remove corrugations or ruts
- 3) Adding new material
- 4) Patching soft and unstable areas
- 5) Stabilizing by adding chemicals or bituminous materials

- 6) Raking
- 7) Rolling to assure initial and overall recompaction of materials
- 8) Maintenance of drainage system

#### GRADING AND BLADING

Grading should be done in the spring as soon as the frost leaves the ground or as soon as possible after a rain while the surface materials are still moist but not wet. Grading when the road surface is dry may actually do more harm than good since moisture is required to rebond the materials.

It is usually best to begin grading at the outer edge of the road and to work from the ditch to the centerline. The loose material is deposited in ruts, holes, and other low places in the road surface. After the loose material has been brought across the surface from both edges to the center, it should be carried back to both edges in such a manner that all the material is spread over the surface and no surface material is left to form a windrow at the edge of the road. If in the process of grading, unsuitable material such as weeds, trash or topsoil is left in the traveled way, it should be removed so it will not become mixed with the surfacing material. It is advisable to mechanically rake the roadway after the grading operations to remove small windrows and aid in smoothing the surface.

If large rocks are present in the natural soil near the surface of an unpaved road, they tend to work their way to the surface during the grading operation. If such a rock appears, it should be removed and the void filled with suitable material.

Compaction of unpaved roadways by traffic should produce a hard surface crust that helps to hold the surface aggregates in place. Blading or dragging is a smoothing operation performed with the moldboard tilted forward and with light down pressure on the grader blade to minimize disturbance of the surface crust. Blading is used to pull loose material from the sides of the roadway or spread windrowed aggregate to fill surface irregularities and to some extent restore crown. Blading should be avoided during dry periods to minimize the loss of fine aggregates. It is not effective for correcting corrugations or other extensive surface and subgrade failures.

#### ADDING AGGREGATES

The addition of material is usually accompanied by blading and grading, although light applications of medium sized and fine aggregates may be made occasionally to correct slippery conditions. When increasing the depth of the surface, filling depressions, restoring crown and profile, or correcting other problems that require coarse aggregates, well graded aggregate mix should be dumped in windrows along the area to be repaired for spreading by a motor grader. Fine aggregates needed to correct raveling, and in some cases corrugations, are usually obtained by blading material from the shoulders and ditch lines. Fine aggregates can also be hauled and spread in a manner similar to coarse aggregates.

Stabilization typically involves scarifying the existing surface, adding the stabilizing material, mixing in place, grading, and then compacting. Application rates for the stabilizing material vary depending upon the gradation, type, design thickness and moisture content of the aggregate.

#### CORRUGATION REMOVAL

An unpaved road is preferably scarified at a time when the surface material is damp. If new material is needed, it should be added at this time and thoroughly mixed by grading and blending before compaction is begun. After the surfacing materials have been properly mixed, the surface should be shaped to the correct crown or superelevation and rolled. If necessary, water should be added. When water is applied, the surface should be graded and rolled until the material is thoroughly compacted.

#### **RUT REMOVAL**

When ruts occur, the road surfaces should be scarified, graded, suitable material added and rolled. Filling ruts with a large size aggregate is not good practice for the following reasons: (1) these aggregates interfere with subsequent grading operations, (2) traffic will usually slip from these narrow strips of material and will form new ruts alongside the old ones. At best, the use of stone is a temporary expedient and is not worth the expense involved. Draining the ruts, and filling with material from the roadbed is more effective.

#### **ELIMINATING SOFT SPOTS**

Soft spots are generally caused by the lack of proper drainage or stabilizing material. The cause may be a plugged pipe, an improperly placed pipe, the absence of a pipe or the side ditches may not be deep enough to lower the water table to the proper level.

When the soil is in poor condition, the remedy is to replace with a suitable material such as stone, slag or gravel. Often stabilizing material must be laid the full roadway width to a suitable depth to correct the deficiency.

#### **DUST CONTROL**

The basic principle of dust control is to improve the cohesion of fine, binder aggregates. Several methods to accomplish this are available ranging from sprinkling with water to the application of calcium chloride, salt brine, or liquid asphalt.

Sprinkling with water is a very short-term solution that is generally only acceptable as a temporary measure. Short duration construction projects with low traffic volumes are examples of situations where sprinkling with water is appropriate. Maintenance agencies traditionally rely on applying an additive as a preventative measure.

The additive may be calcium chloride, sodium chloride or bituminous material. Treatment of a surface with moisture-retentive or adhesive materials will not prevent failure of the surface due to improper gradation of the soil and aggregate particles in the mixture composing the surfacing.

Calcium chloride, applied either in dry or liquid form, and salt brine draw moisture from the air and improves the cohesion and ability of fine aggregates to retain moisture. Calcium chloride and salt brine are most effective if applied before roads become too dry and dusty. They should also be applied after any necessary grading and blading has been completed. Actual application rates depend upon weather conditions and the type, depth, and moisture content of the aggregates in the road surface. Liquid calcium chloride is typically applied at a rate of

approximately 0.3 gallon per square yard in the spring followed by approximately 0.2 gallon per square yard in the summer. The equivalent concentration of flake calcium chloride may be applied in spring and summer at rates of approximately 1.2 pounds per square yard in the spring and 0.8 pound per square yard for the second application.

Emulsified liquid asphalts can be used for dust control. Liquid asphalts act as a binder to hold the aggregate particles in place and as a seal to slow the evaporation of moisture. Slow setting emulsified asphalts are applied in repeated light applications at rates ranging from 0.1 gallon per square yard to 0.5 gallon per square yard on roads which have been shaped by blading, grading and compacting.

Calcium lignosulfonate can be used for dust control. Each application of this material shall be a minimum of two passes on a prepared surface. For each pass, apply at a rate of 0.5 gallon per square yard, at a dilution ratio of 1:1 (Calcium lignosulfonate to water) dependent upon road conditions and recommendations of the supplier. This material shall be shipped at the dilution ratio specified for each location such that it can be used within a 24-hour period. Properly prepare the roads by blading and grading prior to initial application. Additional reapplication may be necessary at a 4 to 8 week interval dependent upon road conditions. Blading and grading of the road surface is not necessary prior to reapplications.

There is also a list of other approved control palliatives as listed in Bulletin 15. Medium cure asphalt cut-backs have been eliminated from department force projects due to the potential impact on the environment.

# CHAPTER 7 PAVED SURFACES

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#### 7.1 INTRODUCTION

The maintenance of paved surfaces is one of the most visible activities performed by the Department of Transportation, whether by contract or by Department Forces. The Department is judged by the condition of the highway surface. Therefore, it is important that surface maintenance be performed to a uniformly high standard statewide.

The ideal for surface maintenance is to have all pavements on the state system upgraded to a load carrying capacity and surface condition that would virtually eliminate potholes and depressions and provide a smooth and safe ride.

To accomplish this, it is essential that the service life of the good and fair roads be extended by timely and quality maintenance, i.e., liquid skin patching, seal coating, joint and crack sealing, mechanized patching, concrete patching, drainage repair and cleaning and shoulder cutting.

#### **PURPOSE**

The purpose of Chapter 7 is to consolidate and clarify policies and procedures related to the maintenance and preservation of pavement surfaces.

#### **OBJECTIVE**

The objective of Chapter 7 is to insure uniform quality maintenance practices statewide for similar pavement problems without losing sight of local conditions.

#### RESPONSIBILITIES

Assistant District Executive (Maintenance) - coordinates the District's compliance with this policy and reviews the planning, scheduling and performance of the work. The Assistant District Executive or representative performs quality assurance checks on Department Force work to verify that work reported is being checked and meets the high quality standards established by this policy.

**District Equipment Manager** -sees that all aspects of equipment maintenance are carried out

in accordance with Equipment Managers Manual(Publication 177) and applicable "M" Letters. Repair priorities must be given to pothole patching equipment so that it will be ready by March 1.

Maintenance Manager -plans, organizes, schedules and trains personnel for this work. Along with Assistant Maintenance Managers, inspects the work crews and checks the quality of work accomplished. Takes required managerial action necessary to get the job done properly.

Assistant Maintenance Manager -inspects roads and schedules the work, concentrating on high priority roads. Trains Foreman and their crews to do the job in accordance with the latest standards. Personally inspects, or causes to be inspected, all routes assigned to him and records any defects that require maintenance on an M-681(see chapter 3) or other appropriate means to list any corrections needed. Is also responsible to see that the proper combination of men, materials and equipment are scheduled and used to perform all surface repairs. Insures that foreman and crews are doing the work properly. As per Quality Assurance Checklists and the Foreman's Manual.

Field Foreman -organizes the work force and equipment to execute the work in an efficient and productive manner. Participates in the inspection and collection of roadway condition data and is familiar with the performance and quality standards and carries out the work accordingly. Sees that personnel and equipment are productive at all times. While waiting for materials or other items, secondary activities shall be performed. Reports on general road conditions of routes traveled.

#### 7.2 TYPES OF PAVED SURFACES

#### **RIGID PAVEMENTS**

Rigid pavements are those constructed of portland cement concrete. Concrete is a rigid material that is strong in compression and weak in tension. Concrete pavement acts as a beam when carrying a moving load. The load carrying capacity of a concrete pavement is a function of the strength of the concrete, the strength of the subgrade and the thickness of the concrete slab.

#### PLAIN CEMENT CONCRETE

Plain portland cement concrete pavement is a pavement constructed with portland cement and aggregates without reinforcing steel. Shrinkage is controlled by the use of short joint spacing, which is normally 15' to 20'. Load transfer joints are used in the transverse joints and tie bars are used in the longitudinal joint.

## REINFORCED CEMENT CONCRETE PAVEMENT

Reinforced portland cement concrete pavement is a pavement constructed with portland cement, aggregates and reinforcing steel. Reinforcing steel, in the form of welded wire fabric, is used to control shrinkage cracking and does not add to the structural strength of the pavement. Transverse joint spacing may vary from 15' to 61.5', and may or may not be skewed depending on when the pavements were built. Load transfer units are used in transverse joints and tie bars are used in the longitudinal joints.

## CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

Continuously reinforced portland cement concrete pavement is a pavement constructed with portland cement, aggregates and a heavy mat of steel reinforcing bars or welded wire fabric. This pavement is constructed without transverse joints except at structures or where it joins another pavement type. Shrinkage cracks are controlled by the heavy steel mat. The slab will develop cracks 2'-3' apart. Normally these cracks are tight and should not be sealed.

Failures in continuously reinforced pavements should not be repaired by Department Forces without the advice and guidance of the District Pavement Manager.

#### **BITUMINOUS SURFACE PAVEMENTS**

Bituminous surface pavements are those where an established base is surfaced with one or more layers of a mixture of graded aggregate and asphalt. The layers can vary in thickness from 1/2" liquid bituminous surface treatment course to a 5.5" binder course.

#### RIGID BASE PAVEMENT

A pavement with a bituminous surface and a portland cement concrete or brick base is a rigid base pavement. The structural capacity of a rigid base pavement is a function of the concrete thickness and bituminous surface composition and thickness and subgrade support.

#### FLEXIBLE BASE PAVEMENT

A pavement with a bituminous surface on a base other than portland cement concrete or brick is a flexible base pavement. The structural capacity of a flexible base pavement is a function of the thickness and quality of the base course(s), the thickness and quality of the surface course(s) and the strength of the subgrade.

#### CENTRAL PLANT-MIXED PAVEMENTS

Central plant-mixed pavements are those constructed of a mixture of graded aggregate and/or reclaimed asphalt pavement (RAP) that is coated with asphalt (usually hot) in a central plant that may be permanently installed or portable. These mixes are Superpave material, FJ-1, FJ-1C, FB-2 Wearing Course or FB-2 Binder Course and cold recycled base courses.

#### TRAVELING PLANT MIX

Traveling plant-mixes or stabilization plant mixes, are those constructed of a mixture of graded aggregate and/or reclaimed asphalt pavement (RAP) that is coated with asphalt in a traveling plant and placed directly upon a prepared surface. These mixes include FB-1 Wearing Course, FB-1 Binder Course and cold recycled base courses.

## SURFACE TREATED / SEAL COATED SURFACES

A seal coated surface is one where a single application of hot liquid asphalt is applied to a properly prepared surface and covered immediately by a single layer of aggregate. The thickness of the treatment is about the same as the nominal size of the aggregate. A surface treated surface is where two seal coats are placed one on the other. The aggregate size of the top layer is

usually smaller than the bottom layer; and may sometimes consist of RAP Materials.

## 7.3 RIGID PAVEMENT MAINTENANCE

The goal of rigid pavement maintenance is to maintain a smooth riding pavement, without an overlay, for as long as possible. This is accomplished by:

- 1) Emphasis on joint sealing, permanent joint spall repair, concrete patching, and pothole and surface spall repair.
- 2) Slab jacking of settled slabs before more serious failures occur.

#### **ROUTINE MAINTENANCE**

Routine surface maintenance activities are those which are done primarily by Department Forces to provide preventive maintenance and otherwise maintain the integrity of the pavement until such time as surface improvement is required and programmed. They are activities that are included in the Long Term Plan and scheduled on the Work Order.

#### POTHOLE PATCHING

This activity includes the preparation and patching of potholes and deteriorated concrete in concrete pavements. The potholes normally occur along cracks and longitudinal or transverse joints, and may extend the full depth of the slab.

Bituminous pothole patching of concrete pavements by Department Force is considered to be temporary patching. The procedure for making these temporary patches is different from permanent patching done on bituminous surfaces. Squaring and cutting of the hole is not required.

Potholes should be thoroughly cleaned. All loose and broken concrete should be removed and the hole blown clean and dried with compressed air.

The clean, dry surface should be tacked with an approved tack coat material in accordance with

Section 460.3(b), Publication 408. Tack coat is to be used with hot mix patching materials. Synthetic resin tack material shall only be used on dry surfaces and applied with an approved applicator. After the tack coat has been applied and allowed to cure, the bituminous material is to be placed in lifts not exceeding 6.0" in compacted depth when using 25.0 mm Superpave Mix or 4.5" in compacted depth when using 19 mm or 2 when using 9.5 mm Superpave Mix (in compliance with Pub 242, Table 9.5). The material in each lift should be worked into the corners with the blade of a shovel.

After leveling, each lift should be compacted with an approved mechanical tamper. Care must be taken when placing the last lift to insure that, after compaction, the surface of the patch is 1/8" to 1/4" above the surrounding pavement.

It is not necessary to edge seal bituminous patches in concrete pavement.

#### **SURFACE REPAIRS**

Surface repairs are those made to restore the riding surface of the pavement. Primarily, they are repairs of surface spalls, popouts and scaling. Spalls and popouts are surface defects that occur in the slab away from a joint. Generally, they are circular in shape and extend down to the reinforcing steel. Spalls may be temporarily repaired with the standard bituminous patching procedures previously described for pothole patching on rigid pavements. An alternate procedure is the spray patch method, which may be used on Type 3 concrete pavements. A spray patch is made by filling the hole with alternate layers of a liquid bituminous material, such as RS2, CRS2 and Number 8 or Number 9 aggregate. The spalled area should be thoroughly cleaned and dry (the hole may be damp when emulsions are used). Saw cutting is not required. A thin film of bituminous material shall be sprayed on the clean, dry surface. Sufficient Number 8 or Number 9 aggregate is placed in the hole to completely cover the bituminous material. This procedure is continued until the level of material in the hole is slightly above the surrounding pavement. The completed patch shall be compacted with a roller. All foreign material should be removed from the pavement surface around the patch prior to compaction to insure full contact of the roller with the patching material.

Popouts are also surface defects that occur in the slab away from a joint. They occur where the expansion or deterioration of single pieces of coarse aggregate have caused a small pit in the surface. Popouts are normally too small to be individually repaired. If serious enough to adversely affect the riding quality of the pavement, they may be repaired with a mechanized patch or slurry seal. Scaling, another type of surface defect is the complete loss of the cement mortar matrix that covers the aggregate, leaving a rough textured riding surface. Scaling may involve an area several feet square or the entire slab. Depending upon the severity and scope, a scaled surface can be rehabilitated with a mechanized patch, slurry seal, grinding, or resurfacing. The taper at the end of a mechanized patch or overlay shall conform to Construction Standard RC-28.

#### **BLOWUPS**

Blowups are characterized by a tenting effect at a transverse joint caused by expansion of the pavement on either side of the joint. This expansion causes the adjacent pavement slabs to rise off the subgrade and may create an obstruction to traffic. The expansion is caused by high summertime temperatures and usually occurs in pavements where the transverse joints have not been properly maintained and are filled with incompressible material. Blowup repair can be classified as an emergency repair, depending upon the severity of blowup.

Where the blowup is causing an obstruction to traffic the following temporary patching method shall be used. The pavement should be saw-cut transversely on either side of the blowup. All concrete is removed between the saw cuts. Additional saw cuts may be necessary to break the slab into manageable size pieces. The subgrade should be leveled and compacted. Superpave HMA material shall be placed in lifts not to exceed 5.5" in compacted depth. This is considered to be a temporary repair.

Care should be taken not to bind saw blade in the cut by back pressure of concrete slab.

A permanent repair in accordance with Construction Standard RC-26 should be scheduled to repair a blowup that is not obstructing traffic or to replace a temporary patch.

#### **CRACK AND JOINT SEALING**

This activity includes the cleaning and sealing of random cracks and transverse and longitudinal joints in plain or reinforced portland cement concrete pavements.

Crack and joint sealing is required to prevent the intrusion of incompressible materials into cracks and/or joints and the infiltration of water into the underlying subbase and/or subgrade. Timely and proper sealing will maintain the integrity of the joints and pavement. It is anticipated that a properly cleaned and sealed joint will last at least five years.

Joint problems can be divided into several categories: seal failures, transverse joint spalling, and longitudinal joint spalling. Corrective measures include spot joint sealing, joint cleaning and sealing, joint rehabilitation, joint spall repair or joint replacement.

Concrete pavements are divided into three types, based upon the expected service life of the pavement. Joint maintenance will vary according to the type of concrete pavement.

- Type 1 These are pavements that have an expected service life of ten years or more. Joints in these pavements should be rehabilitated. Where not physically possible, sealing methods for Type 2 pavement shall be used.
- Type 2 These are pavements with an expected service life of five to ten years. The best available cleaning and sealing technology should be used on these pavements.
- Type 3 These are pavements with an expected service life of zero to five years and/or are candidates for a surface improvement project. Minimum cleaning and sealing procedures may be used on these pavements.

Type 3 concrete pavements shall be identified by the Maintenance Manager and approved by the District Executive. All other concrete pavements shall be considered Type 1 or Type 2.

Joint sealing shall be done in accordance with Performance Standard 711-7147-01 "JOINT SEALING CONCRETE ROADS". Joint sealing should only be performed when the pavement temperature is above 40oF and is best performed between 45oF and 55oF. No sealing should be done sooner than 24 hours after any precipitation or if there is moisture in the joint.

Spot sealing will normally require minimal cleaning equipment. Cleaning may be done with hooks and compressed air to remove any loose sealant for spot sealing Type 1 and Type 2 concrete pavements with Type IV (ASTM D-6690) on Type I pavements and Type I (ASTM D-6690) on Type II pavements. Prepackaged AC with rubber may be used on Type II pavements with district approval. Preferred sealant for Type 3 concrete pavements is AC and rubber or Type I (ASTM D-6690).

When cleaning and sealing is required, the joints should be thoroughly cleaned and dried before sealing. Joints in Types 1 and 2 pavements should be cleaned with either high pressure water or saw cutting, and/or sandblasting and compressed air. The use of backer rod may be required. It is imperative that the sealant is placed1/4" below the pavement surface. Type 3 pavements may be cleaned by any method that removes all nonbonded sealant and rubber.

Random cracks should be cleaned and sealed using the same method as the transverse joints.

The longitudinal joint is to be air blown and sealed.

The shoulder joint should be air blown and sealed with any material. The preferred material is prepackaged AC and rubber.

#### **JOINT REHABILITATION**

Joint rehabilitation is the creation of an adequate sealant reservoir in a joint and sealing of existing transverse contraction, construction, or expansion joints. Joint rehabilitation may also be required on the longitudinal joint.

This work shall be done in accordance with the latest standard RC-26.

#### JOINT SPALL REPAIR

Joint spall repair is the repair of spalls adjacent to longitudinal or transverse joints. The condition is characterized by the cracking, breaking or chipping of slab edges adjacent to a longitudinal or transverse joint. It usually does not extend through the thickness of the slab but meets the joint at an angle.

#### **JOINT REPLACEMENT**

Joint replacement is the replacement of the entire transverse joint. It is intended to repair crushed joints or joints which have several spalls. Normally, an area of four feet on each side of the existing joint would be removed and replaced.

#### **SUBSEALING**

Subsealing is the stabilization of faulted slabs with grout or polyurethane foam pumped beneath the pavement. It is intended to be used where minor faulting has occurred.

#### SUBSEALING AND SLABJACKING

Subsealing and slabjacking is correction of minor settlement of the slabs and the filling of voids beneath the pavement. It will also be used to correct isolated faulting of slabs. Subsealing around the raised slab is performed to ensure all voids are filled.

## SUBSEALING, SLABJACKING, AND GRINDING

Subsealing, slabjacking and grinding is the filling of voids beneath the pavement, the correction of minor settlements and the grinding of the surface to restore the profile on major rehabilitation contracts. Grinding is done after subsealing and slabjacking. It is generally done as a part of a concrete rehabilitation project.

#### **OVERLAY**

This is resurfacing of an existing pavement to restore the pavement to smooth riding condition. Overlays include both bituminous and concrete. Microsurfacing can be used for texturing purposes.

#### FULL-DEPTH CONCRETE PATCHING

Full-depth Department Force concrete patching should be limited to isolated spot repairs which may potentially present a safety problem to the motoring public and when there is a need to act in a timely manner.

Isolated spot repairs shall be defined as a maximum of 100 square yards per lane mile (approximately 35 cubic yards of concrete).

Requests for exceptions to this policy shall be submitted to the Director of the Bureau of Maintenance and Operations for approval.

## 7.4 BITUMINOUS PAVEMENT MAINTENANCE

#### ROUTINE MAINTENANCE

Routine surface maintenance activities are those which are done primarily by Department forces to maintain the integrity of the pavement until such time that surface improvement is required and programmed. They are included in the Long Term Plan and are scheduled on the Work Order.

#### POTHOLE REPAIR

The objective of manual pothole repair is to have the County Maintenance Organization plan, schedule and carry out pothole repair work in accordance with Maintenance Performance Standards. The work is to be done correctly with properly staffed and equipped crews to meet this objective.

The repair of potholes on the Priority Commercial Network should have first priority. After patching of these roads is accomplished, potholes on lower volume roads and other work such as shoulder cutting and grading, bridge maintenance, surface treatment and guiderail work may be scheduled.

There should be at least one foreman in each Assistant Maintenance Manager's area who is designated and equipped to quickly respond to complaints of isolated potholes. Priority is to be given to the high traffic roads. This is not to be a "dump and run crew". These crews are to patch according to standard and should be provided

with complete and comprehensive work area protection and all required equipment and materials.

All pothole repair equipment should be overhauled and repaired during the winter months and be ready for use as soon as possible, but no later than March 1st of each year. Bids for rented equipment, when required to supplement Department equipment, should be obtained in sufficient time to have it available by March 1st. All Department equipment should be scheduled before utilizing rented equipment.

All bituminous materials shall conform to the applicable requirements of Publication 27, Publi¬cation 37 and Publication 408.

Special Bituminous Patching Materials are listed in the Miscellaneous Section of Publication 35, Approved Construction Materials.

Tack Coat material shall be AE-T.

Manual pothole repair is to be done in accordance with Performance Standard 711-7121-01,"PATCHING -MANUAL", except as noted previously in this section.

The Performance Standard 711-7121-02, "PATCHING -MANUAL, EMERGENCY" pothole repair should be used only for emergency repair during nonstandard, unscheduled work hours, such as call-outs on weekends or holidays or during normal working hours in the periods of extended severe winter weather. All other potholes should be patched in accordance with Performance Standard 711-7121-01, "PATCHING MANUAL".

Mechanical cutting is not required on roads that are programmed for mechanized patching, leveling and a bituminous surface, a 381 or 383 project or roads that have high density pothole situations where identifying individual potholes is difficult. Such roads must be identified and approved by the District Executive or Assistant District Executive (Maintenance).

Spray patching utilizing specialized equipment which applies the material under pressure is also approved.

If a contractor is used for spray patching, the following specification will be used:

Mobile Road Patcher with qualified operator who possesses CDL qualifications appropriate to vehicle classification. All required safety and operational equipment, work lights, reverse direction alarm and a revolving or strobe light provided by vendor. Unit should also have a minimum 5 cubic yard aggregate hopper. The unit must be able to move while patching. The contractor must supply all asphalt, oil and washed aggregate. Materials must meet Pub.408 specifications and be obtained from an approved source. The contractor will also ensure that proper oil and aggregates are used to guarantee positive chemical bond of oil and aggregate. The materials provided shall be appropriate for the particular project, regardless of temperature. The Department will not be responsible for time required for equipment servicing/maintenance. Contractor is responsible for all fuel, lubrication, maintenance and insurance. Contractor is also responsible for proper disposal of waste products created during machine clean out.

The contractor shall be responsible to ensure all equipment and operators are in compliance with applicable Federal and Pennsylvania motor vehicle laws.

Contractor will report to jobsite as directed by the Department. Contractor is required to respond within 48 hours of notification. Hours of payment shall be based on actual hours worked. No payment is to be made for travel time to and from county of work, scheduled breaks or time required for equipment repair/service.

Roadway repairs made by contractor must carry a 14 day minimum warranty. Contractor shall repair failed areas at no cost to the Department. The Department will be responsible for WZTC during all operations to include warranty repairs. Contractor must be available to work at any time of the year regardless of temperature.

All quantities are estimated. Payment by the Department to the contractor will be based on actual usage.

Modified patching procedures may be used on pancake or piecrust roads. Those procedures are:

 Remove weak and/or deteriorated material from the edge of the hole with a pick, mattock or other appropriate hand tools. 2) Fill with cold mixed material in maximum 6" layers and compact or fill hole to top of base with unbound Number 8 or Number 57 aggregate. Apply a light coat of liquid asphalt followed by alternate layers of aggregate and asphalt until flush or slightly higher than the adjacent surface. Compact the final layer of asphalt and aggregate. Skin patch the patched area and all adjacent surfaces that show signs of distress.

#### **CRACK SEALING**

This activity includes all actions related to crack sealing bituminous surfaces with prepackaged material in a non over banding operation. Activity includes routing of cracks where required(working transverse and single random cracks), cleaning of cracks, applying material and squeegeeing on rigid or flexible base roads. The objective of this operation is to prevent more serious pavement distress such as base failures or potholes.

Only well defined cracks, 1/2" to 1" in width shall be sealed. Areas that have multiple cracks or cracks less than 1/2" wide should be skin patched. Cracks that vary in width within the prescribed parameters shall be sealed along their entire length. Care must be taken not to overlap, run together or cause a dense amount of sealant to accumulate on the pavement.

Routing is required for transverse cracks and single random cracks when the pavement is less than 5 years old and is not scheduled for resurfacing for at least 2 years. Do not rout areas that contain a significant amount of old sealant material. Create a reservoir for sealant material with the router that has the approximate dimensions of 1/2" wide and minimum 1/2" deep. The pavement layer on which cracks are being sealed must be a minimum of 11/2" in depth.

It is very important that all cracks be dry. A Hot Compressed Air Lance shall be used to dry all damp cracks. Care must be taken so as to not burn, scorch or damage the pavement.

ONLY prepackaged sealants are accepted for use. The preferred material for roads with multiple cracking situations (with cracks that require routing and cracks that don t require routing) is TYPE I – ASTM D-6690. It is also important to heat and apply the sealant being used to the manufacturers specifications both for quality performance and safety concerns. The temperature limits as listed on the outside of the shipping package shall be adhered to at all times.

All cracks should be uniformly filled and sealed. Cracks shall be sealed by placing the applicator wand in or directly over the crack and carefully placing the sealant to just fill the crack –concave disk applicator heads are no longer used. The sealant shall be wiped off flush with the pavement surface using a squeegee. Only a narrow, thin film of material shall be permitted on the pavement surface. The film shall not be greater than 3" wide and 1/32" thick. Sealant placed in excess of these dimensions shall be removed.

Crack sealing shall be done in accordance with Publication 408 and Performance Standard 711–7128-01, "CRACK SEALING – BITUMINOUS SURFACE, RIGID AND FLEXIBLE BASE."

#### **SKIN PATCHING**

Skin patching is the application of a layer of liquid bituminous material and a layer of aggregate to seal limited areas of minor cracking, weathering or raveling. It can be done manually or mechanically.

All bituminous materials shall conform to applicable requirements of Publication 37 (Bulletin25), Specifications for Bituminous Materials.

RS-2	Emulsified Asphalt
CRS-2	Emulsified Asphalt
RS-2PM	Polymer Modified Emulsified Asphalt
CRS-2PM	Polymer Modified Emulsified Asphalt

Skin Patching shall be done in accordance with Performance Standards 711-7127-01, "SKIN PATCH -LIQUID BITUMINOUS, MANUAL" or 711-7127-02, "SKIN PATCH -LIQUID BITUMINOUS MECHANIZED."

All surfaces to be skin patched should be clean of all loose and foreign material. The surface is to be broomed if necessary. Areas to be patched manually should be marked by the foreman.

When using emulsions the air, surface and aggregate temperature should be 60F or above and rising. No emulsified asphalt shall be applied if rain is expected within 24 hours.

Mechanized skin patching will follow the procedure as described below under "Bituminous Treatments, Liquid Bituminous", including weather limitations.

The use of spray patching equipment to address alligator cracking and isolated edge deterioration is also recommended.

Manual skin patching may be done in cooler weather if the benefits, assuming aggregate loss, exceed the potential negative impact.

#### LIQUID BITUMINOUS TREATMENTS

A liquid bituminous surface treatment is the sealing of minor cracking, weathering and raveling over large areas with two applications of a layer of liquid bituminous material and a cover layer of aggregate for each bituminous layer. A liquid bituminous seal coat is a single application of liquid bituminous material and aggregate. It should be done before major distress occurs in the pavement. It is the most effective tool for extending the life of rural bituminous pavements.

All bituminous materials shall conform to applicable requirements of Publication 37 (Bulletin25).

RS-2	Emulsified Asphalt
CRS-2	Emulsified Asphalt
RS-2PM	Polymer Modified Emulsified Asphalt
CRS-2PM	Polymer Modified Emulsified Asphalt

AggregateType A stone, slag or gravel meeting

the requirements of Section 703.2, Publication 408. Material finer than Number 200 sieve shall not exceed 1.0 percent.

Liquid bituminous treatments shall be done in accordance with Sections 470, "BITUMINOUS SEAL COAT; 471, "BITUMINOUS SEAL COAT USING PRE-COATED AGGREGATE"; 480, "BITUMINOUS SURFACE TREATMENT" and 481, "BITUMINOUS SURFACE TREATMENT USING PRECOATED AGGREGATE" of Publication 408 and Performance Standard 711-7124-01.

Liquid bituminous treatments should not be used when traffic exceeds 20,000 A.D.T.

The following time restrictions are to be adhered to:

Roadway: May 1 to September 15

Shoulders: May 1 to September 15

District 1-0

District 2-0

District 3-0

District 4-0

District 5-0 (Carbon, Monroe, and Schuylkill)

District 8-0 (Mountainous portions of Franklin,

Dauphin, Perry)

District 9-0

District 10-0

District 11-0

District 12-0

Roadway: May 1 to October 15

Shoulders: May 1 to October 15

District 5-0 (Berks, Lehigh and Northampton)

District 6-0

District 8-0 (Except mountainous portions of Franklin, Dauphin, Perry, and Juniata)

The pavement surface temperature should be 60F and the air temperature shall be 60F and rising for one hour before the start of the application of bituminous material.

A design shall be prepared for each route to be treated. The design method in Appendix E of Bulletin 27 or equivalent computer program shall be used. The design is to be on the job at all times.

Prior to the start of any work, the distributor(s), chipper and pneumatic tire rollers must be calibrated. This equipment is to be calibrated in accordance with the procedures outlined in Appendix B of Chapter 7. Also included in Appendix B of Chapter 7 are calibration documents for each of the three pieces of equipment. These may be copied for field use. Copies of the completed calibration documents (either those provided in Appendix B of Chapter 7 or a facsimile) are to be on the job at all times.

The bituminous material shall be applied within the specified temperature limits and at a rate within +10% of the design rate.

Rolling should be done by sufficient pneumatic tire rollers to cover the entire surface with one pass. Any final rolling should be done with a pneumatic tire roller, as specified in Section108.05(c)3.f, Publication 408. A ground contact pressure of 40-50 psi is required for all pneumatic tire rollers. All rolling should be done in the direction of traffic.

Vehicular traffic on the newly completed surface should be restricted until adequate stability and adhesion have been obtained and the material is sufficiently cured to prevent distortion, flushing of bituminous materials to surface or loss of aggregate. Traffic should be controlled by the use of a pilot vehicle and flaggers or a detour.

When a liquid bituminous treatment is placed on an old hot plant mix pavement, the road should be closed to traffic until complete curing is obtained unless a pilot car is used to control traffic. This work is restricted to the months of June, July and August. Programmed liquid bituminous surface treatment projects are to be programmed on the Notification screen.

For additional information, refer to Performance Standard 711-7124-01, "LIQUID BITUMINOUS TREATMENT -MECHANIZED" and related quality assurance indicators.

A report should be completed daily by the project foreman using the format in Chapter 7, Appendix D and kept on file in the county office.

#### POST-CONSTRUCTION CONDITIONS

Flushing or bleeding of seal coats and surface treatments is a problem that can occur following the completion of this work. Extremely hot weather and the use of these treatments on high ADT roads contribute greatly to flushing or bleeding conditions. Flushing or bleeding on this type of surfacing can occur due to one of the following causes.

Loss of Cover Aggregate -If there is a substantial loss of cover aggregate from a seal coat or surface treatment, the underlying bituminous material is exposed and presents a flushed surface. The loss of cover aggregate can result from (a) inadequate application rate of bituminous material, (b) inadequate traffic control before the bituminous material cures, (c) use of dusty aggregates, (d) use of excessively damp aggregate (e) in case of surface treatment, excessive application of Number 67 aggregate, (f) incompatibility of stone and bitumen.

Excessive Bituminous Material -If it is established that there is no significant loss of cover aggregate, then the cause of flushing is usually excessive application rate of the bituminous material and embedment of the cover aggregate. The excessive application rate can result from (a) not following the design application rate in the field, (b) improper evaluation of existing surface condition or (c) improperly calibrated application equipment. The design application rate can also prove to be excessive if the cover aggregate is thin and elongated and not nearly cubical in shape.

#### REMEDIAL MEASURES

It is very difficult to correct the flushed condition of a seal coat, surface treatment or shoulder overspray. Several measures can be attempted to improve the existing flushed condition. Since the flushing can range from marginal (just a smear on the aggregate) to truly excessive (significant amount of bitumen which can be scraped off the aggregate of the old surface), these measures should be attempted on a trial basis only after an engineering judgement of the situation has been made. The following remedial measures are listed in the order of increasing potential for success.

- Apply clean dry coarse sand (for marginal flushing) or dry Number 8 aggregate (for excessive flushing) on a hot day and roll it immediately.
- Apply heated coarse sand or heated Number 8 aggregate on a hot day and roll it immediately.
- Apply precoated Number 8 aggregate at ambient temperature on a hot day and roll it immediately. Precoating with PG 64-22 is preferred.
- Apply heated precoated Number 8 aggregate (preferably using PG 64-22) on a hot day and roll it immediately. The temperature range for aggregate precoated with PG 64-22 should be in the 300F -350F range.

**NOTE:** The chances of success in aggregate retention will be enhanced if a clean 1/4" size aggregate is used in lieu of Number 8 aggregate in remedial measures through

• Use open graded bituminous mixtures, such as, FB-1, FB-2 or FB-Modified as an overlay over the flushed pavement.

It should be noted that treatments 1 through 4 will have a better chance of success if the work is done in hot weather as soon as possible. To further increase the chance of success, a three wheel steel roller, as specified in Section 108.05(c)3.a. of Publication 408. A minimum of three (3) passes will give optimum results.

Seal coats and surface treatments over newly constructed FB surfaces may encounter the following problems:

**Excessive Aggregate Whipoff** -A newly constructed FB course is usually open and porous. A substantial amount of the bituminous material is, therefore, absorbed by the FB surface, leaving

an insufficient amount to retain the cover aggregate. This results in aggregate whip-off loss just after construction. Pipe trench restoration and base repair locations that were finished to grade with 19 mm or 25 mm Superpave should be scheduled for skin patching in advance of liquid bituminous seal coat operations.

Flushing or Bleeding in Wheel Tracks -Since newly constructed FB surfaces have not been densified by traffic, it is possible that Number 8cover aggregate gets partially embedded in the FB surface under traffic. This reduces the protruding thickness of aggregate and the initial application rate of bituminous material proves to be excessive later on, causing flushing especially in wheel paths

#### **MAINTENANCE PAVING**

Paving is the application of hot bituminous plant mix material in a uniform lift of approximately 1" to 1 1/2" in compacted depth over the full roadway width and placed on a prepared surface over extended lengths of roadway in excess of 500 feet. The intent of paving is to be a finished wearing course and additional surface applications are not normally anticipated in the immediate future. Department force or contract work in this activity is limited to applying FJ-1 or FJ-1C to a compacted depth of 1"; or 9.5 mm FG Superpave mixes applied to a compacted depth of 1"; or 9.5 mm Superpave Mix applied to a compacted depth of 1 1/2".

Application rates of 120 lbs. per square yard using 9.5 mm FG shall be restricted to roadways with an Average Daily Traffic (ADT) volume of 5,000 or less. All 1" and 1 1/2" paving projects on roadways with an ADT greater than 15,000 require project submission to and advance approval of the District Executive.

Cool or cold weather will adversely affect the performance and compaction of 1" paving; hence, the ambient temperature must be 40F and rising and the work shall be restricted to the time periods according with Publication 408 section 409.3(b).

To achieve adequate density, rolling patterns must be established and compaction must begin as soon as possible after placement of the hot mix and be completed before the mat cools to 175F. Density testing should be ongoing as the operation progresses to ensure that rolling patterns are sufficient.

FJ-1 and FJ-1C material is restricted to high type bituminous surfaces, with speed restrictions of 40MPH or less in primarily urban type areas. This work is to be accomplished in accordance with Section 422 of Specification 408. 9.5 mm Superpave material is used on type 40 or type 60 roadways and is applied in accordance with Section 410 of Publication 408.

Prior to the application of hot bituminous plant mix wearing courses, all surface defects must be carefully studied and repaired. Roadway preparation work such as pothole patching, skin patching, sealing cracks in excess of 1/4" wide, base failure repairs, etc. shall be completed and charged to the appropriate activity code. Particular attention should be given to removing wheel path ruts of 1/2" or greater with a leveling course.

Notches are required to be cut at the limits of the project and intersecting roads per the Maintenance Manual, Chapter 7 and a tack coat applied for all applications in accordance with Section 460 of Publication 408.

This work shall be scheduled on the M-213 program.

Temporary pavement markings may be required per Section 203.72 of Publication 203, Work Zone Traffic Control.

## TRAVELING BITUMINOUS PLANT MIX (MIXER PAVER)

This activity is the placement of a traveling plant mixed bituminous material having a compacted depth of 1" (approximately 110 pounds per square yard) for FB-1 Wearing Course and having a compacted depth of 2" (approximately 220 pounds per square yard) for FB-1 Binder Course.

All bituminous materials shall conform to the requirements of Publication 37.

PG64-22	Asphalt Cement
PG58-28	Asphalt Cement
PG52-28	Asphalt Cement
PG-46-40	Asphalt Cement
MS-2	Emulsified Asphalt

CMS-2 Emulsified Asphalt

SS-1 Emulsified Asphalt

HFMS-2h Emulsified Asphalt

Aggregate shall meet the requirements for fine aggregate Type A, Section 703.1, Publication

408.

This activity shall be done in accordance with Section 439, "BITUMINOUS WEARING COURSE FB-1", and Section 440, "BITUMINOUS BINDER COURSE FB-1" of Publication 408.

While the FB-1 surface is still tacky and before opening to traffic it is mandatory to spread fine aggregate at the rate of 3-5 lbs: per square yard, roll and then sweep remaining loose fine aggregate.

The use of FB-1 Wearing Course or Binder Course is restricted to flexible or rigid base roads carrying light to medium traffic (<1,500 ADT).

It is recommended that FB surfaces be subjected to three months of warm weather densification before the application of a surface treatment or seal coat. The surface treatment or seal coat should be applied within one year.

Programmed traveling bituminous plant mix projects shall be documented on the notification screen. For additional information refer to Performance Standard 711-7123-01 "BITUMINOUS SURFACE MIXER PAVER".

#### MICRO-SURFACING

Micro-surfacing is a thin surface paving system composed of polymer-modified emulsion, crushed aggregate, mineral filler, water and field control additives as needed. Micro-surfacing can be utilized for preventive maintenance and surface rehabilitation on both low and high ADT pavements. Its uses include texturing, sealing and rut filling.

#### NOVACHIP

Novachip is a paver placed seal/wearing course of open-graded, plant mixed, bituminous concrete

placed on a polymer modified asphalt emulsion tack/seal coat.

#### **ULTRA-THIN WHITETOPPING**

Ultra-Thin Whitetopping (UTW) is a process where a thin layer of concrete (2-4 in.), usually high strength and fiber reinforced, is placed over a prepared surface of distressed asphalt. The UTW utilizes short joint spacing and bonds to the underlying asphalt surface. The underlying asphalt surface should be a minimum of 3 inches thick after preparation.

UTW provides a durable wearing surface for a variety of applications which include low volume roads, intersections and ramps where rutting and washboarding is a problem.

UTW can be placed and opened to traffic within 24 hours by using an accelerated concrete mix.

#### **MECHANIZED PATCHING**

Mechanized patching is intended to repair small areas of severe weathering or raveling, block cracking and multiple shallow potholed areas. This work shall be done in accordance with the following sections of Publication 408 Section 409. Superpave material thicknesses shall comply with Publication 242, Table 9.5.

All mechanized patching projects shall be documented on the notification screen as well as the M-213 Program and be reviewed and approved by the District Office.

Time restrictions for mechanized patching shall conform to Section 409.3(b), Publication 408.

If the nominal depth of wheel ruts is greater than 1/2" and not flushed, the pavement should be tack coated and a thoroughly compacted leveling course applied to fill the ruts and level the surrounding pavement, as needed.

Any full width mechanical patch located on a curve or within breaking distance of an intersection as well as all full width patches longer than 50' must meet the current SRL requirements as listed in Table 5.4, Publication 242.

Mechanized patches should have a minimum thickness of 1" for FJ-1, FJ-1C, FB-1 Wearing Course and FB-2 Wearing Course; 1 for 9.5 mm FG Superpave; and 1 1/2 " for 9.5 mm Superpave;

2.5 for 19 mm Superpave, FB-1 Binder Course and FB-2 Binder Course.

A paving notch is to be used at each end of a full width patch of 1" or greater depth.

A tack coat in accordance with Section 460, Publication 408 is to be used on all Superpave material and FJ mechanized patching projects.

Temporary pavement markings should be installed as required by Section 203-72 of Publication 203, Work Zone Traffic Control.

For additional information refer to Performance Standards 711-7122-01, "PATCHING HOT PLANT MIX TOW PAVER-MECHANIZED" or 711-7122-02, "PATCHING MIXER PAVER MECHANIZED" or 711-7122-03, "PATCHING-PAVER FINISHER MECHANIZED and 711-7122-04 "MECHANIZED EDGE PATCHING"

#### **BASE REPAIR**

Base repair is intended to repair large severely fatigue cracked, potholed or distorted pavement sections and restore the structural integrity of the pavement.

Base repair shall be done in accordance with Section 309, Publication 408 and Performance Standards 711-7126-01, "BASE/SUB-BASE REPAIR FLEXIBLE BASE-LIGHT DUTY" 711-7126-02, "BASE/SUB-BASE REPAIR **FLEXIBLE** BASE¬HEAVY DUTY" 711-7126-03, or "BASE/SUB-BASE REPAIR RIGID BASE" OR 711-7216-04 "BASE/SUB **BASE REPAIR** MECHANIZED (WIDENER).

Base repair may be done by Department forces or contract

#### **LEVELING**

Leveling is the application of bituminous material over extended lengths of roadway to correct surface distortions such as irregular cross section or wheel path rutting. Leveling courses are normally followed by additional surface applications of bituminous material; either a sealcoat (oil and chipping) or 1" paving (FJ), or 1 1/2" overlays (with 9.5 mm Superpave Mix) in the same or subsequent construction season.

All applications of 9.5 mm Superpave Mix orFB-1 and FB-2 binder course material in excess of 500 feet in continuous length shall be charged to leveling. Application of short sections of 9.5 mm Superpave Mix or FB-1 and FB-2 less than 500 feet in length shall be charged to Mechanized Patching 711-7122. Application of FB-1 or FB-2 Wearing Course in a uniform 1" lift (90-110 lbs. per square yard) shall be charged to Activity 711-7123. The application of FJ, 9.5 mm Superpave Mix, or 9.5 mm FG placed to repair surface defects such as distorted cross section or wheel path ruts prior to the application of a 90 to 120 lbs. per square yard uniform lift of Paving (711-7125) or the application of 180 lbs. per square yard uniform lift of paving (711-7135) shall be charged to Leveling (711-7131).Leveling projects shall be planned and approved by the District Executive on the organization's M-213 program.

Temporary pavement markings may be required per Section 203.72 of Publication 203, Work Zone Traffic Control.

The following types of material may be used for leveling.

1. FJ -The use of an FJ leveling course is restricted to high type bituminous surfaces to remove surface distortions and wheel path ruts of 1/2" or less and is intended to prepare a roadway for the application of a uniform 1" lift of FJ, or a 1 1/2" lift of 9.5 mm Superpave Mix wearing course.

The application of the FJ leveling course is to be a separate and distinct operation and placed in a similar manner to a wearing course including proper tacking per Section460 and compacting per Section 409.3(h) of Publication 408.

The depth of the Leveling Course will vary according to field conditions but generally will be applied at the rate of 60-90 lbs. per square yard or less averaged over the length of the project.

2. **9.5** mm FineGraded Superpave Mix-This material is normally used on type 40 or type 60 roads to remove surface distortions or wheel path ruts 1/2" or greater and is intended to prepare a roadway for the application of a uniform 1" lift of 9.5 mm Fine-Graded or a 1 1/2" lift of 9.5 mm Superpave Mix.

The application of the 9.5 mm Fine-Graded Superpave Mix Leveling Course is to be a separate and distinct operation and placed in a similar manner to a wearing course including proper tacking per Section 460 and compacting per Section 409.3(h) of Publication 408.

The depth of the 9.5 mm Fine-Graded Superpave Mix Leveling Course will vary according to field conditions, but should be applied at a minimum rate of 60-90 lbs. per square yard averaged over the length of the project. Reference Publication 242, Table 10.7 for SuperPave material thickness requirements.

The application of a 9.5 mm Superpave Mix wearing course should follow immediately after completion of the Leveling Course.

3. **FB-1 or FB-2 Wearing Course** - -This material is normally used on Type 30 roads with an ADT volume of 1500 or less and light truck traffic. It is normally applied at a rate of 60 to 90 pounds per square yard. Application of a uniform 1" depth lift (90-110 lbs. per square yard) shall be charged to assembly 711-7123.

An FB-modified material can also be used. This material is similar to FB-2 but includes a latex additive. The material is applied in accordance with Section 430 or Section 439, Bituminous Wearing Course of Publication 408. A tack coat is not required. Compaction is to be accomplished with a tandem and 3wheel roller. Intermediate rolling with pneumatic tire roller is not required. After initial compaction, apply 3-5 lbs. per square yard of fine aggregate, sweep and finish rolling. Surface conditions will determine if a seal coat is required during the same or succeeding construction season.

4. **FB-1 or FB-2 Binder Course** - This material is normally used on Type 30 roads with an ADT volume of 1500 or less and moderate truck traffic. It is applied at a rate of 160 or 220 lbs per square yard. The material is applied in accordance with Section 431, or Section 440 Bituminous Binder Course of Publication 408. A tack coat is not required. Compaction is to be accomplished with a tandem and 3 wheel roller. Intermediate rolling with pneumatic tire roller is not required. Surface conditions will determine if a seal coat is required during the same o succeeding construction season.

#### JOINT REPAIR

Joint repair is the correction of tented joints and blowups on bituminous overlaid concrete pavement. The entire depth of pavement structure is removed and replaced with bituminous concrete.

Joint repair shall be done in accordance with Performance Standard 711-7126-03, "BASE/SUB¬BASE REPAIR-RIGID BASE".

For additional information refer to Section 309, Publication 408 and Performance Standard 711¬7126-02, "BASE/SUB-BASE REPAIR FLEXIBLEBASE-HEAVY DUTY".

## MILLING, LEVELING AND BITUMINOUS SURFACE TREATMENT

This is the improvement of seriously distressed [rural] pavements by milling selected areas of their regular surface, restoration of the profile, as needed, with a leveling course and sealing the surface. It is intended to be used on a large portion of the rural system. The amount of milling will vary depending on the type of distress identified. Distressed areas of widening and heavily cracked areas will be milled and replaced with binder prior to the leveling and surfacing. This is particularly suited to bituminous overlaid concrete pavement.

This work shall be done in accordance with Publication 408, Section 409 and Publication 242, Table 9.5 for Super Pave material thickness requirements.

#### **WIDENING**

This activity is the widening of roadways with deficient pavement width. The width criteria in the

Maintenance Manual, Chapter 7, Appendix A, should be used to determine the minimum desirable width.

Work may be accomplished by Department Forces or Contract. Department Force projects shall be confined to Maintenance Functional Class (MFC) C, D and E system roads. Projects shall be approved in advance by the Assistant District Executive for Maintenance and scheduled on the M-213 program.

If both sides of the roadway are to be widened, it shall consist of a minimum of 2 feet on each side. Partial lane widening (< 10 ft) shall match pavement type and depth.

Full lane additions (≥ 10 ft) shall match existing pavement type and depth unless circumstances dictate heavier traffic loadings for the additional lane; then design for actual traffic. When changing pavement layer thicknesses, check that drainage is adequately provided throughout the pavement cross-section.

#### **CEMENT CONCRETE PAVEMENTS**

If the existing pavement has a surface or base consisting of cement concrete pavement, widening or lane additions shall be in accordance with Pub 242, Chapter 4.8 and the following, unless waiver is granted by the Pavement Design and Analysis Section:

- 1. Bituminous material may be used, without wavier request, if the cement concrete pavement:
  - was not constructed since 1945, or
  - has non-uniform depth, or
  - has depth less than 9 in., or
  - carries no more than 40 trucks per day
- 2. Class AA cement concrete shall be used.
- 3. Widening of plain cement concrete pavement shall be constructed with plain cement concrete.

Reinforced concrete pavement may be widened with either reinforced or plain cement concrete pavement

- 4. Lane additions and widening shall be tied to the existing pavement with steel reinforcement tie bars
- If the future traffic pattern supports the flow of traffic diagonally crossing the longitudinal joints, consider removal and replacement of slabs involved.
- 6. Transverse joints spacings for the widening or lane addition are as follows:
  - Plain Concrete 15 ft. joint spacing all depths
  - Reinforced Concrete 30 ft. joint spacing

Transverse joints on the widening or lane addition shall be aligned with those on the existing pavement, and intermittently as needed to most closely match these defined spacings

7. This work shall be charged to assembly 711-7136-02 (Pavement Widening Cement Concrete).

#### **BITUMINOUS PAVEMENTS**

If the existing pavement consists of full-depth bituminous material, widening or lane additions shall be in accordance with Pub 242 Chapter 5.9 and as follows.

- 1. Either Recycled Asphalt Pavement (RAP), or 25 mm Superpave Mix may be used for widening. Aggregate Bituminous Base Course (ABBC) may be used in lieu of RAP with approval of the District Executive.
- 2. If RAP material is used, the depth of the widened pavement shall match the existing pavement depth or be a minimum of 6 inches, whichever is less. The widened area shall be sealed during the same construction season.
- 3. The depth of the widened pavement when using 25 mm superpave shall match the depth of the existing pavement using one or more lifts according to Table 9.5 of PUB 242:
- 4. The work shall be done in accordance with Sections 210, "SUBGRADE";Section 341,

"COLD RECYCLED BITUMINOUSBASE COURSE"; Section 409, "PLANT-MIXED BITUMINOUS CONCRETE COURSES"; and Section 320, "AGGREGATE BITUMINOUS BASE COURSE" of Publication 408 and applicable special provisions.

5. This work shall be charged to either assembly 711-7136 (Roadway-Pavement Widening with B.C.B.C.) or 711-7137 (Roadway Pavement Widening with Recycled Material).

## MILLING, RECYCLING, LEVELING AND RESURFACING

This is the restoration of the cross section of a severely distressed pavement by milling and the recycling of the milled material into the pavement and/or shoulder reconstruction. It also provides a uniform surface to begin resurfacing and reduces the thickness of shoulder reconstruction. These projects would be used where the ADT exceeds 2000 and in urban areas.

#### RECONSTRUCTION

This activity is the complete reconstruction of a section of road done to upgrade the structural capacity or to improve safety.

#### TACK COAT

A tack coat is a very light spray application of emulsified asphalt material applied to the road surface prior to placement of hot plant mix bituminous material. The purpose of a tack coat is to ensure adhesion between the existing surface and the new course being applied.

A tack coat is to be applied prior to placement of all leveling courses, wearing courses, mechanized patches or pothole repairs when using the following hot plant mix bituminous materials:FJ-1, FJ-1C, 9.5 mm Superpave Mix, or 19 mm Superpave Mix. The exception to applying a tack coat when using the above materials is when a wearing course is placed immediately (within a few days) over a freshly laid, clean and dry leveling course. Tack coat is also required when Micro Surfacing over an existing concrete roadway

A light tack coat should also be applied to

flushed areas unless the entire or nearly entire roadway is flushed and at the time of application of the bituminous course the flushed surface is sticky to the touch. The decision not to use a tack coat per Section 409.3(g) of Publication 408 requires the approval of the Assistant District Executive for Maintenance.

A tack coat is not required when placing the following: FB-1, FB-2, cold mix or when placing Micro Surfacing over an existing bituminous surface

The most common emulsified asphalt material used for tack coat is AET in accordance with Section 460.2(a) of Publication 408.

The application of the emulsified tack coat to the road surface is to be accomplished in accordance with Section 460 of Publication 408.

During construction of the longitudinal joint, paint the vertical face of the previously placed lane with a very thin coating of emulsified asphalt tack coat material (AET) prior to placing the abutting lane.

Synthetic Resin Tack Coat (SRTC) is approved solely for use as a pothole tack coat. SRTC contains approximately 50% mineral spirits which can have a flash point as low as 100oF. Suitable safety precautions are mandatory at all times when handling this material. Open flames or sparks must not be permitted close to this material and a non-pressurized backpack sprayer is used to apply this material.

SRTC also releases undesirable Volatile Organic Compound (VOC) emissions into the atmosphere which adversely affect air quality, and therefore the use of this material is to be restricted to pothole patching when other suitable tack coat material are not available. Air quality is monitored by and is under the regulation of the Environmental Protection Agency (EPA).

#### **PAVING NOTCH**

The purpose of a paving notch is to provide a smooth transition between the existing pavement and the new bituminous pavement course being placed and also to prevent raveling which is common with a feathered edge.

Paving notches shall be constructed at the beginning and end points of the paving and at intersecting roads when placing hot plant bituminous mix material at a depth of 1 inch or greater. This applies to Paving (711-7125) and Mechanized Patching (711-7122) operations.

Paving notches are to be constructed in accordance with Section 409 of Publication 408. A notch is normally not required when applying a leveling course, which is to be followed by a wearing course. The leveling course may be feathered in accordance with Roadway Construction Standard RC-28.

Ideally paving notches should be constructed using a grinding/machine making a cut in a triangular shape in accordance with the standard drawing, Appendix G. Rectangular shaped notches may be constructed when using a pavement breaker to cut the notches.

The depth of the notch should be a minimum of 1" or the depth of the wearing course being applied if greater than 1". A notch that is over cut depth wise should be repaired by placing a layer of hot plant bituminous mix material in the overcut notch and compacting to the desired triangular shape.

The minimum width of the notch is two feet for the main line and one foot for intersecting cross streets.

A notch is not required on stabilized roads, concrete roads, at the intersection of driveways or when using FB material.

A tack coat is always applied to the surface including vertical face of the notch prior to placement of the bituminous material. After compaction, a 4-inch band of approved crack sealing material is lapped over the junction of the existing and new wearing course to seal the joint.

## RUBBER TIRE ROLLER CALIBRATION "Dry Print Tracking Test"

This test is designed to aid in the determination of adjustments required, if any, to individual tire air pressure or other components of the rubber tire roller to ensure single pass total area coverage. This test is to be conducted after inflating all tires to the required tire pressure as outlined in Steps (A) through (E) of Chapter 7, Appendix B, page 7-20.

To begin the test you will need a tire pressure gauge, an air supply source, computer paper and a relatively clean, flat, dry surface sufficient in length to allow straight tracking of the tires.

Ten to twenty feet in front of the roller, position computer print paper or a facsimile, perpendicular to the path of the roller. The paper should be placed flat on the surface and be of sufficient length to extend beyond the width of the roller right and left. The paper must be held in a fixed position during the test by either taping or weighting each end. The application of weights is recommended.

Slowly move the roller forward in a straight line over the test paper. Dust and ground-in dirt on the tires will leave a print on the paper reflecting the actual contact area of each tire.

After having passed over the test paper, review the results. The total area over the width of the roller should be covered, with no streaking or uncontacted areas. If streaking is evident, adjustments must be made to achieve total surface area coverage. Although minor adjustments to individual tire air pressure may result in total coverage, these adjustments should not be made before the following items are reviewed:

- TIRE CONDITION -Are tires abnormally worn or damaged? Adjusting tire pressure to compensate for exaggerated wear or damage may result in drastically altering the specified ground contact pressure, replacement should be considered.
- TIRE PLY -Recheck tire ply rating. If tires of different ply ratings are present, were these differences addressed in the calibration of required tire air pressure? If not, required tire pressure will have to be recalibrated, and adjusted accordingly.
- BALLAST -The roller should be "unballasted".
   If ballast is present it should be removed. The presence of ballast will affect ground contact pressure and unevenly distributed ballast will adversely affect the tracking quality of the roller.
- RIMS -Are the rims all of the same type? During the course of operations, tire replacement has, on occasion, resulted in interchanging different rim types between

rollers. Although interchangeable, a mix of "flat" and "dish" type rims will result in incomplete coverage because of the difference in offset from one to the next (as much as 11/4"). Attempts to compensate for this condition by lowering air pressure will not be possible.

At this point, if adjustments have been made to any of these components, rerun the Dry Print Tracking Test and evaluate the results. If streaking or uncontacted areas remain, reduce the air pressure in increments of three pounds on all tires, rerunning and evaluating the Dry Print Tracking Test after each reduction in air pressure. When complete coverage is attained, record the adjusted tire air pressure in the boxes provided in Item #7, Appendix B, page 7-20.

\*\*\* Reducing the air pressure below the manufacturer's recommended minimum will adversely effect the lateral stability of the roller. Consult the equipment manufacturer if it becomes apparent that tire pressure will have to be reduced to less than 25 psi to achieve full width tracking coverage.

## OIL DISTRIBUTOR AND CHIPPER CALIBRATION PROCEDURE

#### **OIL DISTRIBUTOR**

Distributor calibration consists of verifying the accuracy of three elements. These elements are . . 1) The asphalt pump tachometer or gallons per minute meter; 2) The bitumeter or foot per minute meter and 3) Triple lap coverage or correct fan width of material applied. The calibration document, located in Appendix B, page 7-22, is segmented to address each of these elements and may be copied for field use.

Before beginning the calibration process, all screens or in-line strainers should be checked and cleaned, all spray nozzles should be of the type appropriate for the material being applied and each must be adjusted to the required angle using the wrench provided for this purpose. The fifth wheel must be free of buildup, secure in its yoke and free riding on the surface. Additionally, in preparation to test fan width for triple lap coverage, all nozzles should be plugged such that only every third nozzle is firing . . . all nozzles on

the last three feet of the bar should remain open for pressure relief.

## DISTRIBUTOR CALIBRATION/DOCUMENTATION

#### **Gallons Per Minute Test**

#### PRE-TEST INFORMATION AND WARMUP

- -Record the type and temperature of oil to be used during the calibration. The oil should be within the application temperature range as it appears on the bill of lading. -Position the empty distributor on a relatively smooth, level surface near the source of supply and pump approximately 200 gallons into the distributor to warm the pump.
- -Record the quantity in the distributor as indicated by use of the calibrated measuring stick and as indicated by the tank gauge.
- -Indicate whether or not the tank gauge was adjusted or reset to equal the stick reading.
- -Check and record the spray bar height at the right and left ends of the bar.
- -Indicate whether or not the distributor is of the type that self-adjusts for load difference.

#### GALLONS PER MINUTE TEST

- -Set the asphalt pump tachometer or gallons per minute meter to 100 gal. /min.
- -Record the gallons of oil indicated by the stick measurement in the pre-test warm up as the "beginning gallons".
- -On que, pump oil from the source of supply to the distributor for six minutes. Six minutes is the recommended duration of the test, you may elect to use an alternate duration.
- -At the end of the timed pump, record both the stick measurement and tank gauge readings as the "gallons ending".

#### 7.5 APPENDICES

#### APPENDIX A

## CHART 1 MINIMUM WIDTH CRITERIA FOR MAINTENANCE PROJECTS ‡

CURRENT TRAFFIC		MENT	SHOULDERS * (EACH SIDE)			
ADT	DESIRABLE		MINIMUM			
0 To 400**	20' - 0''	18' - 0"	2' - 0" Minimum			
401 To 1,000	20' - 0''	18' - 0"	2' - 0" Minimum			
1,001 To 2,000	22' - 0''	20' - 0''	2' - 0" Minimum			
2,001 To 4,000 10% Heavy Vehicles***	22' - 0"	20' - 0"	3' - 0" Minimum			
4,001 To 10,000 10% Heavy Vehicles***	22' - 0"	20' - 0"	3' - 0" Minimum			
10,001 To 20,000	24' - 0"†	22' - 0"	4' - 0" Minimum			
Over 20,000	24' - 0"†	24' - 0"†	5' - 0" Minimum			

- ‡ THE MINIMUM WIDTH CRITERIA FOR BRIDGES SHALL CONFORM TO THE REQUIREMENTS IN DESIGN MANUAL, PART 2, CHAPTER 1.
- \* THE MINIMUM SHOULDER WIDTHS MAY BE WAIVED, AS REQUIRED, TO REMAIN WITHIN THE LIMITS OF EXISTING RIGHT-OF-WAY WIDTHS.
- \*\* IN UNIQUE CIRCUMSTANCES, AN EXCEPTION MAY BE APPROVED BY THE  $\overline{ ext{DE}}$
- \*\*\* OVER 10% HEAVY VEHICLES, PAVEMENT WIDTH IS 22' 0" MINIMUM TO 24' 0" DESIRABLE. EVERY EFFORT SHOULD BE MADE TO ACHIEVE 24' 0" PAVEMENT WIDTHS WITHIN EXISTING RIGHT-OF-WAY. THE NUMBER OF HEAVY VEHICLES = CURRENT TRAFFIC ADT x % OF TRUCKS, BUSES AND RECREATIONAL VEHICLES.
- + UNDER RESTRICTIVE OR SPECIAL CONDITIONS, SUCH AS RIGHT-OF WAY OR LATERAL CLEARANCE LIMITATIONS, REDUCTION OF PAVEMENT WIDTH FROM 24' 0" TO 22' 0" IS ACCEPTABLE.

## APPENDIX B RUBBER TIRE ROLLER CALIBRATION DOCUMENT

County:	
Performed:	
Date:	
Equipment #:	
(A) Tire Ply	{
(B) Weight of Roller(Unballasted)	
(C) Number of Wheels	
(D) Wheel Load [(B) (C)](E) Required Tire Pressure	
(E) Required Tire Pressure	{
by the number of wheels.  5. Based on tire ply and calculated wheels on the roller to determine and record to f 40-50 pounds for seal coat & liquid mixed bituminous paving. See Appen	wheels.  In pounds by dividing the weight of the roller without ballast load weight, use the manufacturer's calibration chart located the required tire pressure to achieve a ground contact pressure libituminous surface treatment or 60-95 pounds for hot plant dix B, page 7-20, for an example of a calibration chart.
6. Inflate all tires to the required pressure	).
7. Conduct the Dry Print Tracking Test page 7-19, Appendix B. If adjustmen necessary to get complete coverage, repressure here.  [This item not required when roller is constant to the present of the present the	ts to tire pressure are
8. A copy of this calibration shall be on the prior to the commencement of the seal	he job at all times. This procedure is to be completed annually

# RUBBER TIRE ROLLER CALIBRATION CHART MAXIMUM GROUND CONTACT PRESSURE (For 7.50 X 15 Smooth Tread Compactor Tires)

TIRE	E PLY				12 PL	Y						14 P	LY		
	IRE SURE	35	50	60	70	90	110	35	50	60	70	90	110	120	130
WHEE	L LOAD			GROU	JND C	ONTA	CT PRI	ESSUR	e and	CON	ΓACT A	AREAS			
1000	GCP	38	44	47	51	60	65	46	50	54	56	61	68	71	74
	CA	26	23	20	20	17	15	22	20	19	18	16	15	14	14
2000	GCP	46	53	56	60	69	75	54	59	62	65	72	78	82	86
	CA	43	38	36	33	29	27	37	34	32	31	28	26	24	23
2500	GCP	50	57	60	65	74	78	57	63	66	70	76	83	87	90
	CA	50	44	42	38	34	32	44	40	38	36	33	30	29	28
3000	GCP	53	60	64	69	77	83	60	66	70	73	80	87	91	94
	CA	57	50	47	43	39	36	50	45	43	41	38	34	33	32
3500	GCP		64	67	71	81	86		68	73	76	83	90	94	98
	CA		55	52	49	43	41		51	48	46	42	39	37	36
4000	GCP			70	<i>7</i> 5	84	89			<i>7</i> 5	79	86	94	98	101
	CA			57	53	48	45			53	51	47	43	41	40

GCP - GROUND CONTACT PRESSURE

CA - GROUND CONTACT AREA

#### PUB. 408. SPECIFIED

\* SEAL COAT/LIQUID BITUMINOUS SURFACE TREATMENT - 40 TO 50 LBS

#### GROUND CONTACT PRESSURE

\* HOT PLANT MIXED BITUMINOUS PAVING - 60 TO 95 LBS

DISTRIBUTOR C	ALIBRATION DOCUMENT	
Date:	_	
County:		
Equipment #:		
Calibrated By:	Verified By	
Oil Type and Temperature:	Equipment Manager	
GALLONS PER MINUTE TEST		
1) Pre-test Warm-up	Post Warm-up Measurement	
(A) Pump Appx. 200 Gallons	Stick Tank Gauge	
Into Distributor From Supply	(Unadjusted Reading)	
(B) Tank Gauge Reset to Stick Measuremer	Yes No	
(C) Spray Bar Height	Right Left	
(D) Distributor Self Adjusting for Load Diff	erence Yes No	
	100 GAL./MIN. 125 GAL./MIN. 150 GAL./	MIN.
2) Gallons Per Minute Test <u>DUR</u>	ATION-6 MIN. DURATION-4 MIN. DURATI	
(A) Gallons Beginning		
(B) Gallons Ending (Stick Measurement)		
(C) Gallons Ending (Unadjusted Tank Gauge Reading)		
(D) Total Gallons Pumped (2B-2A)		
(E) Test Duration-Actual		
(F) Gallons Per Minute (2D/2E)		
(G) Tank Gauge Adj. to Stick Measurement	Yes No Yes No Yes No	
(H) Spray Bar Height	Rt. Lt. Rt. Lt. Rt. Lt.	
REMARKS:		
GRO	UND SPEED TEST	
BITUMETER SETTING		
FEET/MINUTE MEASURED DISTANCE	<u>DIFFERENCE</u> <u>REMARK</u>	<u>.S</u>
300		
350		
400		
450		
TRIPLE	AP COVERAGE TEST	
	/Oil Type Oil Tomp	
1) Gallons of oil on board at time of test	/ On Type On Temp	

CHIPPER CALIBRATION DOCUMENT								
	DATE:							
							<u>.</u>	
	CALIBI	RATED BY	·					
				EQUIPM	ENT MANAGER			
	RAI	NGE			AGGREGATE		GATE	YIELD
GEAR	HI	LOW	RPM	FT/MIN	VENDOR	TYPE	SETTING	LBS/S.Y.

- -Calculate and record the "total gallons pumped" by subtracting the "gallons beginning" from the stick measured "gallons ending".
- -Record the actual minutes of the "test duration".
- -Calculate and record the "gallons per minute "by dividing the "total gallons pumped" by the "test duration" time.
- -Indicate whether or not the tank gauge was adjusted to equal the stick measurement.
- -Check and record the spray bar height at the right and left ends of the bar.
- -This concludes the Gallons Per Minute Test with the asphalt pump tachometer set at 100gallons per minute. To further verify the resultant yield in "gallons per minute", it will be necessary to repeat this process with the asphalt pump tachometer set at 125 gallons per minute, and again at 150 gallons per minute. The "gallons beginning" for each subsequent test will equal the stick measured "gallons ending" of the previous test.
- -If the calculated "gallons per minute" deviates more than five (5) gallons from the asphalt pump tachometer setting, this information should be reported to the garage manager.

#### GROUND SPEED TEST

- -Set the bitumeter or foot per minute meter to 300 ft. per minute.
- -Accelerate to 300 ft. per minute and once up to this speed, dispense a one second shot of oil on que.
- -Traveling at a constant speed of 300 ft. per minute, dispense another one second shot of oil after exactly one minute of time has lapsed from the first shot of oil.
- -Measure and record the distance from the beginning of the first shot of oil to the beginning of the second shot of oil.
- -Record the difference between the measured distance and the bitumeter setting . . .

- differences greater than ten (10) feet should be reported to the garage manager.
- -This concludes Ground Speed Test with the bitumeter set at 300 feet per minute. To further verify the results, it will be necessary to repeat this process with the bitumeter set at 350, 400 and 450 feet per minute.

#### TRIPLE LAP COVERAGE TEST

- -Record the quantity, type and temperature of the oil on board at time of the test.
- -Set the pump for five (5) gallons per minute for each foot of bar.
- -With the exception of nozzles on the last three feet of the spray bar, all remaining nozzles should be plugged such that only every third nozzle is firing . . . nozzles on the last three feet of the bar should remain open for pressure relief.
- -After making a short shot(s) to warm the bar & nozzles, review the spray pattern...the tips of each fan of spray must touch. Streaking indicates that the spray bar is too low and overlapped spray fans indicate that the spray bar is too high.
- -Record the height of the spray bar at which the correct spray pattern was achieved. Although only one entry is required, it is important to understand that spray bar height must be the same across the length of the bar.

## CHIPPER CALIBRATION/DOCUMENTATION

Chipper calibration consists of two basic elements . . .1) Identifying and relating groundspeed (expressed in feet traveled per minute) to a specific gear and range and 2) Determining the yield (expressed in pounds per square yard) of a given gradation and type of aggregate when traveling at a predetermined ground speed at various gate opening settings.

The calibration document, located in Appendix B, on page 7-23, is provided to document results of

the chipper calibration process and may be copied for field use.

- -Hook a dump truck to the chipper and load the hopper with aggregate.
- -With the throttle completely open and the truck attached, select a gear and range at which the equipment is normally operated.
- -Proceed forward. When the machine is up to speed, open the gates on que for a period of two seconds. At the end of one minute open the gates again for another two seconds.
- -Measure the distance traveled from the beginning of the first drop to the beginning of the second drop. This is the forward speed expressed in feet per minute.
- -Record the Gear and Range (Hi or Low) at which the drop was made. You may also wish to record the RPM's.

Employing this method, find a gear and range which yields a forward speed in feet per minute that will approximate the actual speed of the chipping operation... usually between 300 and 400 feet per minute. Remember, the forward speed must be coordinated between the chipper and distributor. Because the speed of the chipper cannot be changed easily, the speed of the operation will be governed by the forward speed of the chipper.

- -Record the Gear and Range (Hi or Low) at which the desired speed or "ft/min" was achieved. Record the measured "ft/min". You may also wish to record the RPM.
- -Load a dump truck with aggregate from a source and of a type intended for use in the seal coat and liquid bituminous surface treatment program. Record the vendor and the aggregate type.
- -Place a one square yard frame on a drop cloth approximately 30 yards in front of the chipper.
- -Attach the dump truck to the chipper and fill the hopper with the selected aggregate.
- -Select a gate setting at which the chipper has been operated historically with the subject aggregate. Record this setting.

- -With the truck attached, bring the chipper up to speed in the identified gear and range, and open the gates on approach to the drop cloth depositing aggregate over the one square yard frame.
- -Clean all stone outside the one square yard frame from the drop cloth and pick up and weigh the balance. Record the weight of the stone . . . this is the yield in pounds per square yard.

This procedure should be repeated through a range of gate settings. The number of tests completed will depend largely on the number and range of design application rates for the subject aggregate. In addition to calibrating the chipper for each type of aggregate intended for use, consideration should also be given to calibrating the chipper for like types of aggregate from each vendor. This is particularly important in those areas serviced by vendors producing both limestone and gravel products.

#### **APPENDIX C**

## DEPARTMENT RESPONSIBILITY BEYOND CURBLINES

The Department's policy with regard to legal responsibility for maintenance beyond curblines is as follows:

#### **POLICY**

#### A. Highways in First-Class Cities

Department of Transportation may not perform any maintenance beyond the face of curb (except that the P.U.C. may order such maintenance on bridges under its jurisdiction), unless, with respect to Act 6l5 highways only, it has entered into an agreement assuming such maintenance.

### B. County Highways Taken over by Act 615 of 1961

Department of Transportation may not perform any maintenance (1) beyond portions available to vehicular traffic or (2) upon guiderail and drainage facilities, unless it has entered into an agreement assuming such maintenance.

## C. Highways in Boroughs, Incorporated Towns and Cities Other than First Class

Department of Transportation will not perform any maintenance beyond curblines except as required to maintain the structural integrity of the highway, such as slopes, walls, etc., unless, with respect to Act 615 highways only, Department has entered into an agreement assuming such maintenance.

Where some properties are curbed and others are not, the curblines can be projected on the uncurbed properties.

If there are no existing curblines, the Secretary can indicate on a plan of public record the width of the street or highway the Department will maintain.

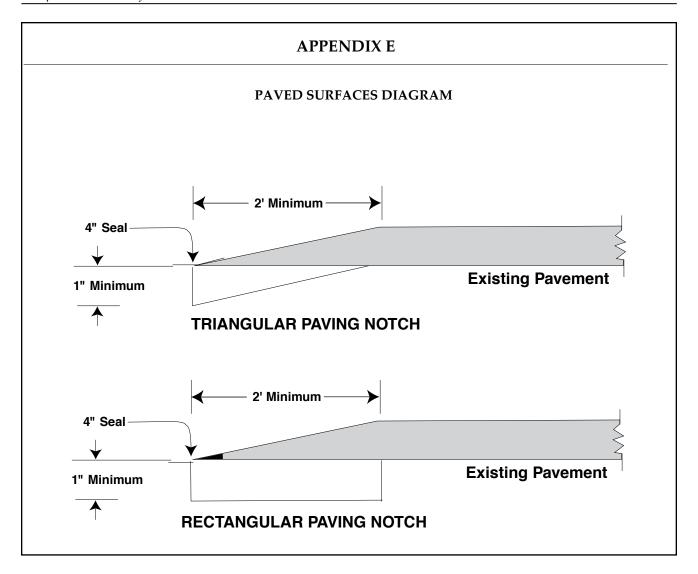
## D. State Routes that had the Old Five-Digit L.R. Numbers in Townships

Department of Transportation may perform maintenance beyond curblines. Where the Department has not assumed responsibility to perform such maintenance, townships may do so.

#### E. State Routes that had the Old One, Two, Three, or Four-Digit L.R. Numbers in Townships

Department of Transportation will perform maintenance beyond curblines.

		Date	
	Seg		
	_		
Fair	None		
Le	eveling		
ir Pot	tholes Patches	_	
Date Scrato	ch Placed	By Who	
		_	
te	Surface	Bituminous Material	
TUMINOUS			
	Application Rate	9	
31	Application Rate		31
Method			Method
			Wediod
AGGRI			
		PΔ # (Rulletin 14)	
		_	
-		-	_
51			51
Method			Method
			wictiou
		Steel Wheel	
		Eleaner	
		_ riagiliali	
nour	s Atter Kolling		
	Fair	Fair None	Surface Treatment



# CHAPTER 8 DRAINAGE AND DRAINAGE SYSTEMS

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#### 8.1 GENERAL CONSIDERATIONS

Drainage is one of the most essential elements to be considered in the maintenance of a highway system. The purpose of drainage is to convey water away from the road as quickly as possible to prevent erosion of the roadway and saturation of the subgrade. An efficient highway drainage system provides for the disposal of surface water from the roadway section and the elimination or control of subsurface water.

Included in a surface drainage system are the roadway crown, shoulder, curbs, gutters, drop inlets, storm drains, ditches and culverts. A surface drainage system is provided to permit water to flow from the roadway surface as rapidly as possible and away from the highway.

Subsurface drainage systems include pipe underdrains, pavement base drains and combination storm sewer and underdrain. Examples of these are shown on Standard Drawing RC-30M. The objective of a subsurface drainage system is to convey away any water that gets into base material. Subsurface drainage is a practical and economical way of maintaining firm, stable subgrades and structure foundations, eliminating wet cuts and preventing or reducing frost heave.

All drainage facilities should be maintained in first class operating condition, with special attention given to Fall cleaning so that structures will be ready to handle Spring and Summer rains. This requires year-round maintenance with emphasis on side ditch cleaning in the Fall and early cleanup in the Spring.

Properly cut shoulders are essential for water to drain away from the road surface and to flow to the nearest cross pipe. Side dozing operations (removal of accumulated material from beneath guiderail) on unpaved shoulders and side approaches is an essential Activity (711-7331) to provide efficient drainage. Chapter 5 contains additional information concerning shoulders.

Routine maintenance of drainage systems should consist of regular inspections and drainage cleaning activities. Regular inspections should be conducted to confirm that satisfactory conditions exist and to evaluate needs for cleanup and repair. Marked settling of an area or part of a roadway (usually with pavement breakups or cracks) during or following the wet season is generally an indication that a drainage problem may exist.

In summary, proper drainage can keep water from collecting on and under a pavement. Keeping the subsurface properly drained will insure stability and minimize maintenance costs.

#### 8.2 SURFACE DRAINAGE

Two types of water courses that handle surface drainage are natural water courses and manmade water courses. Natural water courses consist mainly of rivers and streams but may be a valley or swale that directs water into a river or stream. An important part of drainage maintenance is the cleaning of obstructions such as trees, branches, boulders and sandbars from around drainage facilities to ensure that stream flow is not directed toward bridge abutments.

All surface water should eventually lead to a natural watercourse. In order to accomplish this, manmade watercourses are constructed which include open drainage systems such as ditches and gutters, or enclosed drainage structures such as culverts, which cross under or run parallel to a roadway and outlet to a natural water course.

Ditches are generally classified as parallel ditches, diversion ditches and inlet or outlet ditches. Parallel ditches are channels that are constructed parallel to the roadway for the purpose of carrying runoff coming from the pavement, shoulders and adjacent areas. They are usually open unless crossing under sideroads, driveway or walkways. A parallel ditch may be lined with paving material in mountainous terrain, or they may be sodded or in a natural state provided it is adequate to accommodate the design velocity.

Diversion ditches are constructed parallel to the top of a cut and are intended to intercept surface drainage from flowing over the face of the slope, thus preventing erosion and slides due to excessive moisture. They may be paved or unpaved, depending again on design velocity.

Inlet and outlet ditches serve primarily to carry water to and from cross pipes, are generally perpendicular or slightly skewed to the centerline of the road, and often extend from or onto private property. The Department's responsibility to maintain these ditches extends only as far as necessary to achieve free flow of drainage to and from the cross pipe, while avoiding excessive

volume or velocity of water discharged onto private property.

Typical sections for parallel ditches and diversion ditches are shown on Standard Drawing RC-10M.

Periodic inspections should be made, especially after heavy rains and in the Spring after snow and ice melt. The inspection should include but not necessarily be limited to:

- 1) Checking ditch line for uniformity and obstructions.
- 2) Checking side slopes for erosion and possible need for protection of erosion.
- 3) Checking condition of ditch paving materials.
- 4) Checking sediment deposits and weed and brush growth in ditch line.

Ditches and drainage channels should be maintained to the line, grade, depth and cross section to which they were constructed or subsequently improved. They should be kept reasonably clear of weeds and obstructing materials which may restrict the normal flow of water. Presently approved herbicides (discussed in Chapter 13) are effective and may be used for this purpose. Paved ditches should be maintained in a condition to ensure a smooth and impervious surface to prevent underflow of water. Cracks and joints in asphalt or concrete paved ditches and paved gutters should be repaired as necessary and the joints sealed.

Gutters are channels or curbs used along the side of a roadway surface to collect and control the flow of water and direct it to an inlet or outlet ditch, a catch basin or shoulder drain leading the water into a nearby stream or other natural watercourse.

All ditches and drainage channels should be kept clean of debris and trash. Any settlement should be corrected and repairs of broken or eroded surfaces should be made with appropriate materials.

Refer to Publication 113, Highway Maintenance Foreman Manual, Activity Numbers 711-7311 and 711-7312-01 for additional information concerning activity requirements and production and planning units.

## 8.3 AUTHORIZATION TO ENTER PRIVATE PROPERTY FOR DRAINAGE ACTIVITIES

The purpose of this section is to clarify procedures for the Department or its authorized representatives to enter upon any property if entry is necessary to correct, maintain or restore existing drainage facilities.

Section 417, State Highway Act of 1945, P.L. 1242 supports the Commonwealth's position and the following policies and procedures discussed in this Chapter concerning this subject.

This policy applies in all cases where work is to be done by Department Maintenance Forces or by contractors which have been engaged by the Department.

Drainage problems usually result from either a natural impairment (e.g., growth of weeds or siltation) or a physical blockage by the property owner. In the case of a natural impairment of drainage facilities requiring entry onto private property, the first step should be personal contact with the property owner to explain the problem and our plan to correct it. The Departments' representative should request the property owner to sign an Authorization to Enter Form (RW-397A) for the Department's protection. However, refusal of the property owner to sign the form does not prevent the Department from taking necessary corrective action. If the property owner refused to allow the Department to enter the property to correct the problem, he should be sent a Certified Letter informing him of the problem, our plan to correct the problem and the date we intend to enter. The corrective work should then be performed on the date indicated.

**NOTE:** If a dangerous condition exists on the highway because of blocked drainage, the Maintenance Manager should act as soon as possible to cure the problem and the preceding steps are not required. However, personal contact should be made when and where possible.

In the case of a physical blockage caused by the property owner, the first step is also personal contact with the property owner. The property owner should be told the action is in violation of the law and that he must correct the problem within a reasonable time. If the property owner

fails to correct the problem within a reasonable time he should be sent a certified letter detailing the problem, indicating that he is in violation of state law, and demanding correction within a reasonable time in consideration of all the circumstances, (generally, two weeks). If the property owner still does not correct the problem, the Department may: (1) file a complaint before a District Justice for a summary fine (to be filed by District Personnel), (2) submit the matter to the Office of Chief Counsel for filing of an equity action to require the property owner to correct the problem or (3) do the work and bill the property owner (the property owner must be informed beforehand in writing). Again, if a dangerous problem exists on the highway because of blocked drainage the Department should act immediately to cure the problem and the preceding steps are not required.

On the following pages are suggested letters notifying the property owner that the ditch must be opened.

The responsibility for insuring that authorization to enter has been obtained rests with the Maintenance Manager.

Form RW-397A, Authorization to Enter (Waiver of Claim) may be ordered from the Bureau of Office Services. The commodity code is 0830-4700-1810.

Caution should be exercised on private property to prevent damage to any trees, shrubs, etc. when reestablishing drainage facilities. Ditches should be dug only as deep, as wide and as long as necessary to assure flow to or from the pipe invert and appropriate erosion and sedimentation control measures must be taken. The placement of additional pipe on private property is not permitted. The property should be left in a clean and well-graded condition.

When opening the pipe under adverse circumstances, ask the property owner if he wants the excavated dirt. Do not, under any circumstances, leave it piled next to the excavated ditch. If the owner wants it placed on another portion of his property, oblige him. If he insists that you leave it next to the ditch, remove the dirt and store it at the local PennDOT stockpile. It is the property owner's dirt and we may have to give it back. Leaving the dirt in a pile next to the ditch has, in the past, resulted in findings against the

Commonwealth.

When replacing pipes use the following guidelines:

- 1) The size of the pipe should be determined. If the pipe is in poor condition, it should be replaced with the same type, unless excessive acidity or alkalinity of water or surrounding soil appears to cause corrosion; then the pH value of the water or soil should be determined and the proper type of replacement pipe chosen (reference Section 8.6).
- 2) Guidelines concerning the size of replacement pipe are discussed in Section 8-6 of this Chapter.
- Pipes should be replaced, if possible, at the same location, direction of flow, etc. If it is determined that an alternate location is more feasible, the pipe may be relocated at our discretion and with the property owner's approval. The property owner must agree to sign a new "Deed of Easement" for the new location. The outlet at the new location must empty onto the same owner's land as specified in the Deed of Easement. It should be determined that the land needed for the new channel location is owned by the person giving the Deed of Easement. All property owners must sign the Deed of Easement and the Deed of Easement must be filed in the local court. Two sample "Deeds of Easement" are provided at the end of this Chapter for use where appropriate. Form RW-319, Deed of Release and Quit claim may also be used, if applicable.
- 4) The outlet ditch should be located as shown on the plan, or in the absence of a plan, along the flow line of the existing pipe. The only exception to this is if the property owner has constructed an improvement in the direct line of flow of the pipe such as a home, garage, etc. The outlet ditch may be relocated to bend or curve around the improvement, but should not be located to direct water toward the improvement or toward an adjacent property owner. The property owner must agree to sign a new "Deed of Easement", as noted previously for a relocation.
- 5) Photographs should be taken at the area

before the work is performed and after the work is completed. The date, location and name of the person taking the photograph should be listed on the back of the photographs to provide important documented evidence if the property owner claims that damage occurred to shrubs or other parts of his property during the drainage work.

6) When land development caused the replacement of drainage systems, the developer is responsible for the replacement costs.

EXHIBIT 1
COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
IN REPLY REFER TO
County
S.R, Seg, Offset
Township/Borough
Blocked Drainage
TO:
Dear:
The Department of Transportation has been experiencing drainage problems at the above referenced location. Our storm drain at this site is blocked and must be cleaned and reopened.
It is apparent that recent earthwork on your property altered the existing drainage facilities and courses in this area.
The blockage of any highway drain is a violation of the Pennsylvania Highway Law, 1945, Section 417. Therefore, please be advised that you are hereby ordered to reopen the above referenced highway drain on or before Failure to do so will subject you to legal action under the above referenced section of the highway law.
The drainage pipe in question is a legal Commonwealth drainage easement and is shown on sheet of the plans for the above referenced route. These plans were signed by Governor
on [date] and recorded in County Book,, pages to
A copy of this plan is available for your review at our County Office, between the hours of to
[NOTE: If the plans are old they may not have been recorded in the local court house.  If this is the case, omit this paragraph.]
Should you have any questions concerning this matter, please contact me at
Very truly yours,
[NOTE: Send certified mail, return receipt requested.]

EXHIBIT 2
COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
IN REPLY REFER TOCounty
S.R, Seg, Offset
Township/Borough
Blocked Drainage
TO:
10.
Dear:
The Department of Transportation has been experiencing drainage problems at the above referenced location. Our storm drain at this site is blocked and must be cleaned and reopened.
It is apparent that recent earthwork on your property altered the existing drainage facilities and courses in this area.
The blockage of any highway drain is a violation of the Pennsylvania Highway Law, 1945, Section 417. Therefore, please be advised that you are hereby ordered to reopen the above referenced highway drain on or before Failure to do so will subject you to legal action under the above referenced section of the highway law.
The drainage pipe in question is a legal Commonwealth drainage easement. The road in question is legally described inCounty Road Docket, Page(s),  The road became a state highway by Act of the Legislature, Public Law, [date].
Should you have any questions concerning this matter, please contact me at
Very truly yours,
[NOTE: Send certified mail, return receipt requested.]

### EXHIBIT 3 COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION IN REPLY REFER TO \_\_\_\_\_County S.R.\_\_\_\_\_, Seg.\_\_\_\_\_, Offset\_\_\_\_\_ \_\_\_\_Township/Borough **Blocked Drainage** The Department of Transportation has been experiencing drainage problems at the above referenced location. Our storm drain at this site is blocked and must be cleaned. When the drain is reopened, the water will enter upon your property. The drain in question is a legal Commonwealth drainage easement and is shown on sheet \_\_\_\_\_ of the plans for the above referenced route. These plans were signed by \_\_\_\_\_on \_\_\_\_[date] and recorded in Governor \_\_\_\_ \_\_\_\_\_ County Book, \_\_\_\_\_, pages \_\_\_\_\_ to \_\_\_\_. A copy of this plan is available for your review at our \_\_\_\_\_\_County Office, between the hours of \_\_\_\_\_ to \_\_\_\_. NOTE: If the plans are old they may not have been recorded in the local courthouse. If this is the case, omit this paragraph.] Please be advised that on \_\_\_\_\_\_, the Commonwealth of Pennsylvania Department of Transportation will enter your property at the above referenced location solely for the purpose of reestablishing drainage. Our authority to enter your property to reestablish drainage is contained in the State Highway Law, Section 417, which states in part: "The Department shall have authority to enter upon any lands or enclosures and cut, open, maintain, and repair such drains or ditches, inlets, or outlets through the same as are necessary to carry the waters from roads, highways, or within, at the top, or base of, slope areas, constructed or improved at the expense of the Commonwealth or under its supervision." Should you have any questions concerning this matter, please contact me at \_\_\_\_\_\_\_. Very truly yours, [NOTE: Send certified mail, return receipt requested.]

## 8.4 DRIVEWAYS AND DRAINAGE PROBLEMS

When icing, debris or drainage problem is caused by an improperly constructed or maintained driveway, the following policies are established to define and clarify District Maintenance and Permit responsibilities:

Should a driveway channel drainage onto the roadway, the District should notify the property owner to have the problem corrected as soon as possible. This is true even if the driveway was authorized by permit. It is not necessary to determine whether a permit exists before notifying the property owners.

Section 420(e) of the State Highway Law of 1945 and, as amended, March 7, 1982 and Pennsylvania Code title 67, Chapter 441 supports the Department's position in this matter.

Section 420 (e) makes it a summary offense for any person to:

- (a) violate any rule or regulation promulgated under authority of Section 420.
- (b) willfully destroy, injure or damage any State highway by any method or device.

It is therefore unlawful for any person to discharge sewage or drainage, except surface drainage, on or within the legal limits, of any State Highway. Any sewer outlet placed or located within the limits of a State Highway, or so located that the discharge therefore enters a State Highway, is a violation of Section 441 of the Pennsylvania Highway laws, and a public nuisance, and may be blocked or removed by the Department.

Pennsylvania Code Title 67, Chapter 441 states: "All driveways shall be located, designed and maintained in such a manner as not to interfere or be inconsistent with the design, maintenance and drainage of the highway." A driveway that is draining surface water onto the road surface or shoulders and is damaging the shoulder pavement or causing icing is not being maintained in a manner consistent with the highway's drainage.

If a landowner refuses to correct a driveway drainage problem after he has been notified, he is violating Section 420(e) by willfully allowing the damage to continue, whether or not a permit exists. In some very rare cases, a permit may

authorize some drainage onto the highway. If the property owner should introduce the permit as a defense to any court action or revocation proceeding, it can generally be demonstrated that the drainage is a threat to safety and thus provides a basis for modifying the permit.

If a drainage problem causes a clear and present danger to the driving public, i.e., icing, immediate action should be taken to correct the situation, regardless of whether a permit does or does not exist.

Permit Managers should be notified about any drainage problems related to driveways, but it is not necessary to routinely refer drainage problems to the Permit Manager for resolution. Permit Managers are responsible for enforcing the terms of the driveway permit. Maintenance Managers are responsible for resolving and correcting all drainage problems within the right-of- way.

EXHIBIT 4
COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
IN REPLY REFER TOCounty
S.R, Seg, Offset
Township/Borough Blocked Drainage
TO:
Dear:
The Department of Transportation has been experiencing drainage problems at the above referenced location. Our storm drain at this site is blocked and must be cleaned. When the drain is reopened, the water will enter upon your property.
The drain in question is a legal Commonwealth drainage easement. The road in question is legally described inCounty Road DocketPage(s)  The road became a state highway by Act of the Legislature, Public Law, on[date].
Please be advised that on, the Commonwealth of Pennsylvania Department of Transportation will enter your property at the above referenced location solely for the purpose of reestablishing drainage.
Our authority to enter your property to re-establish drainage is contained in the State Highway Law, Section 417, which states in part:
"The Department shall have authority to enter upon any lands or enclosures and cut, open, maintain, and repair such drains or ditches, inlets, or outlets through the same as are necessary to carry the waters from roads, highways, or within, at the top, or base of, slope areas, constructed or improved at the expense of the Commonwealth or under its supervision."
Should you have any questions concerning this matter, please contact me at
Very truly yours,
[NOTE: Send certified mail, return receipt requested.]

#### 8.5 DRAINAGE MAINTENANCE RESPONSIBILITIES CONCERNING MUNICIPALITIES AND UTILITIES

Policies relating to the maintenance of drainage facilities concerning municipalities and utilities and legal interpretations of the State Highway Law concerning these issues have been developed over the years. Some of the more widely referred to policies for non-interstate or freeways are included in the following section:

Any drainage installed by permit is generally the responsibility of the permittee to maintain. Where inlet grates are in the roadway surface between curb lines (actual or projected), it is the Department of Transportation's responsibility to maintain them as part of the roadway surface. A projected curb line is defined as the extension of the curb line across an intersection or short uncurbed section between curbed sections. In accordance with curb to curb policy, local municipalities are generally responsible for storm drainage facilities. The Department is not obligated to maintain cross pipes and inlets, but may do so under agreement. Parallel pipes and curbing required for the storm sewer system are the responsibility of the local municipality. Parallel ditches in uncurbed areas are the responsibility of the Department. Street cleaning and sweeping at and along the curb line (actual and projected), shall be considered to be a drainage function of cross and parallel drainage systems within the subject curb section. The Department of Transportation, through past practice or agreement may sweep these sections but is not obligated to do so.

Sixty-seven Pa. Code, Chapter 459, Section 7 - 15 deals with the maintenance of any utility placed in our right-of-way. It states "as long as the permittee operates and leaves in place any structures or facilities, in, upon or along the right-of-way, the permittee shall maintain and keep them in good order and repair." For example, the responsibility to replace a missing or loose manhole cover belongs to the utility which installed it.

The following policy should be followed to determine responsibilities for maintaining and replacing drainage pipes parallel to state highways within state right-of-way at intersections with municipal roads.

There are three categories to be considered. First, where the state highway was in existence and a local road is newly built or reconstructed. Second, where a local road is in existence and a state highway is newly built or reconstructed. Third, where the two intersecting roads were built by local governments and the state has been legislated jurisdiction over one of the roads.

- 1. Category one involves an existing state road and a local government agency building or reconstructing a local road, or accepting a local road from a developer. Section 36 P.S. 670-420(b) clearly provides that "the Secretary may issue permits for the opening of streets and driveways onto state highways.... on terms and conditions established in department regulations...." If a newly constructed or reconstructed local road must traverse a drainage area to access a state highway, the drainage must be properly controlled. Accordingly, the Highway Occupancy Permit shall require the municipality to design, construct and maintain any and all affected drainage appurtenances.
- 2. Category two involves an existing local road and the construction or reconstruction of a state highway. If the state highway, for its proper drainage, requires the placement of a cross-pipe under the existing local road, the Department bears the responsibility for maintaining the cross-pipe.
- Category three usually involves two roads which were built by other governmental units (townships, boroughs, etc.) and, by statute, the state assumed jurisdiction of one of these two intersecting roads. Under these circumstances, there is joint jurisdiction and responsibility over the intersection area. The state right-of-way includes the paved cartway on the state road and the associated drainage swales. The local right-of-way includes the paved cartway on the local road and the associated drainage swales. The area where the two rights-of-way cross does not become the sole right-of-way of the state. Since the cross-pipe serves both the state and local road and there exists joint responsibility for the maintenance of this cross-pipe the Department and the local government may be subject to tort liability

for damages caused by a blocked pipe. Therefore, an agreement shall be reached with the local government to share maintenance costs. This type of agreement would alleviate a dangerous condition and potential accidents as well as mitigate legal costs and damage claims.

## 8.6 PIPES, CULVERTS, INLETS, ENDWALLS

Highway maintenance activities that are generally performed by Department Forces and are associated with pipes, culverts, inlets, and endwalls include the following:

- 1) Cleaning pipes and culverts (Activity 711-7314-01).
- 2) Cleaning inlets and endwalls (Activity 711-7311-01).
- 3) Repair and/or replacement of inlets and endwalls (Activity 711-7321-01).
- 4) Replacement of pipes and culverts (Activities 711-7324-01 and 711-7324-02).

The Department's objective is to maintain the above referenced structures in a condition to efficiently carry away collected surface and/or subsurface water.

Surface water that does not drain from the roadway surface and the shoulder or subsurface water that reaches the roadway during periods of freezing weather can produce icy spots. Such icy spots can be a problem, particularly when they occur on an otherwise clear or dry roadway and motorists will not expect to encounter them. The best corrective measure is prevention. The locations of icy areas should be documented so that they may be repaired later. Chapter 4 provides guidance for treating and signing such locations as a temporary remedy.

The importance of maintaining and installing drainage facilities to preclude the formation of icy spots should not be overlooked.

Annual inspections should be made after the snow and ice season and routine inspections after heavy rains. These inspections are a very important part of preventative maintenance. Department maintenance employees should watch for signs of drainage problems or failures whenever they travel the roadways.

Inlets and endwalls should be checked to

determine if any structural repair work is necessary. Frames and grates should be properly seated. Pipe culverts should be checked for condition of pipe, alignment of inlet and outlet ditches and for blockages.

Necessary repairs to concrete and masonry structures should be made as required to provide structurally sound units. Replacement of inlets and endwalls should be made in accordance with Section 605 of Publication 408 (2000) and Standard Drawings RC-31M and RC-34M.

Culverts should be kept reasonably clean and unobstructed. Obstructions and sediment deposits should be removed as quickly as practical. Inlet and outlet channels should be properly aligned and maintained so that culverts can function to capacity. Often the inlet channel needs realignment to prevent sedimentation. Areas around culvert inlets and outlets should be controlled to limit vegetation and permit free flow of water.

It may be necessary to clean debris from a channel or natural water course beyond the right-of-way line to keep rains from washing material into a culvert inlet. Written permission should be obtained from the property owner before entering private property to clean up debris. (Reference discussion in previous section on Authorization to Enter Private Property).

Clogging of pipe by silt, leaves or other debris is a common occurrence. The solution for the leaves and other debris is frequent cleaning. If silting continues to occur, consideration should be given to determining the cause or source of the erosion and stablizing where appropriate to preclude the introduction of silt and debris to the drainage system.

Scour at inlet ends of pipe is caused by turbulence that results when more water is collected at the inlet than can rapidly be discharged by the pipe. When water collects at the inlet end of pipe culverts, the cause should be determined as soon as possible and the necessary correction should be made promptly to preclude culvert failure. If the ground is not protected a headwall, pipe end section, or riprap should be installed.

Scour at outlet ends of pipe is caused by fast, uncontrolled discharge of a volume of water into an outlet channel that is easily eroded or from a pipe whose discharge elevation is not complimentary to that of the drainage channel into which it discharges. Undermining and failure of the outlet head wall can result from such scouring. When scour occurs at the outlet end of a pipe culvert, the alternatives for correcting this condition are to build a concrete or stone apron on the spillway beneath the end of the pipe or to construct an energy dissipater in accordance with Standard Drawing RC-70M. It may also be necessary to line the bed of the outlet channel or where practical, change the outlet elevation of the pipe.

References to be reviewed when replacing pipe include the following:

- 1) Publication 408, Sections 601 to 605.
- 2) Standard Drawing RC-30. Excavation for pipe bedding and trench details are shown on this drawing.
- 3) Design Manual, Part 2, Chapter 10, "Drainage Design and Related Procedures".
- 4) Publication 113 (MORIS Foreman's Manual) Performance Standards for Activity 711-7324 and Related Quality Assurance Review Format for Pipe Replacement.

Before replacements are made, it is important to determine the causes of pipe failure. It may be necessary to complete a hydraulic design and to determine the pH value of the water or soil to determine the type and/or size of the culvert to accommodate the flow. The drainage system should be adequate to prevent flooding of pavement, shoulders, and adjacent property.

As discussed in Publication 408, the joining of individual pipe sections requires additional emphasis. If the sections are not joined properly, water will seep through the joints and into the bedding, thus causing erosion and settlement and additional associated maintenance problems.

The use of approved "pipe liners" should also be considered when the condition of the existing deteriorated pipe will allow the introduction of a "liner" without adversely constricting the flow. Primary candidates for this treatment may include crossdrains located under significant depths of fill and/or in areas of heavy traffic where detouring is not an option and operational width is a concern.

Hydraulic reviews should be part of the decision making process when "pipe liners" are considered an option to completely replacing an existing deteriorated drainage system.

Excessive acidity or alkalinity of water or surrounding soil may exist and cause corrosion of metal pipes and deterioration of steel reinforced concrete pipes thus accelerating the need for the replacement of a pipe. The pH value of the water or soil should be determined before a pipe is replaced. Below is a guide for the selection of pipe types based on pH values of the water and the pH and resistivity values of the soil:

#### TYPE OF PIPE WATER AND/OR SOIL

COATING	SOIL pH	RESISTIVITY OMM-CM
Aluminum Alloy (Uncoated)	4.0 to 8.5	>1500
Concrete (Uncoated)	.4.0 or Greater	All
Concrete (Epoxy Lined)	<4.0	All
Plastic	All	All
Steel (Metallic Coated)	5.5 to 8.5	>6000
* Steel (Polymer-Type B)	4.0 to 8.5	2000 to 6000
Steel (Polymer-Type C)	<8.5	<6000
* Steel (Fiber Bonded)	4.0 to 8.5	2000
* Stainless Steel * Not shown in DM-2		<6000

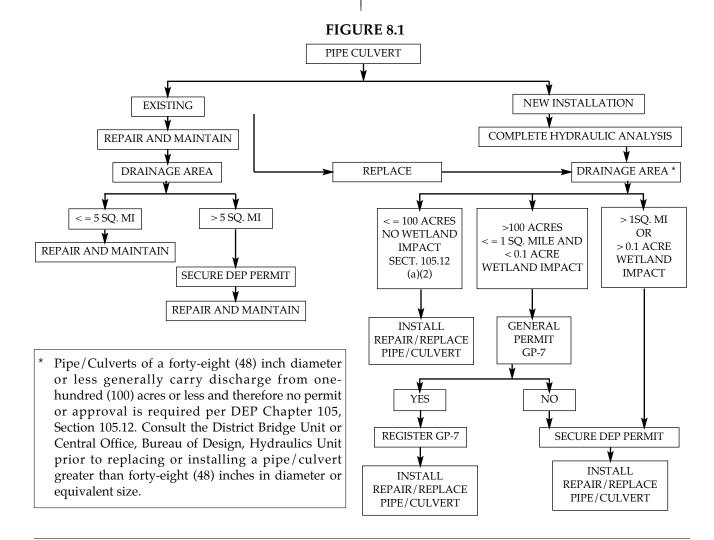
In areas where abrasive conditions exist, metal coated or uncoated pipe should have a paved invert, concrete pipe should be epoxy lined and plastic pipe should be double-walled, smooth-lined corrugated polyethylene pipe.

For the repair and maintenance of existing pipes, the Department of Environmental Protection 25PA Code, Chapter 105 Regulations, Section 105.12 (b-7) waves the permit requirement for a culvert, bridge or stream enclosure on a watercourse where the drainage area above the structure is five (5) square miles or less and the structure was completed and in place prior to July 1, 1979. Additionally, for pipes or culverts installed after July 1, 1979, 25 PA Code, Chapter 105 Regulations, Section 105.11(d) provides that all installations permitted by DEP shall incorporate

authorization for normal repairs and maintenance within the original specifications. Therefore, to ensure compliance with DEP regulations regarding existing pipes or culverts, the following shall be the Department of Transportation policy:

- 1) Existing pipes or culverts forty-eight (48) inches or less in diameter [i.e. drainage area one hundred (100) acres] may be replaced at the same location with the same size or equivalent size pipe or culvert as routine maintenance as directed by county management.
- 2) If by field observation an existing pipe of less than forty-eight (48) inches in diameter does not appear to be adequate to accommodate the existing flow of water, a maximum six (6) inch diameter increased size pipe or culvert, up to and including a maximum size of forty-eight (48) inches, may be installed at the same location as routine maintenance as directed by county management.

- 3) In accordance with the Design Manual, the minimum diameter pipe should be eighteen (18) inches.
- 4) All existing pipes or culverts, greater than forty-eight (48) inches in diameter, shall have a hydraulic analysis completed in accordance with the Design Manual, Part 2, Chapter 10 prior to replacement. Likewise, pipes or culverts replaced by pipes greater than one pipe size [six (6) inches] larger shall have a hydraulic analysis completed. A file should be maintained in the District Office on all pipes or culverts with diameters greater than forty-eight (48) inches (or equivalent). Changes to this list should be forwarded on a quarterly basis to the Bureau of Design, Hydraulics Unit.
- 5) If the hydraulic analysis determines that the drainage area of an existing pipe or culvert to be replaced is greater than one hundred (100) acres, a permit in accordance with the applicable DEP, Chapter 105



regulations, must be obtained either by registration for a General Permit, GP-7 (Minor Road Crossings), where applicable, or by submission of an application for permit.

6) The replacement of all existing pipes and culverts shall comply with all Erosion and Sedimentation control measures contained in the Maintenance Manual, Chapter 3, Section 10.

For the installation of pipes or culverts at new locations where no pipe or culvert exists, DEP 25PA Code, Chapter 105 Regulations, Section 105.12 (A.2) provides that a permit is required for all new installations with a drainage area of greater than one hundred (100) acres or where wetlands are located in the floodway.

Therefore, to ensure compliance with DEP, Chapter 105 Regulations for new installation of pipes or culverts, the following shall be the Department of Transportation policy:

- 1) All new installations of pipes or culverts at locations where no pipe or culvert exists shall have a hydraulic analysis completed by the District in accordance with the Design Manual, Part 2, Chapter 10 prior to installation.
- 2) If the hydraulic analysis determines that the drainage area is in excess of one hundred (100) acres or wetlands are located in the floodway, a permit in accordance with the applicable DEP, Chapter 105 regulations must be obtained either by registration for a General Permit GP-7 (Minor Road Crossings), where applicable, or by submission of an application for permit.
- 3) All new installations of pipes or culverts shall comply with all Erosion and Sediment action control measures contained in the Maintenance Manual, Chapter 3, Section 10. The flow chart in Figure 8.1 shows the process described herein.

In addition to the previously outlined DEP regulations, care must be taken when working in and around wetland or suspected wetland areas. There have been several confirmed cases of endangered plant and or aquatic species identified in Pennsylvania. It is important to protect

both these species of concern and their habitat. For further assistance in dealing with these regulations, consult the District Environmental Coordinator or District Maintenance Office.

#### 8.7 SUBSURFACE DRAINAGE

In addition to providing facilities for draining water from surface areas of the highway, it is also important to provide drainage for the removal of water from beneath the surface. Subsurface water conditions can be more damaging than surface water conditions. Subsurface water can soften the subgrade of a pavement causing weakness and eventual failure of the pavement. Roadside problems such as slides, slipouts, and rock falls can also result from excessive amounts of subsurface water.

All subsurface water must be drained away from the highway. Subsurface drains should have free flowing outlets, and should be located to direct water to some type of surface watercourse such as a parallel ditch, flume, or pipe. Proper drainage will prevent subsurface water from collecting under the roadway or reaching the surface of the roadway.

The following types of subsurface drains are shown on Standard Drawing RC-30M and are specified in Sections 610 and 612 of Publication 408:

- 1) Pipe Underdrain
- 2) Pavement Base Drain
- 3) Subgrade Drain
- 4) Combination Storm Sewer and Underdrain

Also noted are subsurface drain outlets that serve the purpose of outletting the underdrain.

Pipe underdrains are generally used for the following purposes:

- 1) To drain springs and cut off seepage in the original ground either under an embankment, or along benches where the highway is located on the side of a hill.
- 2) To lower the ground water level so that it will be below the surface of the subgrade.
- To provide an outlet for water that gets into the base and subbase.

Subgrade drains are designed to handle water from springs or seepage that cannot be cut off before it gets to the subgrade, or water that may get to the subgrade from the surface of the road.

Frequent inspection of subsurface drains is very important. Subsurface drains should have outlets and these outlets should be kept open. Otherwise the subsurface drain acts as a reservoir for water and does more harm than good.

Information concerning pipe size and proper spacing of outlets can be found in the Design Manual, Part 2, Chapter 10.

All repair and replacement work of subsurface drains should be done in accordance with the associated Roadway Construction Standards and Publication 408 Specifications previously referenced in this section.

EXHIBIT 5						
DEED OF EASE	EMENT					
construction and/or maintenance work on the above- administrators, successors, and/or assigns, hereina GRANTOR, and the Commonwealth of Pennsylvania, D the COMMONWEALTH.  WITNES  IN CONSIDERATION of the sum of one dollar ( America to it well and truly paid by the Grantee at an presents, receipt whereof is hereby acknowledged, the G COMMONWEALTH an easement for drainage purposes	of property to be affected by the proposed mentioned State Route, their heirs, executors, fter, whether singular or plural, called the epartment of Transportation, hereinafter called  SETH:  (\$1.00) lawful money of the United States of and before the ensealing and delivery of these RANTOR does hereby grant and convey to the s, unlimited in vertical dimension as shown on					
the pertinent section of a plan which is attached hereto taken from the premises conveyed or devised to GRANTO	and made a part thereof, said easement to be OR by					
taken from the premises conveyed or devised to GRANTO dated, and recorded in the, page, t and appurtenances to the said easement, except those wh	ogether with the improvements, nerealtaments					
THE GRANTOR does further remise, release, quitclaim, and forever discharge the COMMONWEALTH or any agency, bureau, or political subdivision thereof or its or their employees or representatives of all suits, damages, claims, and demands which the GRANTOR might otherwise have been entitled to assert under the provisions of any law, for or on account of any injury to or destruction of the aforesaid property of the GRANTOR through or by reason of the aforesaid highway construction and/or maintenance work.						
FURTHER, the GRANTOR does acknowled COMMONWEALTH of his possible right to the payme herein described easement and that he does hereby waive	ent of just compensation for the taking of the					
NOW, it is hereby agreed by the GRANTOR hereing Easement shall be granted and conveyed from the GRANTOR and outlet a storm drain upon GRANTOR's property for from State Route, Segment, Constitution and proceeding along a course the attached section of Highway Plan, which is made a particular section of Highway Plan, which is made a particular section of Highway Plan, which is made as particular section of Highway Plan, which is made	NTOR to the COMMONWEALTH to construct the purpose of carrying runoff and waters away offset, being at or about Highway more particularly and graphically set forth on					
FURTHERMORE, the COMMONWEALTH shall no location caused by the discharge of waters through said of						
FURTHERMORE, GRANTOR also conveys to the Center upon said land for the purpose of cleaning, opening further agrees that no claim shall be brought against the Cormaintaining.	ng, or maintaining said drainage facilities; and					
IN WITNESS WHEREOF, the GRANTORS have exemples intending to be legally bound, intending to have said presents to be recorded in the proper Office of Recorder of	presents run with the land, and intending said					
Witness	(Seal)					
Witness	(Seal)					

INITAHTMECCIANTEDECE 41-	
IN WITNESS WHEREOF, the	ame of corporation, association, or club) porate seal to be hereto affixed by
·	xecuted this release and certify that execution hereof
BD OF DIRS, MAJORITY VOTE OF ASSOC, ETC.	CORPORATION, ASSOCIATION, CLUB, ETC.
SECRETARY	By
DATE OF CERTIFICATION (CORPORATE SEAL)	ByPRESIDENT
COMMONWEALTH OF PENNSYLVANIA:	COMMONWEALTH OF PENNSYLVANIA:
COMMONWEALTH OF PENNSYLVANIA:	I certify that, upon recording, the within instrument should be mailed to:  Right of Way Administrator Pennsylvania Department of Transportation  Agent for Commonwealth of Pennsylvania Department of Transportation

EXHIBIT 6	
DEED OF EASEMENT	
THIS INDENTURE, made this day of, [year], by County, Pennsylvania, owners of property to be affected by the proposed construction and/or maintenance work on the abovementioned State Route, their heirs, executors, administrators, successors, and/or assigns, hereinafter, whether singular or plural, called the GRANTOR, and the Commonwealth of Pennsylvania, Department of Transportation, hereinafter called the COMMONWEALTH.  WITNESSETH:	
IN CONSIDERATION of the COMMONWEALTH not opening a blocked drainage crosspipe and drainage outlet ditch which carries water over and through GRANTOR's property at or about Highway Station, and which by Act of 1945, P.L. 1242, art. IV, 670-417, the COMMONWEALTH has the right and authority to reopen the same, the GRANTOR does hereby grant and convey to the COMMONWEALTH an easement for drainage purposes, unlimited in vertical dimension as shown on the pertinent section of a plan which is attached hereto and made a part thereof, said easement to be taken from the premises conveyed or devised to GRANTOR by, dated, and recorded in the, together with the improvements, hereditaments and appurtenances to the said easement, except those which may have been retained by the GRANTOR.	
THE GRANTOR does further remise, release, quitclaim, and forever discharge the COMMONWEALTH or any agency, bureau, or political subdivision thereof or its or their employees or representatives of all suits, damages, claims, and demands which the GRANTOR might otherwise have been entitled to assert under the provisions of any law, for or on account of any injury to or destruction of the aforesaid property of the GRANTOR through or by reason of the aforesaid highway construction and/or maintenance work.	
FURTHER, the GRANTOR does acknowledge that he has fully informed by the COMMONWEALTH of his possible right to the payment of just compensation for the taking of the herein described easement and that he does hereby waive such right.	
NOW, it is hereby agreed by the GRANTOR herein and the COMMONWEALTH that a Deed of Easement shall be granted and conveyed from the GRANTOR to the COMMONWEALTH to construct and outlet a storm drain upon GRANTOR's property for the purpose of carrying runoff and waters away from State Route, Segment, Offset, being at or about Highway Station and proceeding along a course more particularly and graphically set forth on the attached section of Highway Plan, which is made a part hereof.	
FURTHERMORE, the COMMONWEALTH shall not be liable for any charge in grade, depth, or location caused by the discharge of waters through said course or caused by other natural elements.	
FURTHERMORE, GRANTOR also conveys to the COMMONWEALTH the right and privilege to enter upon said land for the purpose of cleaning, opening, or maintaining said drainage facilities; and further agrees that no claim shall be brought against the COMMONWEALTH for said cleaning, opening, or maintaining.	
IN WITNESS WHEREOF, the GRANTORS have executed or caused to be executed these presents, intending to be legally bound, intending to have said presents run with the land, and intending said presents to be recorded in the proper Office of Recorder of Deeds.	
Witness(Seal)	
Witness(Seal)	

IN WITNESS WHEREOF, the	
the duly authorized officers, this day of	, A.D. 20
	executed this release and certify that execution hereof
BD OF DIRS, MAJORITY VOTE OF ASSOC, ETC.	CORPORATION, ASSOCIATION, CLUB, ETC.
SECRETARY	ByPRESIDENT
DATE OF CERTIFICATION	PRESIDENT
(CORPORATE SEAL)	_
COMMONWEALTH OF PENNSYLVANIA: : ss:	COMMONWEALTH OF PENNSYLVANIA:
COUNTY OF :	COUNTY OF:
COUNTY OF; ss:; On, before me the undersigned Officer, personally appeared	COUNTY OF: ss:: On, before me the undersigned Officer, personally appeared
known to me (or satisfactorily proved) to be the person(s) whose name(s) subscribed to the within instrument, and acknowledge that executed the same.  IN WITNESS WHEREOF, I have hereunto set my hand and official seal.  (Seal)  Notary Public My commission expires:	who acknowledged himself to be the  of a corporation, and that he as such officer, being authorized to do so, executed the foregoing instrument on behalf of the said corporation.  IN WITNESS WHEREOF, I have hereunto set my hand and official seal. (Seal)  Notary Public My commission expires:
COMMONWEALTH OF PENNSYLVANIA: : ss: COUNTY Of: Recorded in the Office for Recording of Deeds in and for aforesaid County in Deedbook  pageWitness my hand and seal of office on:  Record of Deeds .	I certify that, upon recording, the within instrument should be mailed to:  Right of Way Administrator Pennsylvania Department of Transportation  Agent for Commonwealth of Pennsylvania Department of Transportation

	DEED OF RELEASE AND QUITCLAIM
FED. PROJ. NO.	_ Ditch and Drainage Acts
COL.	_ 36 P.S. 670-417
CITY. BORO. TWP.	_
S.R. SEG. OFF.	(TO BE USED ONLY WHEN MONETARY
CL. NO.	CONSIDERATION IS PAID OR WORK
CLAIMANT	_ IN LIEU THEREOF)
	I (we)address) Intenance of a drainage ditch inTownship,
	County,
Pennsylvania, on my (our) property located at for and in consideration of the sum of	Dollars
account if any damages to my (our) property this	therwise, against it or them or any of them, for or on rough construction or maintenance of any drainage, or
according to the standards of the Departmen improvement is hereto attached and made a part the Commonwealth against any claim made by	r by reason of the subsequent maintenance thereof t of Transportation. A plan showing the proposed of this release and further, I (we) do hereby indemnify a lessee of said property, other than those who have
according to the standards of the Departmen improvement is hereto attached and made a part the Commonwealth against any claim made by	r by reason of the subsequent maintenance thereof t of Transportation. A plan showing the proposed of this release and further, I (we) do hereby indemnify a lessee of said property, other than those who have my (our) hand(s) and seal(s)
according to the standards of the Department improvement is hereto attached and made a part the Commonwealth against any claim made by joined in this release.  IN WITNESS WHEREOF, I (we) have hereto set not this day of	r by reason of the subsequent maintenance thereof t of Transportation. A plan showing the proposed of this release and further, I (we) do hereby indemnify a lessee of said property, other than those who have my (our) hand(s) and seal(s)
according to the standards of the Department improvement is hereto attached and made a part the Commonwealth against any claim made by joined in this release.  IN WITNESS WHEREOF, I (we) have hereto set in	r by reason of the subsequent maintenance thereof t of Transportation. A plan showing the proposed of this release and further, I (we) do hereby indemnify a lessee of said property, other than those who have hy (our) hand(s) and seal(s)
according to the standards of the Department improvement is hereto attached and made a part the Commonwealth against any claim made by joined in this release.  IN WITNESS WHEREOF, I (we) have hereto set not this day of	r by reason of the subsequent maintenance thereof t of Transportation. A plan showing the proposed of this release and further, I (we) do hereby indemnify a lessee of said property, other than those who have  hy (our) hand(s) and seal(s)

IN WITNESS WHEREOF, the		
IN WITNESS WHEREOF, the		
the duly authorized officers, this day of	, A.D. 20	
	executed this release and certify that execution hereof	
BD OF DIRS, MAJORITY VOTE OF ASSOC, ETC.	CORPORATION, ASSOCIATION, CLUB, ETC.	
SECRETARY	D.,	
DATE OF CERTIFICATION (CORPORATE SEAL)	ByPRESIDENT	
COMMONWEALTH OF PENNSYLVANIA:	COMMONWEALTH OF PENNSYLVANIA:	
COMMONWEALTH OF PENNSYLVANIA:	I certify that, upon recording, the within instrument should be mailed to:  Right of Way Administrator Pennsylvania Department of Transportation  Agent for Commonwealth of Pennsylvania Department of Transportation	

# CHAPTER 9 EMERGENCY OPERATIONS

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#### 9.1 INTRODUCTION

#### **PURPOSE**

This chapter familiarizes Department personnel with proper procedures relative to incident management including localized and wide-spread activity. The document provides information necessary to understand the Department of Transportation's role in incident response/management, and the minimum protocols which are to be followed. These procedures are for use in emergency situations only.

The target audience includes all Department personnel that have or may be assigned a role in responding to or managing highway incidents.

It is also intended to reinforce the protocol for the Department's participation in National Incident Management System (NIMS) and the Unified Command structure for managing highway related incidents. The Department's position within the structure will be determined during each incident and can range from liaison for Department resources to Incident Commander.

#### 9.2 GENERAL

The procedures outlined in this chapter represent an extension of Department's responsibilities and activities, as a state agency, relative to the Commonwealths "Emergency Operations Plan" and the "Commonwealth of Pennsylvania Disaster Recovery Plan".

The Secretary of Transportation has delegated the administrative authority, through the Deputy Secretary of Highway Administration, to the director, Bureau of Maintenance and Operations, also identified as the Department's Emergency Management Coordinator.

The term "Emergency Operations", as it relates to PennDOT functions and responsibilities, is defined as a "combination of circumstances creating a crisis which calls for decisive action" or "a single circumstance that requires immediate action to return the roadway to a clear and safe condition for the motoring public."

Emergency operations include the following:

- An incident on the Department right-of-way that has caused a roadway lane restriction, highway closure, or to be partially blocked.
- A national or state of emergency which affects PennDOT operations.

- A situation wherein the potential (or actual) exists for a serious accident or damage to property, or significant interference with operations of the Department.
- A situation which could reflect major discredit upon the Commonwealth of Pennsylvania and/or the Department of Transportation.
- A situation not so categorized above which is so classified by an appropriate authority.

In the descriptive narrative above, the terminology "decisive action" connotes a requirement for critical decisions a decisions which must be made by proper authority. In such situations, the decision making process at the appropriate levels of authority is completely dependent upon efficient and effective communications.

For example, a specific emergency occurrence may require a timely decision by the Secretary of Transportation or the District Executive. Such a decision will not be timely, if it is rendered at all, if a failure in communications occurs. Effective communications are a function of standardized and efficient procedures to assure the right decision, by the right person, at the right time is made. Effective control is thus a function of organization, procedures and communications. A deficiency, in any of these areas can result in a critical failure of the Department to adequately respond to a situation.

(The Communications Flow Chart can be found in Appendix "D" "Flowcharts")

Emergency operations extend beyond Departmental boundaries. In addition to winter meetings with local partners, referenced in Chapter 4, County Maintenance Offices should hold summer meetings to sustain coordination and communication between emergency response personnel, State and local police, County Emergency Management Agencies and local Governments.

#### 9.2.1 AUTHORIZATION

The Pennsylvania Code, Title 4, Section C, "Responsibilities of Departments and Agencies During Emergencies", Chapter 3, "Pennsylvania Emergency Management Services Act of 1978", as amended, assigns emergency management responsibilities to Commonwealth departments and agencies. All departments and agencies have been tasked with developing Emergency Operations and Continuity of Government Plans, to include general protection of employees and assets, training requirements, incident reporting,

disaster analysis and tests and exercises of the plans. Each department and agency also has specific tasks relative to that department or agency.

- 9.2.2 PA C.S. TITLE 4, SUBCHAPTER C, 3.25
  "SPECIFIC RESPONSIBILITIES"
  SUBSECTION (II) "DEPARTMENT OF
  TRANSPORTATION" ASSIGNS THE
  DEPARTMENT TASKS THAT
  INCLUDE THE FOLLOWING
  - 1. Mitigation activities shall include the following:
    - a. Disseminate information on flood insurance to the operators of public and private transportation systems and facilities.
    - b. Assure that new facilities and equipment, toward which the Department is requested to make a financial contribution, will not be constructed or located in the floodplain or at a site subject to hazards such as mine subsidence and hazardous industry, wherever economically feasible.
  - 2. Preparedness activities shall include the following:
    - Maintain plans and procedures for the implementation of assigned emergency response activities.
    - b. Maintain plans and procedures for the emergency evacuation of Department facilities to include dissemination of alert information to employees, implementation of evacuation and designation of key personnel to maintain essential Department functions.
    - c. Maintain plans and procedures, in coordination with the Pennsylvania State Police, for routing and route control associated with the emergency evacuation of the Capitol Complex and state office buildings located in Philadelphia, Pittsburgh, Scranton and Altoona.

- 3. Emergency response activities shall include the following:
  - a. Deploy emergency response team representatives to the Harrisburg and three (3) Area Emergency Operations Centers of the Commonwealth, as requested by the Pennsylvania Emergency Management Agency, for the coordination of Department emergency response activities.
  - b. Collect and report, to the Pennsylvania Emergency Management Agency, information on major disaster disruption of and damage to state, federally aided and other highway systems and facilities, to include summary information regarding major disruptions and damage on county and local systems and facilities.
  - c. Collect and report, to the Pennsylvania Emergency Management Agency, information on major disaster disruption of and damage to key air, rail and bus transportation systems and facilities.
  - d. Assist, as requested, by the Pennsylvania Emergency Management Agency, in the emergency supply of motor fuels and transport services in accordance with all applicable federal and state laws and regulations.
  - e. Assist, as requested, by the Pennsylvania Emergency Management Agency, in the designation of routes for the emergency movement of people.
- 4. Recovery activities shall include the following:
  - Prepare and submit, to the United State Department of Transportation as appropriate, State requests and applications for Federal Assistance in the repair of disaster damage to interstate and federally aided highways and facilities.
  - ii. Prepare and submit or assist in county or local preparation and submission of specialized Federal Disaster Applications relating to the emergency supply of temporary public transportation service

within federally declared major disaster areas.

- iii. Supply professional engineering assistance in highway, road and bridge damage survey and reporting work and activities prerequisite to filing of Federal Disaster Assistance Project Applications relating to such facilities, to include the inspection of completed major projects.
- iv. Supply technical and administrative advice and assistance to county and local governments in matters relating to the repair and replacement of county and local roads and bridges, as well as the preparation and filing of applications for federal assistance.
- v. Disseminate information on the availability of federal emergency assistance to agencies and organizations to which the Department extends financial assistance.

#### 9.3 NATIONAL INCIDENT MANAGEMENT SYSTEM (NIMS)

# OVERVIEW AND TRAINING REQUIREMENTS

On February 28, 2003 Homeland Security Presidential Directive HSPD#5 was issued. HSPD#5 directed the Secretary of Homeland Security to develop and administer a National Incident Management System. NIMS provides a consistent nationwide template to enable all government, private sector, and nongovernmental organizations to work together during domestic incidents.

NIMS is a comprehensive, national approach to incident management that is applicable at all jurisdictional levels and across functional disciplines.

#### The intent of NIMS is to:

- 1. Be applicable across a full spectrum of potential incidents and hazard scenarios, regardless of size and complexity.
- 2. Improve coordination and cooperation between public and private entities in a variety of domestic incident management activities.

HSPD#5 requires Federal departments and agencies to make the adoption of NIMS by state and local organizations a condition for Federal preparedness assistance (grants, contracts, and other activities) by FY 2005. The Department has met that requirement and utilizes NIMS as the management tool during emergency incidents.

The NIMS is a standardized, on-scene, all hazards incident management concept. NIMS allows its users to adopt an integrated organizational structure to match the complexities and demands of single or multiple incidents without being hindered by jurisdictional boundaries.

NIMS has considerable flexibility.

- 1. It can grow or shrink to meet different needs.
- 2. Meet the needs of incidents of any kind or size
- 3. Allow personnel from a variety of agencies to meld rapidly into a common management structure.
- 4. Provides logistical and administrative support to operational staff.
- 5. Be cost effective by avoiding duplication of efforts.

NIMS consist of procedures for controlling personnel, facilities, equipment, and communications. It is a system designed to be used or applied from the time an incident occurs until the requirement for management and operations no longer exists.

One of the key aspects of becoming NIMS compliant is to ensure that appropriate personnel are trained. The required training courses, provided by Federal Emergency Management Agency (FEMA), are web-based and available free of charge. Other required courses such as Emergency Transportation Operations (ETO) training are provided by the Department. To facilitate this effort the Department has identified the training required, the groups to be trained and a schedule of Department provided courses and dates of training in Policy Letter dated April 20, 2009, as revised. FEMA Independent Study Courses WEB address for this training is;

www.training.fema.gov/EMIWeb/IS/crslist.asp.

# 9.4 MOBILE EMERGENCY TEAMS (MET) OBJECTIVE

The purpose of this section is to establish pools of selected personnel and equipment from which Mobile Emergency Teams can be selected to aid other Maintenance Facilities in times of emergencies, and provide management with the means to respond quickly to emergency situations with efficient, qualified teams of personnel and equipment. "MET" may be dispatched for technological, natural and human-made disaster events.

#### 9.4.1 RESPONSIBILITIES

The prime responsibility for the team rests with the District Executive or his/her designee. The Assistant District Executive for Maintenance is responsible for planning and coordinating the development of the "MET". It shall also be the Assistant District Executive for Maintenance' responsibility to ensure the team assignments are reviewed annually.

Requests for "MET" activation/deployment actions are to be reported immediately to the Director, BOMO or to the Area Command at 717–783-5437.

#### 9.4.2 TEAM COORDINATION

The District Executive shall have the County Maintenance Manager survey their counties to determine which employees and equipment can be away from their home county for an extended period of time. In addition to the primary team personnel the County Maintenance Manager shall develop a list of substitute personnel for those primary personnel who are unable to respond to a particular emergency.

It is recommended each team consist of the following personnel and equipment:

#### 9.4.2.1 Personnel

The County Maintenance Manager shall prepare and maintain a list of dependable operators, mechanic, and supervisory staff, which can be made available for immediate deployment with the team. This list shall contain, but is not

limited to, the following personnel:

- 4 Certified Equipment Operators
- 1 Certified Fuel Truck Operator
- 1 Mechanic
- 1 Foreman
- 1 Assistant County Maintenance Manager

The most desirable operators are those that are capable of operating and are certified on multiple types of equipment with proficiency and are agreeable to such an assignment

#### 9.4.2.2 EQUIPMENT

The County Maintenance Manager shall prepare and maintain a list of dependable equipment, which can be made available for immediate deployment with the team. This list shall contain, but is not limited to, the following equipment:

- 4 (minimum) 33,000 Gross Vehicle Weight dump trucks appropriately equipped for the emergency
  - 1 All Wheel Drive grader with plow
  - 1 Front end loader
  - 1 tractor with 30 ton low boy trailer
  - 1 Pick-up truck equipped with chain saw
  - 1 Fuel Truck
  - 1 Mechanics Truck

Any truck, loader and grader with mounted snow blowers, when used, may require additional operators.

#### 9.4.3 REPORTS

The Engineering District shall report by County and District the personnel and equipment available to form the "MET". The County report shall be made on Form M-622 and the District Summary on Form M-623. (See Appendix "C" Forms") Blank forms can be reproduced locally.

The District must ensure that all reports have been filled out properly and distributed no later than November 1 of each calendar year. Distribution includes:

- Team personnel notification
- District and County Equipment Manager
- Director, BOMO

The resource reports will be made available to each District for their reference in requesting "MET" deployment.

#### 9.4.4 DEPLOYMENT

When it is determined by the District Executive that emergency circumstances have exceeded the capacity of the available county forces, the affected County Maintenance Manager through the Assistant District Executive for Maintenance should call upon the "MET" within the Engineering district to neutralize the emergency. Central Office approval is not required, however immediate notification to the Area Command Center (717-783-5437) is required.

Should the magnitude of the emergency exceed the resource limits of an Engineering District that District Executive, or designee, shall request the activation of the "MET" from another Engineering District. Requests for "MET" activation from another district shall be made to the Director, Bureau of Maintenance and Operations (BOMO) or the Area Command Center.

The appropriate forms relative to MET Team activations are included in Appendix "C" "Forms" of this Chapter. They include the "Met Checklist <sup>a</sup> Requesting Organization" and "Met Checklist <sup>a</sup> Receiving Organization". The forms must be filled out, in their entirety, and forwarded to the Director, BOMO or the Area Command Center prior to MET activation. This requirement is for all MET activations.

The Director, BOMO, via the Area Command, shall assume overall coordination of the deployment. The Assistant District Executive for Maintenance, or designee, of the home district shall assume responsibilities for planning and coordinating actions relative to the deployment arrangements for their District. The Assistant District Executive for Maintenance, or designee, of the receiving district shall assume responsibility for all action related to receiving and deployment

within the Engineering District.

It is recommended that a well-qualified supervisor from the home district be assigned to supervise a large team. The receiving District shall supply support personnel and maps to the "MET" since it will be working in unfamiliar territory.

The receiving Maintenance Organization shall arrange overnight accommodations.

#### 9.4.5 MET LODGING CARDS

Employees assigned to a Met Team shall be issued a Commonwealth Corporate Card. Employees not preassigned to a MET Team, that are activated due to an Emergency, shal utilize the Departments "Agency Holding Card". The "Agency Holding Card" Policy Letter was issued February 12, 2009. A copy can be obtained by contacting your local Human Resources Office. The following provisions shall apply:

- Hotel Orders (STD-192) have been discontinued
- Agency Lodging Cards may be used for room and tax payments under the following circumstances:
  - Individual employee who is traveling to a one-time event, whose position does not usually require travel and has not been issued a Commonwealth Corporate Card
  - Individual employee who travels less than four times a year and has not been issued a Commonwealth Corporate Card
- MET Team Employees that bid on and are assigned to a MET Team must obtain a Commonwealth Corporate Card
  - Commonwealth Corporate Cards are assigned to an individual employee, not to an organization.
  - Because MET members change on a regular basis, monitoring and purging of Commonwealth Corporate Cards will need to occur
  - Managers cannot use their own Commonwealth Corporate card to pay for other employees lodging

- Preferred lodging properties should be used if practical
- Commonwealth corporate cards can be used by employees to purchase food
- Non-Designated MET Members It is recognized that an emergency could occur that requires employees not assigned to a MET to assist during an emergency. Because emergencies can occur at any time, the outlined procedures are on a 24/7 basis:
  - The sending district is to contact the Department's Area Command at 717-783--5437 with the following information:
- Names of non-designated MET members requiring rooms
- How many rooms are required
- Check-in and probable check-out dates
- Name of lodging property selected.
  - The Area Command will in turn contact the Bureau of Office Services, "Agency Lodging Card" Section to arrange payment
  - The host district can obtain food for nondesignated MET members by following the Department's catering policy. This food can be paid for with a Purchasing Card.

Cash advancements and reimbursements for individual expenses shall be made according to Management Directive 230.10.

#### 9.4.6 TIME AND CHARGES

Labor and equipment, including transfer time, shall be charged to the County receiving the aid. Time worked by the "MET" shall be certified on the "Cross Application Time Sheet" by the County Maintenance Manager of the county receiving the aid. These forms shall be returned to the home county in time for processing. A complete copy shall be kept at the receiving county for audit purposes and in the event Federal aid for the event is available.

### 9.5 COMBINED FACILITIES RESPONSE PLAN (CFRP)

Each Department facility (owned or leased) shall have a current CFRP Plan developed and updated and posted in a visible location, in accordance with Publication 284, "Facilities Manual".

#### 9.6 DISASTER RECOVERY

The purpose of this section is to give a brief overview of the programs available to the Department. These procedures apply to minor or localized conditions as well as general disaster conditions which occur over a major geographical area. Specific guidance can be secured from the Department's Publication 550, "Disaster Recovery Manual", located on the LAN at P:\penndot shared\Bureau of Maintenance and Operations\Disaster Recovery\Disaster Recovery Training Packet 2006.

### 9.6.1 DAMAGE ASSESSMENT AND REPORTING REQUIREMENTS

Maintenance organizations are to refer to the Department's "Damage Recovery Manual" (Pub. 550) for damage assessment and reporting criteria.

The use of the disaster recovery activities codes for reimbursement of services relative to Department Force and contracted services activities may be authorized by the District Executive or his/her designee when in the opinion of the District Executive a disaster is of such magnitude that it may qualify for Federal Aid. This includes events that are natural in occurrence such as floods, tornadoes, etc. and human-made events such as vehicle accidents or Homeland Security activities.

It is the responsibility of the maintenance organization to ensure the proper reporting procedures are being followed. Each emergency/disaster event is unique unto itself and will be managed according to the severity and geographical properties associated with the emergency/disaster. Generally, the following will apply to all emergencies/disasters that have a potential for or have a Gubernatorial or Presidential Disaster Declaration.

#### 9.6.2 FEDERAL REIMBURSEMENT

The Department may be eligible for Federal Highway Administration's "Emergency Relief Program" funds for damages to Federal Aid Highways. The Department may also be eligible for Federal Emergency Management Agency "Public Assistance Program" funds for damages to non-Federal Aid Highways.

More specific guidance for these programs is available in Department's Publication 550, "Disaster Recovery Manual".

#### 9.6.3 FEDERAL AID HIGHWAYS

Congress authorized the Emergency Relief Program from the Highway Trust Fund for the repair or reconstruction of Federal Aid highways and roads on Federal lands which have suffered serious damage as a result of (1) natural disasters or (2) catastrophic failures from an external cause. This program supplements the commitment resources by States, their political subdivisions, or other Federal agencies to help pay for unusually heavy expenses resulting from extraordinary conditions.

Emergency Relief funds are not intended to cover all damage repair nor interim emergency repair costs that will necessarily restore the facility to pre-disaster condition. State and local highway agencies must expect additional expenditures, changes in project priority, and some inconvenience to traffic as a result of emergency conditions. State and local governments are responsible for planning and providing for extraordinary conditions. Economic hardship is not a factor in determining repair eligibility.

#### 9.6.4 NON-FEDERAL AID HIGHWAYS

The "Public Assistance Program" provides supplemental Federal disaster assistance for the repair, replacement or restoration of disaster damaged, publicly owned facilities and facilities of certain non-profit organizations. The Federal share of assistance is not less than 75% of the eligible cost of the emergency measures and permanent restoration.

To be eligible the work must be required as a result of the disaster, be located within the designated disaster area and be the legal responsibility of the applicant.

#### 9.6.5 RESPONSIBILITIES

The District Executives are responsible for establishing procedures within the engineering district to collect essential disaster information such as damages, repair costs, anticipated repair timelines, etc. and develop priorities for the repair of damages.

The District Disaster Recovery Coordinators or Emergency Management Coordinators are responsible for collection of damage assessment data and dissemination of this data to BOMO on an "as requested" basis. The data collected shall include type of damages to bridges and highways, anticipated repair costs, Federal-aid/non-Federal aid highway, and anticipated repair strategies.

The County Maintenance Manager is responsible for the damage assessment and repairs specific to his/her county.

The District Municipal Services Representative(s) will be the liaison between the municipalities, the Department/Federal agencies and assist in the Preliminary Damage Inspection and recovery process.

## 9.7 INCIDENT RESPONSE EXPECTATIONS

Department maintenance crews will respond to requests for assistance where a Department maintained highway has been impacted or an incident which has closed or partially blocked the state highway.

Department personnel <u>shall respond</u> to incidents when requested by the Pennsylvania Emergency Management Agency (PEMA), PSP, or Local Emergency Management Agencies (911 Centers) as follows:

- When requested where the road closure/restriction is expected to last more than two (2) hours for all highway incidents located on or affecting Department maintained highways.
- Incidents on Department maintained highways that impact the Safety of the motoring public such as:

- Bridge damage
- Sinkholes or slides
- Guiderail or median barrier damage
- Damage to regulatory signing
- Highway incident debris removal.

The Department may be called upon to provide interim traffic control on occasion at incidents where the cause can be traced to a responsible party such as a contractor or utility. Maintenance and protection of traffic control operations should be transferred to the responsible party upon arrival to the site.

#### 9.7.1 RESPONSE ACTIVITIES

The Department's response shall be limited to the following actions:

- Provide Traffic Control for the safety and protection of emergency responders and the motoring public including activities such as the erection of traffic control devices in cooperation with state and local police authorities.
  - The Department typically will not provide personnel for flagging operations or manual traffic direction at intersections.
- Activate detour routes in cooperation with state and local police authorities as necessary.
- Activate Dynamic Message Signs or Highway Advisory Radio services as necessary.
- Provide materials (i.e. sand, anti-skid, etc.) as appropriate at the emergency scene.
- Assist in removing highway incident debris.
  - The Department shall assist with minor, non-hazardous debris removal.
  - Major debris removal is the responsibility of the owner or agent (towing company).
- Participate in the Unified Command

#### 9.7.2 RESPONSE METHODS

It shall be the responsibility of the District Executive to establish the method of response for each respective Engineering District. Method(s) of response can include, but are not limited to:

- Use of County maintenance forces by-way of incident specific call-out or assignment.
- Pre-established District or County Response Teams

### 9.7. 3 INCIDENT MANAGEMENT PARTNERS AND ROLES

The Department has many partners it interacts with as part of incident management. The following is a summary of the various partners and their roles in Incident Management.

### 9.7.3.1 PENNSYLVANIA STATE POLICE (PSP) AND LOCAL POLICE

Operate as partners under a Unified Command structure.

- Ensures that coordination between agencies occurs and unified command decisions are made.
- Assist in the process of road closure and initiating detours.
- Select appropriate towing agencies and request service as necessary.
- Ensure DEP is notified of hazardous material incidents. (PSP will request recommendations from DEP and/or County Hazmat regarding hazardous material incidents.)
- Investigate incidents/Initiate prosecution as applicable/Conduct criminal investigations.

# 9.7.3.2 COUNTY EMERGENCY MANAGEMENT AGENCY (COUNTY EMA)

The County EMA is responsible for liaison duties with Unified Command or the Incident Commander in charge of the incident scene.

- May participate in Unified Command.
- In the event of a hazardous material incident, may provide Hazmat Commander to assist the Incident Command (IC) in unified command decisions.
- Assists in the coordination of residential/business evacuation and/or shelter if necessary. For non-hazardous incidents, County Emergency Management Agency can monitor the overall conditions of incident for reporting purposes if requested.

#### 9.7.3.3 DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP)

In the event of a hazardous material or environmental impact incident assists the unified command in decisions on hazardous mitigation and appropriate protective actions for the general public.

- DEP provides monitoring if necessary to assess the exposure of responders or the general public.
- DEP assures cleanup of hazardous material following DEP regulations according to the Hazardous Material Emergency Planning and Response Act (Act 165).
- DEP issues emergency permits for the transportation of hazardous waste if necessary and may arrange for the emergency cleanup/disposal if responsible party is non-responsive and DEP determines an imminent threat exists to public health and safety or the environment outside of DEPARTMENT right-of-way.

NOTE: DEP will not pay for cleanup or removal of spills that are entirely contained within Department right-of-way.

 Maintenance organizations may utilize the Department's "Statewide Environmental Remediation Contract" for emergency isolation, clean-up and removal of hazardous materials.

#### 9.7.3.4 FIRE COMPANIES

Respond to call outs. Participate in the Unified

Command. Provide firefighting services or stay on standby for potential fire hazards. Coordinate with Emergency Medical Services (EMS) to provide rescue service. Assist in setting up helicopter landing zones if required. If available, Fire Police (FP) provides traffic control. Note: Fire police are under the command of PSP and/or Local Police, not the Fire Chief, per the vehicle code.

#### 9.7.3.5 EMS

Responds to call outs. Participate in the Unified Command. Addresses medical needs at the scene and provides transport.

#### 9.7.3.6 TOW COMPANIES

Provide tow service and clean up of wreckage on an as needed basis. Services are called into service by state or local police.

### 9.7.3.7 PENNSYLVANIA EMERGENCY MANAGEMENT AGENCY (PEMA)

Is responsible for planning and response for disasters and emergencies and is notified by County Emergency Management Agencies and PSP.

#### 9.7.3.8 TRAFFIC REPORTING AGENCIES

Has ability to provide information to motorists regarding highway incidents and detours.

#### 9.8 EMERGENCY TRAFFIC ROUTES

#### 9.8.1 INTRODUCTION

Delays due heavy congestion, total blockages due to vehicle accidents and severe weather conditions and other reasons are everyday occurrences on the highway system. In cases where the traffic is blocked in either one or both directions for long periods of time, immediate use of predetermined temporary emergency (detour) routes should be used to reduce unnecessary inconvenience to the motoring public.

#### 9.8.2 OBJECTIVES

Establish responsibility, furnish guidelines, and outline requirements for the development and implementation of emergency traffic routing plans to:

- 1. Reduce the time to implement an emergency route when such a routing is desired or required.
- 2. Decrease delays, to an absolute minimum, when the main highway is blocked.
- 3. Prevent commercial vehicles and the motoring public from being stranded because of poor road conditions due to adverse weather and other causes.
- 4. Expedite the movement of traffic through unfamiliar areas by the placement of traffic control devices along the emergency route.
- 5. Alert the motoring public by notifying local radio and television stations of the emergency event and alternate routing.

Specific guidance emergency traffic routing can be found in the Pub 46 Traffic Engineering Manual, Section 6.14 Detours.

## 9.9 HAZARD CONTROL AND CLEAN-UP

#### 9.9.1 OBJECTIVE

To promote cooperation between the state and local police and department field personnel; to clarify Department responsibilities for the detection and expeditious removal of debris and restoring the roadway as soon as possible after an incident or accident has occurred as required by the Vehicle Code (Title 75), objectives being:

- 1. Decrease the possibility of additional dangers and hazards after an accident/incident occurs.
- 2. Assure that maximum coordination exists between all responding services for the welfare of the motoring public and the prompt removal of debris.
- 3. Assure coordination exists for the containment/removal of hazardous materials from the roadway with DEP assistance and direction.
- 4. Restore the area at the scene of the accident/incident to a safe condition and insure proper departments are notified in cases of serious damages to the environment.

5. Insure that the normal flow of traffic is resumed as soon as practical.

#### 9.9.2 **RESPONSIBILITIES**

#### 9.9.2.1 SAFE MOVEMENT OF TRAFFIC

The safe movement of vehicular traffic on highways is the responsibility of the State Police, State and/or local police where highways pass through political subdivisions, and PennDOT.

### 9.9.2.2 SEQUENCE OF FUNCTIONS AND RESPONSIBLE ACTIVITY

Generally, the sequence of functions that normally must be accomplished following a vehicle accident or incident, and the responsible person/activity that should perform these functions are indicated in the table on pages 9-11 that follows.

#### 9.9.2.3 PROCEDURES

When the local emergency management official is not on the scene, the responsibility rests with the ranking police officer having jurisdiction and present at the incident scene. However, the control of specific operations should be vested with the professional organization or service responding to the scene. Fire, rescue and medical services should be supervised by the professionally trained organization called to the scene. For example, traffic control, investigation and release of information to the news media should be handled by the police; salvage and major debris clean-up should be completed by the wrecker service; placement of traffic control devices, minor debris clean-up, non-hazardous materials clean-up and temporary road repairs by PennDOT or the local highway maintenance

- 1. **Isolation of the Incident** If it becomes necessary to completely isolate the incident scene, emergency routing will be required. See "Emergency Traffic Routes" in Section 9.8, of this chapter.
- 2. **Control of Traffic** Effective control of traffic is essential to prevent further accidents and injuries and to assure that working and maneuvering room is available for responding personnel and equipment.

FUNCTION	PERSON ACTIVITY
Detection and reporting	Police and PennDOT
Traffic advisory to local news media	Police and PennDOT
Control of traffic flow	Police
Telephone serious incidents affecting highway traffic or road closures to PennDOT BHSTE via District Executive	PennDOT
Emergency routing and placement of barricades	Police, PennDOT or municipal forces
On-Scene Emergency Relief	Fire, rescue, and Emergency Medical Technicians (EMT), police, PennDOT, or municipal forces or, DEP Waste Management
Investigation and establish relief	Police and DEP
Salvage and clean-up of minor debris excluding Hazardous Materials**	Wrecker Service, DEP Waste Managment
Major debris clean-up	Wrecker Service
Temporary repairs to roadway excluding Hazardous Materials	PennDOT or municipal forces
Open roadway to traffic	Police, PennDOT or municipal forces
Filing of Investigation Report	Police
Release of detailed information to news media	Police
Process claim for responsible party*	PennDOT
Hazardous Materials**	Carrier, DEP, PSP, Contractor

- \* When Department forces are involved in traffic control and/or clean-up, the foreman in charge must follow the procedures outlined in Chapter 14 "Accident Damage Program" of this Maintenance Manual.
- \*\* PennDOT's involvement is to be limited to the erection of traffic control devices in cooperation with the State and local police and/or provide equipment and materials (e.g. anti-skid) as appropriate to the scene for containing a spill in accordance with the technical advice provided by the DEP.

For additional information and guidelines regarding Hazardous Materials Incidents refer to section 9.10 of this chapter.

- 3. Damage to PennDOT Property State and local police should notify the respective PennDOT County Maintenance Manager or PennDOT should notify State and local police of accidents that occur within the county where damage is caused to Department property within the right-of-way (Refer to Chapter 14 Accident Damage Program" of this Maintenance manual for additional details on damage claims involving Department property and reimbursement procedures.)
- 4. Action Required When Roadway Is Closed For More Than Two Hours Where local emergency responders are in charge of the incident site and the roadway is expected to be closed/restricted for more than two hours, it should be reported immediately to the State or local police and then the PennDOT County Maintenance Manager as outlined in "RESPONSIBILITIES" area of section 9.9.2 "Hazard Control and Clean-up Objectives" of this chapter.
- 5. **Emergency and Relief Equipment** Police should insure that necessary equipment and nonconventional equipment (heavy duty wreckers, etc.) when required, have been requested when clearing the roadway. This is critical to the restoration of a smooth and safe flow of traffic.
- 6. **Selection of Wrecker Service** In the event an incident involves a carrier that has its own contracts for wrecker service, the police at the scene should determine whether the owner's service or other nearby available wreckers services will be used. This decision should be based on the situation at the incident scene, condition of the roadway, hazards to the motoring public, nature of cargo (if present and involved) and the time and distance factors for the incident location and the owner's wrecker location with respect to the incident. PennDOT Maintenance organizations should have wrecker service under contract to expedite removal of disabled vehicles when it has been determined the owner's service is not readily available.
- 7. **Minor Vehicle Damage** On heavily traveled roadways, incidents involving minor property damage that require an investigation should not be permitted to cause other traffic to be delayed. If there are no major injuries or vehicular damages, the incident should be photographed or sketched, wrecked vehicles should then be removed to the nearest exit or city street, where an investigation

can be completed after the congestion is relieved.

#### 9.9.2.4 COORDINATION REQUIREMENTS

- Cooperation and Mutual Understanding In order that the procedures outlined in Section 9.9.1, Hazard Control and Clean-up Objectives" are effective, mutual understanding and coordination between the responding departments and agencies is essential. At minimum annual conferences/meetings should be held at the county and political subdivisions levels to discuss the principal features of these procedures. Early conferences should be arranged between the following for the purposes indicated below:
  - 1. State and local police should agree on jurisdiction of incident investigations and control centers where highways pass through political subdivisions. A State Police representative from the station or troop headquarters area should survey these control centers and insure that there is appropriate coverage by the control centers for the entire Commonwealth.
  - 2. State Police, PennDOT Maintenance Managers (under the supervision of the District Executive), local police, and local highway departments should work together to establish the pre-determined "Emergency Traffic Routing Plans". Such pre-planning is invaluable when it becomes necessary to close traffic on heavily traveled roadways.
  - 3. State Police, Turnpike Officials and PennDOT Maintenance Managers (under the supervision of the District Executive) should coordinate and establish predetermined emergency routes in the event the Turnpike traffic must be diverted to Department highway(s) or the traffic must be diverted off Department highways onto the Turnpike.
- Commonwealth Highways The current official Commonwealth Transportation Map may be used to refer to a geographic location where the straight-line-diagram is not available.

The community index for the Pennsylvania Official Transportation Map booklet (Pub. 315)

should be used in conjunction with the official highway map for proper spelling and location of a community within the Commonwealth.

# 9.10 HAZARDOUS MATERIALS INCIDENTS

Hazardous materials Incidents are those where small incidents occur within the right-of-way. PennDOT personnel involvement in Hazardous Materials incidents is to be limited to the following:

- Erection of traffic control devices
- Establish detours
- Attempt to identify product spilled/released
- Provide containment materials (i.e. sand, anti-skid, etc.)

PennDOT personnel are not to be actively involved in the isolation of or removal of Hazardous Materials.

Fuel spills (gasoline, diesel fuel, propane, natural gas) that result from leaking vehicle fuel tanks, including those fuel spills and leaks that result from vehicle accidents are not considered to be Hazardous Materials incidents.

The circumstances of an incident, as described in this section concerning hazmat team response, must be evaluated by the ACCM or Foreman in charge to determine if the incident is beyond PennDOT's capabilities and necessitates response by a certified hazmat team. The following guidelines have been developed by the Commonwealth and are included in "Emergency Management Guidance & Information Circular" (No. C93-1).

 The spill or leak involves, or has the potential to involve, not only gasoline, fuel oil, heating oil, propane or natural gas from the fuel supply tanks or lines involved, but also hazardous chemicals or substances that were being transported by the vehicle or stored on site.

- Multiple vehicles and/or heating system fuel supplies are involved in the incident and are leaking different fuel, thereby creating a complex chemical environment that exceeds the training level or overwhelms the response capability of the fire department.
- The imminent potential danger of significant uncontained fire or explosion exists at the site of the incident.
- The potential exists for development of pockets of combustible/ explosive vapors around the incident site due to the terrain and/or structures involved in or adjacent to the incident.
- Visible smoke or vapor cloud is reported around the incident site at the time of the fire department's dispatch or arrival indicating a possible fire and/or chemical reaction.
- Identification markings on the vehicle, cargo, or adjacent stored materials indicate the presence of reactive products which may leak and react violently with leaking or spilled fuel, air (oxygen etc.) and/or suppressants (water, foam).
- The potential exists for the fuel spill or leak to directly enter a waterway and diking or diverting the fuel spill or leak is beyond the capability of the first responders at the scene.
- The potential exists for the contamination of drinking water supplies.
- The safety of the first response personnel is jeopardized because of insufficient training, equipment, personal protective equipment or supplies needed under a typical "Emergency Service Response".
- Uncontrolled radiological, biological or toxicological materials are present and may be released or are unstable.

The Department is not necessarily responsible for disposal of the spilled or leaked fuel products. It is the responsibility of the owner of the vehicle or property involved in the incident to properly dispose of the spilled or leaked fuel.

- The Department of Environmental Protection enforces regulations governing the transportation and disposal of waste materials in Pennsylvania. DEP considers local government entities, including fire departments, as "non-generators" for purposes of hazardous waste regulations when their activities are restricted to cleaning up and collecting hazardous waste rather than actually generating such waste (25 Pa. Code Chapter 287).
- DEP further considers fuel-contaminated cleanup products and fuel-contaminated soil as "residual waste" rather than hazardous waste (25 Pa. Code Chapter 299). Given these two definitions, when properly packaged, such residual waste contained in quantities < 2200 pounds, does not require record keeping, and can be disposed of in most landfills.

Hazardous Materials, either those generated by-way-of a highway incident or those discovered/abandoned in the right-of-way, are not to be stored at PennDOT facilities.

PennDOT maintenance organizations may utilize the Department's "Statewide Environmental Remediation Contract" for emergency isolation, clean-up and removal of hazardous materials.

Notification of all Hazardous Materials incidents to the appropriate agency is mandatory. A Flowchart with the proper agency notifications for Hazardous Materials incidents is located in Appendix "D", Figure 9.9.1, of this chapter.

#### 9.11 SPECIAL CONTRACTOR/ RENTED EQUIPMENT FOR REMOVAL OF VEHICLES/DEBRIS

#### 9.11.1 RENTING EQUIPMENT

To eliminate long delays in obtaining the services of special-duty equipment such as truck mounted high-lift mobile cranes, self propelled cranes with swinging boom, wreckers, etc. from construction companies, equipment dealers or other sources, the Pennsylvania State Police may rent special heavy-duty equipment for clearing the roadway of damaged vehicles and guarantee payment, by the Department of Transportation, for charges and services rendered to include

equipment operator and assistants subject to the following conditions:

- Special heavy-duty equipment will be called to the scene of an incident only when available regular heavy-duty wrecker service can NOT perform the task at hand.
- The State Police will:
  - 1. Contact the PennDOT County Maintenance Manager, or a designated representative of the County Maintenance Manager, each time a rental is needed and inform the PennDOT County Maintenance Manager, or designee, of the vendor who provided the services name and address.
  - Inform the vendor who will furnish the specialized equipment to render an itemized statement of charges, showing costs per hour separately for rental of equipment and operators by the number of hours used, to the PennDOT County Maintenance Manager.
  - 3. Furnish the vendor the complete address where the invoice is to be sent.
  - 4. Provide the PennDOT County Maintenance Manager concerned, after the investigation has been completed, with necessary information regarding the incident to include PSP incident or report number so that he/she may process the statement via the District Executive for payment by Central Office in accordance with existing Comptrollers instructions.

#### 9.11.2 SERVICE CONTRACTING

PennDOT maintenance personnel are not trained in containment and clean-up of hazardous materials and may not have all the safety equipment and materials necessary for this work. Some motor and heating fuels in certain conditions are hazardous. At times PennDOT maintenance personnel must wait for a DEP representative or someone from the company involved in the incident to make a decision on the method of clean-up and who is responsible. Maintenance organizations may utilize the Department's "Statewide Environmental Remediation Contract" for clean-up of Hazardous Materials incidents and unknown materials/container discovered within the right-of-way. (Emergency Procurement rules apply)

The clean-up of certain non-hazardous routine fuel spills in ranges up to 250 gallons may be done without the assistance of an outside agency. For the purpose of "Damage Recovery" billing, efforts are to be made to determine the responsible party. Costs for activities at the incident scene should be charged to a "Reimbursable Report" claim as outlined in Chapter 14 of this manual.

Some suggestions for non-hazardous material fuel leak kits are as follows:

<u>Item</u>	Count	Wt.		
Sorbant Booms 8" diameter x 10'				
long	4	48#		
Sorbant pads 18" x 18" x 3/16"	200	19#		
Hazorb Pillows	10	20#		
Petro Sorb 50 lb bags				
Floor Dry (in stock)				
Reconditioned 55 gallon 17H drum	IS			

Spills/leaks that are beyond the capabilities for clean-up by the County maintenance personnel should be effectively contained and then turned over to an emergency response contractor. Spill clean-up agreements must be maintained with spill contractor companies so they can respond 24 hours a day/7 days a week. Pre-established rate schedules must be included in the contract.

The District Office should provide a listing of Emergency Spill Response Companies with 24 hour notification numbers to their respective County Maintenance Manager. This applies primarily to PennDOT material spills.

The clean-up of non-hazardous residual waste, for example, oil dry, spill diapers and used booms with proper disposal should be completed as part of the task.

## 9.12 DEBRIS REMOVAL FROM HIGHWAYS

#### 9.12.1 OBJECTIVE

The purpose of this section is to establish policies and outline procedures for the expeditious removal of abandoned or disabled vehicles including spilled cargo on State highways (excludes Hazardous Materials covered in Section 9.12 of this chapter).

Abandoned or disabled vehicles, dead animals or other objects resulting from an incident on the traveled portion of the highway may cause additional incident or unnecessary delays to traffic should be moved to the nearest point where such objects will not interfere with or obstruct traffic on the traveled portion of the highway.

The authority to remove or direct removal of disabled/abandoned vehicles is the responsibility of the police. The following statutes and regulation apply:

- "Incident Scene Clearance" 75 PA C.S., § 3745.1,
  - a. Police Officer: A police officer may immediately remove or direct removal of a wrecked vehicle if the owner or operator cannot remove the wrecked vehicle or refuses or fails to have the vehicle removed as required under this section. In carrying out the provisions of this subchapter, no liability shall attach to the police or, absent a showing of gross negligence, to any person acting under the direction of the police officer for damage to any vehicle or damage to or loss of any portion of the contents of the vehicle.
- "Removal of [Vehicles and Spilled Cargo]
   Abandoned or Presumed Abandoned
   Vehicles from Roadway" 75 PA C.S.,
   § 7310.
  - a. General Rule Police officers may immediately remove or direct removal of any vehicle abandoned or presumed to be abandoned vehicle from any roadway,

including the roadway's berm or shoulder, to the nearest point off the roadway where the vehicle will not interfere with or obstruct traffic. Immediately following an accident, the wrecked vehicle or spilled cargo shall be removed or directed to be removed from the roadway by a police officer if the owner or operator cannot remove the wrecked vehicle or refuses or fails to have the vehicle removed within a reasonable period of time.

- b. **Storage of Cargo** When, in the opinion of a police officer, it is deemed necessary for the protection of the contents or load of a wrecked vehicle or spilled cargo from the elements, spoilage or theft, the police officer may remove or cause to be removed and have stored at the expense of the owner of the contents or load or spilled cargo at the nearest practical place of storage.
- c. Liability for Damage or Loss In carrying out the provisions of this section, no liability shall attach to the police officer or, absent a showing of gross negligence, to any person acting under the direction of the police officer for damage to a presumed abandoned vehicle or damage to or loss of any portion of the contents or load or spilled cargo of the vehicle.

#### 9.12.2 **POLICY**

It is the PennDOT policy to reduce, to a minimum, the time required to clean-up an incident and to restore the roadway to a safe normal flow of traffic. To implement this policy, PennDOT maintenance personnel shall:

- Cooperate with police officers in detecting and reporting the location of vehicles or other objects on the highway within our right-of-way.
- Provide prompt and efficient assistance to police officers at any time of the day or night to clean debris from state designated highways.
- Barricade dangerous highway sections or sign emergency route when normal routes are blocked.

 Assist police officers in or if directed by a police officer to remove abandoned or disabled vehicles (and spilled cargo excluding Hazardous Material) from any roadway to the nearest point where such objects will not interfere with or obstruct traffic in accordance with 75 C.S. § 7310.

#### 9.12.3 PROCEDURES

The following procedures are to be followed in reporting and removing the vehicles/debris as listed below:

#### 9.12.3.1 ABANDONED VEHICLES

All Department personnel who observe vehicles which appear to be abandoned within the right-of-way on state designed highways, will immediately notify the County Maintenance Manager furnishing the following information:

- Make of vehicle
- · Model of Vehicle
- Color
- Year of Manufacture
- Date observed
- Time observed
- Location a SR/SEG/OFF or Mile marker
- If Ascertainable:
  - a. Vehicle identification number
  - b. Vehicle registration plate number
  - c. State of vehicle registration

The County Maintenance Manager will promptly transmit the above information to the local police of the political subdivision in which the vehicle is abandoned or State Police for further action. If a vehicle is found abandoned on PennDOT property such as storage areas, the County Maintenance Manager must notify the State Police who will cause the vehicle to be removed (75 PA C.S. § 3352). Notifications to local or State Police will be confirmed in writing. In no event shall these requirements prevent our

maintenance forces from removing or causing to be removed any abandoned vehicles that are presenting a danger to the motoring public.

### 9.12.3.2 WRECKED VEHICLES AND CONTENTS OR LOADS

All PennDOT personnel who observe an incident on any highway, which results in disabled or abandoned vehicles or spilled cargo will immediately notify the County Maintenance Manager furnishing the information listed below then assist with injured, guide others to a safe place and alert other travelers.

#### LOCATION OF INCIDENT

- 1. SR/SEG/OFF and Common Name
- 2. Mile Marker, if known
- 3. Descriptive landmarks to help identify location
- 4. Municipality
- TIME AND TYPE
  - 1. Time of incident, if known
  - 2. Number and type of vehicles involved and nature of cargo or nature of debris causing the incident.
  - 3. Number and seriousness of injuries

#### TRAFFIC CONDITIONS

- 1. Is the route blocked, lane restricted, alternate lane delays, slow moving or normal moving traffic?
- 2. If not moving, which lane/lanes are closed
- 3. Any apparent hazards (fire, leaking fuel/oils, etc.)

#### • RECOMMENDATIONS

1. Recommend the route that the emergency responders and maintenance operators take to the incident site which will help avoid heavy or blocked traffic.

Upon receipt of the above listed information, the County Maintenance Manager will promptly notify the local police of the political subdivision in which the incident occurred or nearest State Police Barracks. Depending upon the seriousness of the incident, the County Maintenance Manager should alert his/her forces and ready equipment/materials to furnish assistance as requested by police. The County Maintenance Manager shall also notify the Assistant District Executive for Maintenance of the situation.

When police officers or Department employees, having permission of a police officer, direct removal of abandoned/disabled vehicles or other objects by commercial equipment under the conditions set forth in 75 PA CS § 7310, the commercial activity that uprights and/or removes the vehicle and stores the cargo then has a lien on the vehicle, and must be paid for up-righting, removal and storage charges by the owner before the vehicle is released. It is not the obligation of the police or the Department to pay removal or storage charges.

In the absence of a police officer, the ranking Department representative, having permission of a police officer, shall remove or cause to be removed disabled vehicles and/or spilled cargo in accordance with 75 PA CS § 7310, if the owner or operator cannot, refuses or fails to have it removed within a reasonable time.

Where there is no serious injury involved, the disabled vehicle or spilled cargo shall be moved beyond the travel portion of the highway, providing personnel and appropriate equipment are readily available. When there is serious injury or a fatality, the disabled vehicle will not be moved until authorized by local or State Police. In the event PennDOT equipment is not readily available, the nearest available appropriate removal or crane services will be called to remove the vehicle/cargo from the highway under provisions of 75 PA CS, § 6109(a) and 7310(a) through (c). In all cases where vehicle and/or cargo are moved under the direction of PennDOT personnel (having permission of a police officer) without the knowledge of the owner/operator, the local and State Police and the County Maintenance Manager shall be notified of its location.

#### 9.12.3.3 FOREIGN OBJECTS

As part of the Department's responsibility to preserve, repair and restore the existing state roadways (75 PA CS § Section 9101) and the Governor's Highway Safety Program, it is felt that each employee can contribute immeasurably in this most effective program.

In addition to the many killed animals along our roadways, there are cases where rocks and runoff material create dangerous driving conditions. There are instances where lumber, boxes and various other objects fall from vehicles and create a dangerous driving condition. Each employee including the operators of Department equipment is requested to remove from the roadway, including the shoulder area, any item that is considered a hazard. Employees are to attempt to properly identify debris to ensure it is nonhazardous. When it becomes necessary to park equipment along the highway for this purpose, operators should be cautioned to park their equipment in a safe manner, and not create a traffic hazard. In addition, Department maintenance employees are further cautioned in their personal safety when removing foreign objects from the highway (wear safety hat, safety vest and use flares or some type of lighting device).

#### 9.12.3.4 COOPERATION

The success for the prompt removal of disabled and/or abandoned vehicles, contents and loads, or other objects and/or clean-up of spilled cargo from Commonwealth highways, depends to a large degree on the availability, attitude and cooperation of the Department employees with local and State Police and related emergency responders and personnel. It is extremely important that the County Maintenance manager be made available on an "On Call" basis any time of the day or night to handle requests for assistance. In this respect, the County maintenance Manager will notify, in writing, the nearest State Police, police of the political subdivision, and news and radio media in their area of operation with the following:

- Current telephone numbers of the County Maintenance Managers during regular working hours (include what constitutes regular hours of operations).
- Telephone numbers of the county maintenance building attendant, when one is employed, and hours of operation.

 Name and current home telephone numbers of the County Maintenance Manager and assistants for emergencies which may occur after hours or when the building is unattended (such as weekends/holidays.)

# 9.13 SNOW OPERATIONS OBJECTIVES

The primary maintenance objective during the winter months is to keep all state roads in a reasonably passable condition. Chapter 4 of the Maintenance Manual discusses all phases of Ice and Snow Control Operations.

However, when a general snow storm delays the movement of traffic for a substantial period of time and could possibly become a disaster or emergency, the assistance of additional personnel and equipment to perform snow and ice control operations may be necessary for an extended period of time.

#### 9.13.1 RESPONSIBILITIES

### 9.13.1.1 COUNTY MAINTENANCE ORGANIZATION

As outlined in Chapter 4 of this Maintenance Manual (Publication 23), each County Maintenance Facility has developed plans for snow removal and ice control operations to include assignment of personnel and equipment and use of materials. When it becomes necessary to establish shifts for personnel assigned to the County Maintenance Facility,

- Insure that the current inventory of material is readily available.
- Know where additional qualified personnel, equipment and/or materials can be obtained. When it is foreseen that additional personnel, equipment and/or materials will/may be required, authority to get the needed resources should be requested from the respective Assistant District Executive for Maintenance.
- Dispatch the MET (personnel and equipment) to stricken areas when requested by the appropriate authority as discussed in Section 9.4 of this chapter.

• Each County affected should prepare a county roads "Status" map with an established legend that includes personnel. The number of personnel will depend on the size and severity of the emergency and the experience of the individuals discussed in this section. The "Status" map should be updated as information becomes available to show the percentage of first priority, second priority and third priority roads as defined in Chapter 4 of the Maintenance Manual.

#### 9.13.1.2 COUNTY MAINTENANCE MANAGER

The County Maintenance Manager or a designated representative will be in charge of operations and will normally remain at the main maintenance building throughout the storm.

Appropriate personnel under the direction of the County Maintenance Manager should be alerted of impending storms and be available for further instructions.

In addition, the County Maintenance Manager should:

- Keep in touch with the District Incident Command Center regarding any developments which may occur in their county.
- Be certain that all communications systems, electronic and non-electronic, are functionally properly and know whom to contact in case of failure of the communications systems.
- Keep in communications with the State or local police and other law enforcement agencies, and the county Emergency Management Agency.
- Coordinate all requests for emergency assistance with the State and local police for verification.

Requests for assistance for non-state maintained highways must be forwarded from the County Emergency Management Agency Office (911 Center) via PEMA.

#### 9.13.1.3 EQUIPMENT MANAGER

The Equipment Manager or a designed representative will see that equipment is quickly and properly loaded, refueled and/or repaired and returned to work. The Equipment Manager (District or County) will also keep the County Maintenance Manager or designee informed of equipment that requires one hour or more for repairs and the time it leaves the shop to return to work. The Equipment Manager will schedule mechanics so that adequate personnel are available to support the operations shift schedule.

#### **9.13.1.4 RECORDER**

As required, one or more individuals (preferably construction inspection personnel assigned to the county during winter months) will be designed to collect information for the "Incident Reports" and insure that this information is submitted, as required in Chapter 4 of the Maintenance Manual, to the Area Command. In addition, this individual will be responsible for keeping the county road "Status" map current, assist in answering the telephone and perform any other tasks required by the County Maintenance Manager.

#### 9.13.1.5 RUNNERS

As required by the County Maintenance Manager, runners will be used to secure repair parts, deliver equipment to the field, and check on particular conditions as directed.

### 9.13.1.6 DISTRICT INCIDENT COMMAND CENTERS (DICC)

District Incident Command Centers support the respective Engineering Office. They are designed as follows:

The District Incident Command Center Incident Commander will be responsible for:

- Assembling the road and condition reports from for the counties in the Engineering District
- Reporting of incidents in RCRS in accordance with current policy

Any changes in the assignment of the District Incident Command Center by the district office are to be reported to the Director, BOMO prior to the effective date of the change.

It is important for the District Executive to know where additional personnel, equipment and materials can be obtained. A listing by Maintenance Organization showing the amount of and type of resource that can be made available (equipment with operators) to form additional MET(s) (refer to section 9.4 of this chapter) is advisable.

When it is foreseen that additional personnel, equipment and/or materials will be required, the Central Office Area Command shall be notified. The Area Command will review the statewide situation and determine where assistance from other Engineering Districts can be most effectively mobilized. District forces will be dispatched by the Area Command to those Engineering District that need the resources. Refer to Section 9.4 of this chapter for further instructions.

When a limited access highway or a traffic route becomes blocked and cannot be quickly and effectively reopened, the District Executive, or designee will inform the Area Command personnel of such blockage and the reason for the blockage such as drifting snow or other reasons. As soon as the roadway is opened to traffic, the opening is to be reported to the Area Command.

Normally, serious incident reports will be reported by telephone to the BOMO On-Call Area Commander upon notification of the incident however, when the Area Command has been activated, call one of the following in the order indicated:

Bomo oncall Area Commander & Activated

Area Commander 717-783-5437

Planning Section 717-783-5355

Logistics Section 717-783-5343

Public Information Officer 717-525-5354

When the District Executive or designee deems an event occurring outside regular working hours sufficiently important to warrant alerting Central Office Key Personnel, the district shall contact the On-Call Area Commander at the phone number indicated above.

#### 9.13.1.7 CENTRAL OFFICE

The Director, BOMO, will keep the Secretary of Transportation and the Deputy Secretary for Highway Administration advised on events requiring emergency operations as determined by the nature of the operation. The Director of Communications/Press Office will also be notified and will assign personnel to work at the Central Office Area Command, when activated.

#### 9.14 ICE JAMS

#### 9.14.1 OBJECTIVES

The purpose of this section is to present policy covering ice jams and to establish PennDOT procedures for reporting them.

Occasionally, PennDOT personnel may be requested to blast an ice jam. Neither the Department of Transportation nor any other Commonwealth Department or agency is authorized to undertake blasting operations. Private individuals requesting action to eliminate a minor ice jam shall be referred to the executive officer or governing body of the political subdivision where the ice jam is located. In the event the political subdivision is unknown, notification of the ice jam shall be made to PEMA at 717-651-2001. The local government may then act under the conditions set forth by Commonwealth Statutes and Regulations.

#### 9.14.2 REPORTING PROCEDURES

PennDOT personnel in the field shall observe, at frequent intervals, locations know to be subject to serious jamming and especially those locations likely to cause damage to any highways, bridges and other public facilities.

When PennDOT personnel observe the development of any potentially major widespread ice jams, they are to notify the Lead EPLO @ 717¬503-8440 or the On-Call Area Commander and the county office. The county office will notify the District Executive.

NOTE: The name of the river or stream and the facility or property damaged or threatened shall

also be included in the report.

The Director, BOMO, shall forward reports of ice jams to the Director, PEMA, who in turn will recommend to the Governor's Office appropriate action to alleviate the condition.

# 9.14.3 PROTECTION OF HIGHWAY FACILITIES & THE TRAVELING PUBLIC

PennDOT maintenance forces working in close cooperation with the Emergency Management Coordinators and County Directors will be prepared for and will promptly initiate measures necessary to protect highways and bridges, protect the traveling public and keep the highways and bridges open to traffic.

#### 9.15 BRIDGE SCOUR EVENTS

#### 9.15.1 OBJECTIVES

The Commonwealth experiences periodic flood events which can compromise the safety of bridges susceptible to scour. Scour is the erosion of the streambed or banks due to flowing water. PennDOT maintenance personnel may be requested to monitor scour critical bridges during a significant flood event to document the effects on scour critical bridges and to coordinate the closure of bridges that show signs of distress, are in pressure flow, or are overtopped. Areas of significant flooding and any bridge closures will need to be communicated to the District Bridge Unit.

### 9.15.2 MONITORING AND REPORTING PROCEDURES

The Department's Bureau of Design, Bridge Quality Assurance Division, has developed a manual titled Scour Critical Bridge Monitoring Field Manual located in Appendix IP 02-D of Publication 238. This manual provides a background on basic scour principles and the details of the scour critical bridge monitoring and reporting process. Department personnel are to be familiar with, and are to refer to, this manual when performing flood monitoring of scour critical bridges.

The typical steps followed in the execution of a significant flood event monitoring and reporting

process are broken into three phases:

- Prior to
- During
- After

Descriptions of these three phases are:

#### Prior to a flood event:

- 1. Maintenance personnel will be familiar with the Scour Critical Bridge Monitoring Field Manual.
- 2. Maintenance personnel will use Scour Critical Bridge Lists and Scour Critical Bridge Maps provided by the District Bridge Unit to identify and locate scour critical bridges. The maps of scour critical bridges are available at P:\penndotshared\Bridge\Scour Critical Bridge Maps and are updated monthly.

Note: Scour critical bridge map scale is 1 inch equals 1 mile.

3. County Maintenance on-call personnel will watch weather forecast if severe weather is predicted.

#### During the flood event:

- County Maintenance on-call personnel will receive notification for reported bridge closure/outage due to flooding by various means:
  - review of the Road Condition Reporting System (RCRS) email, or
  - 911 center telephone notification, or
  - telephone notification by police
  - Deploy Department personnel as needed.
  - Notify Assistant District Executive for Maintenance and District Bridge Engineer or their designees.
- 2. Maintenance personnel will prioritize monitoring in coordination with the District Bridge Engineer per the requirements of

Publication 238 Section 2.6.4.2.

- 3. Maintenance personnel will determine the extent of the flooded area. Site visit Category A, B, and C scour critical bridges within a 2-mile radius of the RCRS reported bridge closure/outage using Scour Critical Bridge List and maps. If any bridge visited requires closure per the requirements of the Bridge Flood Monitoring Log, expand the area in 2-mile increments beyond that bridge (see Example).
- 4. Maintenance personnel will monitor all Category A bridges within the flooded area for obvious signs of distress and record observations on a Bridge Flood Monitoring Log.
- 5. Maintenance personnel will close the bridge per the requirements of the Bridge Flood Monitoring Log if obvious signs of distress are observed or if overtopping or pressure flow occurs. See Scour Critical Bridge Monitoring Field Manual for pressure flow definition.
- 6. As the severity of flooding increases and at the direction of the District Bridge Engineer or County Maintenance Manager, maintenance personnel will monitor Category B and Category C bridges as well. Bridge Flood Monitoring Logs are only mandatory for monitoring Category A bridges.
- 7. Maintenance personnel will report areas of flooding and closed bridges to the County Maintenance Manager.
- 8. The County Maintenance Manager will provide daily summaries of bridge monitoring activities and flood areas to the District Bridge Engineer.
- 9. While in transit between bridges/locations of flooding, maintenance personnel should investigate the status of Category A, B, and C bridges along the route of travel.
- 10. Monitoring of a bridge is no longer required after its closure.
- 11. Bridges are to be monitored a minimum of two times. Monitoring of a bridge may be discontinued when the water level is at

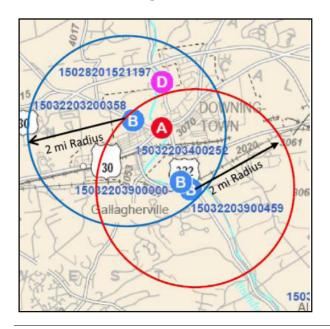
least two feet below the bridge load carrying members and after it has been clearly observed that the flood waters are receding, i.e., at the time of the visit to the bridge, the water level is now lower than that observed at the previous visit.

#### After the flood event:

- 1. District Bridge Unit will prioritize follow-up bridge inspections based on reported flood areas, the severity of flooding, and the results of the Bridge Flood Monitoring Logs.
- 2. Prior to re-opening any scour critical bridge closed due to flooding, approval from the District Bridge Engineer is required per Publication 238 Section 2.6.4.3.
- 3. Completed Bridge Flood Monitoring Logs must be submitted to the County Maintenance Manager upon completion of flood monitoring or on a weekly basis, whichever occurs first. The County Maintenance Manager will forward the assembled logs to the District Bridge Engineer.

### **Example: Determining Extent of Scour Critical Bridges to be Monitored**

First bridge closure reported as bridge 15032203900459 (a Category B bridge) reported through RCRS e-mail (See sketch below). A site visit to all scour critical bridges within a 2-mile radius of the RCRS reported closure is conducted



to determine whether those bridges meet the requirements for closure per the Bridge Flood Monitoring Log. Two-mile radius is indicated by the red circle.

Bridge 15032203200358 (northwest of the first reported closure) is determined to meet the requirements for closure per the Bridge Flood Monitoring Log. A two-mile radius from this bridge will be added as indicated by the blue circle. The preview of bridges is to be systematically expanded in 2-mile increments beyond any scour critical bridge where closure is required.

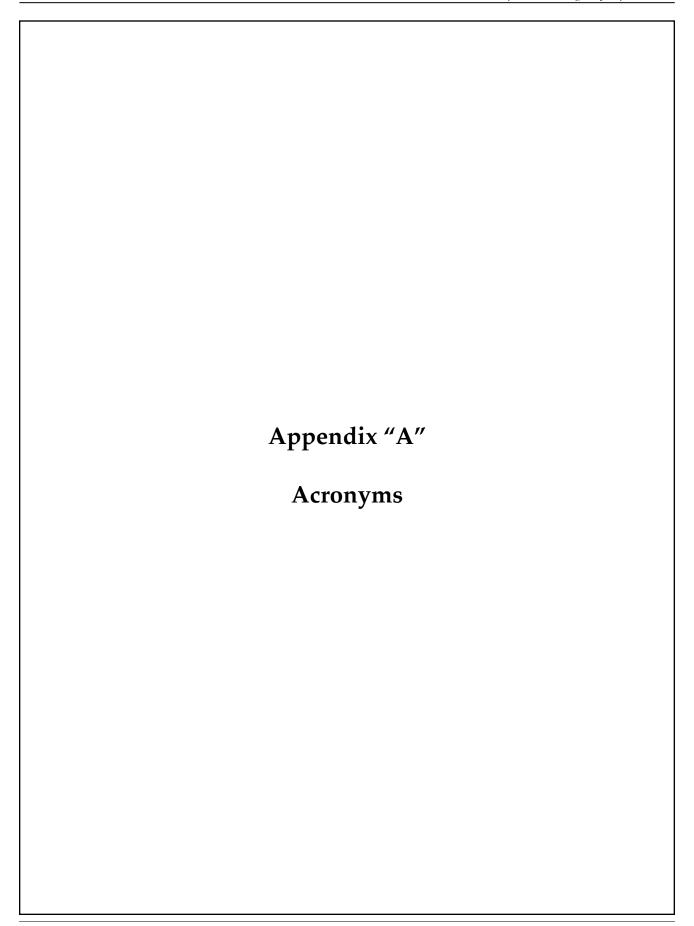
No additional bridges are found that meet the requirements for closure per the Bridge Flood Monitoring Log. All Category A bridges within the red and blue circles are to be monitored. Category B and C bridges should also be monitored depending on the severity of flooding and at the direction of the District Bridge Engineer or County Maintenance Manager

# 9.15.3 PROTECTION OF HIGHWAY FACILITIES AND THE TRAVELING PUBLIC

PennDOT forces working in close cooperation with the Emergency Management (formerly Civil Defense Area) Coordinator and County Directors will be prepared for and will promptly initiate measures necessary to protect highways and bridges, protect the traveling public and keep the highways and bridges open to traffic.

PennDOT maintenance forces will work in close cooperation with the District Bridge unit during a significant flood event to ensure the safety of scour critical bridges. If the safety of a bridge is being compromised during a significant flood event, maintenance crews shall close the bridge and/or highway and implement emergency traffic routes as described in section 9.5 of this manual and section 5.1 of the Scour Critical Bridge Monitoring Field Manual.

The District Bridge unit is to be contacted prior to reopening of any scour critical bridge that is closed due to flooding. Scour critical bridges must not be re-opened without prior approval from the District Bridge Engineer.



#### SUBJECT LISTING - ACRONYMS

**BOMO** - Bureau of Maintenance & Operations

**CERCLA** - Comprehensive Environmental Response Compensation and Liability Act

**CFR** – Code of Federal Regulations

**CHEMTREC** - Chemical Transportation Emergency Center

**DEP** - Pennsylvania Department of Environmental Protection

**EHS** – Extremely Hazardous substance (see use in definitions)

**EMC** - Emergency Management Coordinator (see use in definitions)

**EMS** – Emergency Medical Services

**EMT** - Emergency Management Technician

**EPA** – Environmental Protection Agency

FCP - Forward Command Post

FHWA - Federal Highway Administration

**HB** - House Bill

IC - Incident Command

**MET** - Mobile Emergency Team

**NIMS** – National Incident Management System

NRC – National Response Center

**NWS** - National Weather Service

**PEMA** – PA Emergency Management Agency

**PennDOT** – PA Department of Transportation

PIO - Public Information Officer

**PL** - Public Law (Federal) Pamphlet Law (State)

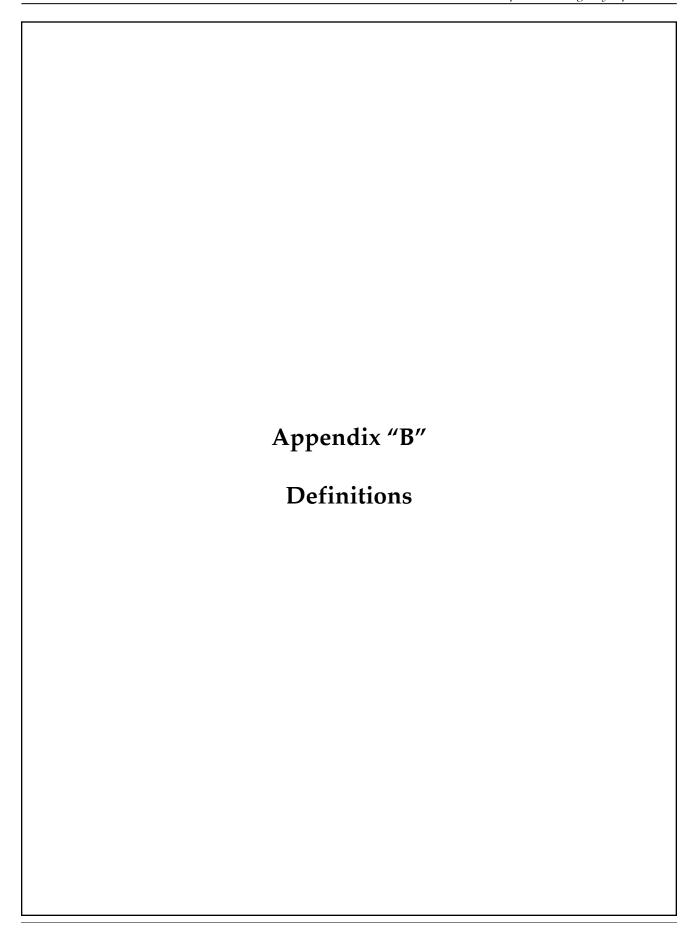
**PPC** - Preparation, Prevention and Contingency

PSP - Pennsylvania State Police

**S & R** – Search and Rescue

**SARA** – Superfund Amendment and Reauthorization Act

**SEOC** – State Emergency Operations Center (PEMA)



#### DEFINITIONS USED IN THIS CHAPTER

After Action Review/Report – A review of activities after an exercise or incident to determine lessons learned areas of success, and areas that need improvement. Normally results in a written report and recommendations.

**CERCLA** - Comprehensive Environmental Response Compensation and Liability Act – An act which regulates hazardous substances released into the environment and the clean-up of inactive hazardous waste disposal sites. It is commonly referred to as "Superfund".

**Control Center** – a facility established as a focal point equipped with necessary communications, manned by trained communicators and management, supervisory personnel authorized to make Decisions.

**Disaster** - A technological, natural or humancaused catastrophe.

- Technological disaster Any industrial, nuclear or transportation accident, explosion, conflagration, power failure, natural resource shortage or other condition, except enemy action, resulting from failure of industrial or transportation systems such as oil spills and other injurious environmental contamination, that threatens or causes substantial damage to property, human suffering, hardship or loss of life.
- Natural disaster Any hurricane, tornado, storm, flood, high water, wind driven water, tidal wave, earthquake, landslide, mudslides, snowstorm, drought, fire, explosion or other catastrophe that results in substantial damage to property, hardship, suffering or possible loss of life.
- Human-caused disaster Any condition following an attack on the United States by use of bombs, missiles, shellfire or nuclear, radiological, chemical or biological means, either by a hostile foreign state or by a domestic or foreign terrorist or criminal organizations or individuals or other non-hostile, human caused incident affectioing highways.

**Disaster Emergency** - Those conditions that by investigation may be found, actually or likely, to:

 Affect seriously the safety, health or welfare of a substantial number of citizens of the Commonwealth or preclude the operation or

- use of essential public facilities.
- Be of such magnitude or severity as to overwhelm the resources available for essential State supplementation of county and municipal efforts or resources exerted or used in alleviating the danger, damage, suffering or hardship faced.
- Have been caused by forces beyond the control of man; by reason of civil disorder, riot, terrorism or disturbance; or by factors not foreseen or not known to exist when technological processes were put into place.

**Debris** – those substances, materials, objects, conditions or phenomena that are foreign to a normal highway environment. Debris may be a result of vehicular or non-vehicular sources. It may be the result of an accident, leakage, spill, fire or any other cause. Debris includes, but is not limited to, wrecked or parts of wrecked vehicles, fallen traffic signs, markers, trees, poles or power lines, spilled and/or leaking fuels and other flammable liquids, dangerous chemicals, toxic, poisonous, explosive substances or alcoholic beverages, live, dead, and/or injured livestock or wild animals, ice, snow, high water or slide residue.

**Emergency Management** - The judicious planning, assignment and coordination of all available resources in an integrated program of prevention, preparedness, response and recovery for emergencies of any kind, whether from technological, human-caused or natural sources.

**EMS - Emergency Medical Services** - The services utilized in responding to the needs of an individual for immediate medical care to prevent loss of life or aggravation of physiological or psychological illness or injury.

Emergency Services - The preparation for and the carrying out of functions, other than functions that military forces are primarily responsible for, to prevent, minimize and provide emergency care for the injury and repair of damage resulting from disasters, together with all other activities necessary or incidental to the preparation for and carrying out of those functions. The functions include, without limitation, firefighting services, police services, medical and health services, hazmat operations, rescue, engineering, disaster warning services, communications, radiological protection, shelter, chemical and other special weapons defense, evacuation of persons from stricken areas,

emergency welfare services, emergency transportation, emergency resources management, existing or properly assigned functions of plant protection, temporary restoration of public utility services and other functions related to civilian protection.

**Evacuation** - As an emergency management function, evacuation is a protective action--moving people from a place of danger to a place of relative safety. As a phenomenon, it is a temporary mass movement of people that collectively emerges in coping with community threats, damages or disruptions.

**Explosive** - Any chemical compound, mixture or device, the primary or common purpose of which is to function by explosion, with substantially instantaneous release of gas and heat.

Extremely Hazardous Substance (EHS) - A substance identified by the Environmental Protection Agency (EPA) as extremely hazardous and meeting reporting requirements under the Superfund Amendments Reauthorization Act (SARA). Extremely hazardous substances are listed in 40 Code of Federal Regulations (CFR) Part 355 and in the EPA published "List of Lists".

**Facility** - All buildings, equipment, structures and other stationary items which are located on a single site or on contiguous or adjacent sites and which are owned or operated by the same person. For purposes of SARA Sec. 304, this includes motor vehicles, rolling stock and aircraft.

**Fire/Rescue Service** - Organized local fire departments, whether career, volunteer, or combination.

**Governing Body** - The elected government of political subdivisions, (i.e., county, city, borough, incorporated town or township government)

Hazardous Material (Hazmat) - The Secretary, U.S. Department of Transportation, has determined that a hazardous material is a substance or material which is capable of posing an unreasonable risk to health, safety and property when transported in commerce. Hazardous materials include, but are not limited to: explosives, radiological materials, etiologic (disease carrying) agents, flammable liquids or solids, and combustible liquids or solids.

**Hazardous Substance** - A substance identified as hazardous and meeting reporting requirements under CERCLA. CERCLA hazardous substances are listed in 40 CFR, Part 302 and in the EPA "List of Lists".

Hazardous Waste - Any garbage, refuse, sludge from an industrial or other waste treatment plant, sludge from a water supply treatment plant or air pollution control facility and other discarded material, including solid, liquid, semi-solid or contained gaseous material resulting from municipal, commercial, industrial, institutional, mining or agriculture operations, and from community activities or any combination of these factors which, because of its quantity, concentration, or physical, chemical or infectious characteristic, may cause or significantly contribute to an increase in mortality or morbidity in either an individual or the total population; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed.

**Incident Commander (IC)** - The person designated to manage on scene operations during a response effort.

**Incident Command System (NIMS)** – An organizational structure with responsibility for the management of assigned resources to effectively accomplish stated objectives pertaining to an incident or event. NIMS is defined in NIMS.

**Local Authorities** – is every county, municipal and other local board or body, having authority to adopt local police regulations under the constitution and laws of this Commonwealth.

**Local Municipality** – is a municipality that is not a county. (See "Municipality")

Municipality – As defined in the Pennsylvania Constitution, "a county, city, borough, incorporated town, township or similar unit of government..." (Article IX, Section 14, the Constitution of Pennsylvania).

NIMS – National Incident Management System – A system to standardize management, communications equipment, training, certification and maintenance of all emergency response. The criteria and principles are published by the NIMS Integration Center of DHS.

**NWS - National Weather Service** - An agency within the National Oceanic and Atmospheric Administration (NOAA) that is responsible for the forecasting, observation and dissemination of weather information.

**Pennsylvania Emergency Management Council** – A council comprised of the Governor and the other senior state officials that is created by law to provide policy and direction for the emergency management program statewide.

**Police Department**– the Pennsylvania State Police or the law enforcement agency of a county, city, incorporated town, borough or township.

**Political Subdivision** - Any county, city, borough, incorporated town or township.

Release - Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment (to include the abandoning or discarding of barrels, containers and other closed receptacles) of any hazardous chemical, extremely hazardous substance or toxic chemical.

**Resource Shortage** - The absence, unavailability or reduced supply of any raw or processed natural resources or any commodities, goods or services of any kind that bear a substantial relationship to the health, safety, welfare and economic well-being of the citizens of the Commonwealth.

**Roadway** – that portion of a highway improved, designed or ordinarily used for vehicular traffic, exclusive of the sidewalk, berm or shoulder. In the event a highway includes two or more separate roadways the term "roadway" refers to each roadway separately but not to all roadways collectively.

**SARA** – "Superfund Amendments and Reauthorization Act of 1986" - Title III of SARA includes detailed provisions for community planning to respond to hazardous material releases.

**SARA Facility** - Any manufacturing or storage facility that has or may hold sufficient quantities of an EHS to trigger the planning and reporting requirements of Title III.

**Spill** - An accident that allows material to flow or escape from a containment.

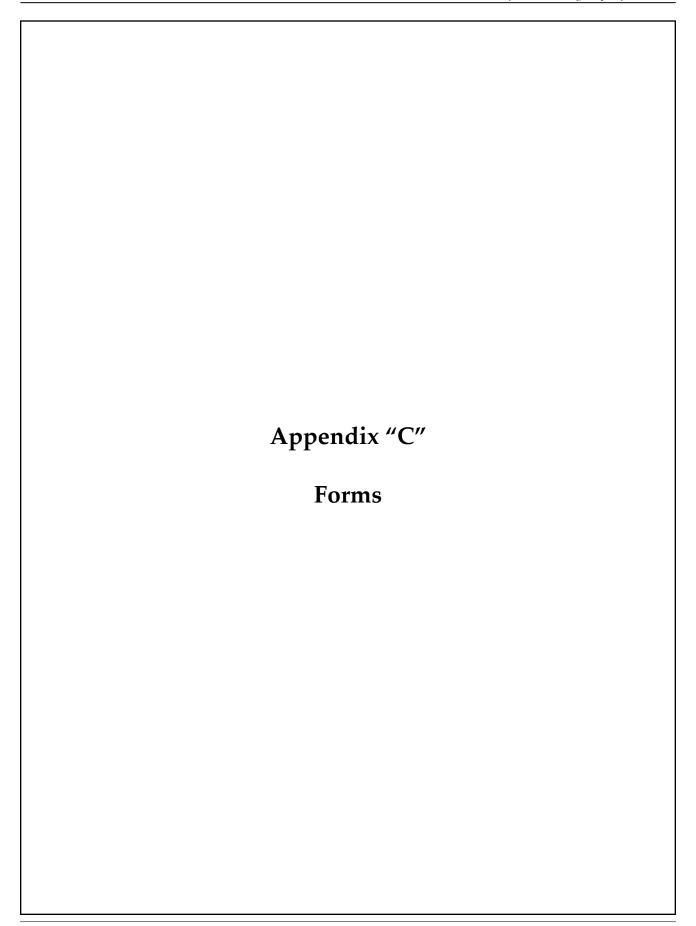
**Staging Area** - A pre-selected location that provides a base for coordinated emergency operations, assembly of persons to be moved by public transportation to host jurisdictions, a rally point for mutual aid and a debarking area for returning evacuees.

**Superfund** - The trust fund established under CERCLA to provide money the on-scene coordinator can use during a cleanup.

**Terrorism** – The unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.

Title III - Part of SARA, this is also known as the "Emergency Planning and Community Right-to-Know Act of 1986" specifies requirements for organizing the planning process at the state and municipal levels for specified EHS, minimum plan content, requirements for fixed facility owners and operators to inform officials about EHS present at the facilities and mechanisms for making information about EHS available to citizens.

**Unmet Needs** - Capabilities and/or resources required to support emergency operations, but are either unavailable or not provided for at the respective levels of government.



# MOBILE EMERGENCY TEAMS "MET" COUNTY PERSONNEL LISTING

County:		
Prepared By:	Date:	PENNDOT
PRIMARY TEAM PERSONNE	<u>EL</u>	

·			ne Numbers	<b>Equipment Certifications</b>
Name	Title	Work	Cell/Home	(See Legend Below)

STAND-BY TEAM PERSONNEL

| Contact Phone Numbers | Equipment Certifications | (See Legend Below | See Legend

# MOBILE EMERGENCY TEAMS "MET" COUNTY EQUIPMENT LISTING

	ict:

Prepared By: Date:



		Prir	nary	Stan	d-bv
Equipment Type	Equipment Specifications Attachments, GVW, Etc.	Equipment Radi Number Type		Equipment Number	
**					* *
					_
					•

#### **Equipment Certification and Personnel Title Legend**

Personnel Title Legend	Equipment Certifications				
CMM = County Maintenance Manager	AU = Automobile	OD = Oil Distributor			
ACCM = Assistant CMM	BR = Broom (Tow)	BI = Bridge Inspection Crane			
HMF = Foreman	BT = Bucket Truck	PM = Paint machine			
TEO-A = Equipment Operator A	CL = Conveyor Loader	PA = Paver			
TEO-B = Equipment Operator B	CS = Chipper	PU = Pick-up Truck			
MC = Mechanic	FI = Finish Paver	SL – Sloper			
	GA = Excavator	SP = Sweeper			
	AL = Anti-Icing Truck	SN Snow Blower			
-	MS = Mechanics Service Vehicle	SF = Sign Truck			
	AL = Aerial Lift (Self Contained)	FL = Special Purpose Equipment			
	CR = Crane	SS = Skid Steer			
	GD = Grader	SA = Single Axle Truck			
	MH = Backhoe	TA = Tandem Axle Truck			
	LD =Loader	TR = Tri-Axle Truck			
	LL = Large Loader > 3 Cubic Yard	TT = Tractor & Trailer (Low-boy)			
	CC = Crew cab	TO = Tractor & Trailer (Other)			
	FT = Fuel Truck	WD = Widener			

# MOBILE EMERGENCY TEAMS "MET" DISTRICT PERSONNEL LISTING

	C1 T-14	1040
.,.	SI I	ict:
	~~	

Prepared By: Date:



				Oı	rganiza	tion Co	ode				
Personnel Summary										I	Totals
Foreman											0
Stand-by Foreman											0
Mechanics											0
Operators											0
Stand-by Operators											0
Other Personnel, Specify Below											0
											0
											0
											0
											0
											0
											0
											0
											0
											0
Totals	0	0	0	0	0	0	0	0	0	0	0

# MOBILE EMERGENCY TEAMS "MET" DISTRICT EQUIPMENT LISTING

T.		•		
Di	C T		M	٠.
171			v	L

Prepared By: Date:



				Org	zaniza	tion C	ode				
Equipment Type											Totals
Single Axle Dump – Conventional											
Single Axle Dump – All Wheel Drive											
Tandem Axle Dump Truck									1		
Tri-Axle Dump Truck											•
Grader – Conventional											
Grader – All Wheel Drive											
Loader - Conventional Snow Bucket									1		
Loader – Conventional 1 ½ Yard Bucket											
Loader - Conventional 1 3/4 Yard Bucket											
Loader - Conventional 3 Yard Bucket											
Loader - Conventional > 3 Yard Bucket											
Loader - All Wheel Drive Snow Bucket			-								
Loader - All Wheel Drive 1 ½ Yard Bucket											
Loader - All Wheel Drive 1 ½ Yard Bucket											
Loader - All Wheel Drive 3 Yard Bucket											
Loader - All Wheel Drive > 3 Yard Bucket											
Skid Steer Loader											
Skid Steel Loddel											
Snow Blower – Truck Mounted											
Snow Blower – Grader Mounted											
Snow Blower – Loader Mounted											
Truck with Trailer											
Tractor & Trailer – Low Boy											
Tractor & Trailer – Other											
	-										
Pick –up with Radio											
Pick-up without Radio											
Tien up willout itudio											
Crew Cab											
Mechanics Repair Truck											
Fuel Truck											
Paver											
Distributor											
Chipper											
Cimpper											
Other – Specify Equipment Type Below											
Onici Opecity Equipment Type Below											
		<del>                                     </del>									
Totals	0	0	0	0	0	0	0	0	0	0	0
lotais	U	U	U	U	U	U	U	U	U	V	U

REQUESTING	REQUESTING						
ORGANIZATION: OFFICIAL:							
Number of Employees Needed for Event:	<u> </u>						
Equipment Needed	Certifications Needed						
Approx Duration of Event:							
Working Hours:							
Supervisor or Contact:							
Phone & Radio Call #'s							
Meeting Time & Location:							
Coding for Payroll and Expense Vouchers:							
	V. N						
Accommodations for Incoming Employees	Yes No						
Cash Advances Needed For Incoming Employees							
Sufficient Replacement Parts Available							
Necessary Materials and Supplies Available							
After Action Review (AAR) Completed							

	MET CHECK	LIST – RECI	EIVING ORGA	ANIZATION	
Plan of Atta	ck (How, What, & Y	Where):			
		_			 

ORGANIZATION:OFFICIAL  Number of Employees Sent:  Employee # Name	ations
Approx Duration of Event:	ations
Sending Organization Contact:	
Receiving Organization Contact:	
Crew Phone & Radio Call #'s:	
Meeting Time & Location:	
Yes N	0
Accommodations Needed for Employees	
Cash Advances Needed for Employees	
Are Sufficient Replacement Parts Available	
Are Necessary Materials and Supplies Available	
Will Receiving Organization Handle Repairs	

#### MET CHECKLIST – SENDING ORGANIZATION

Number and Type of E Equipment	Туре	Equipment Number
Special Needs for Equip	ment or Employees Being Deploy	yed:

### Aid Request Refusal Checklist Date: Time: Event: **Event Information** Area Command Staff Member Name: Phone #: Assigned: DICC Contact Assigned: Phone #: Name: Name/Phone #: Request initiated by: Organization: Description of Aid Requested: Reason for Refusal: List alternatives ideas to satisfy request, if known: Area Command Approved By: Approval/Concurrence: Date/Time:

Pennsylvania Department of Transportation

## file regarding this refusal. E-Mail distribution:

known.)

Send notification e-mail to District ICC and

Send e-mail notification with justification for refusal to State Emergency Operations Center

Department Management Personnel:

(SEOC): (Include alternate solutions if

<u>District Incident Command Center (refusing district only)</u>

Transportation Area Commander (for review by Director, BOMO)

<u>Pennsylvania State Emergency Operations Center</u> (Submitted to SEOC by Area Command Staff only after Director's review and/or approval)

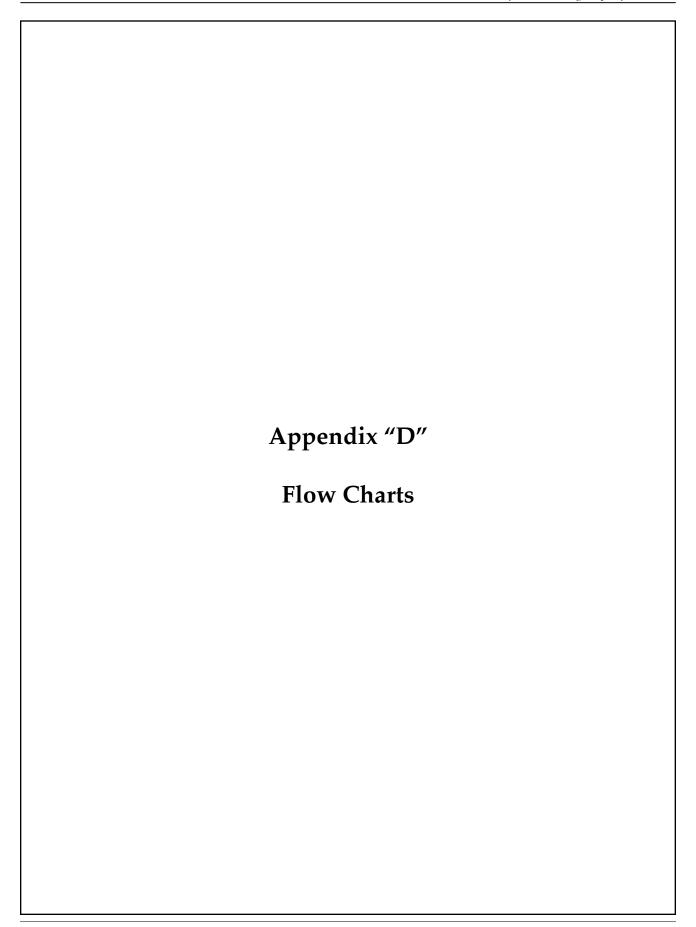
Time:

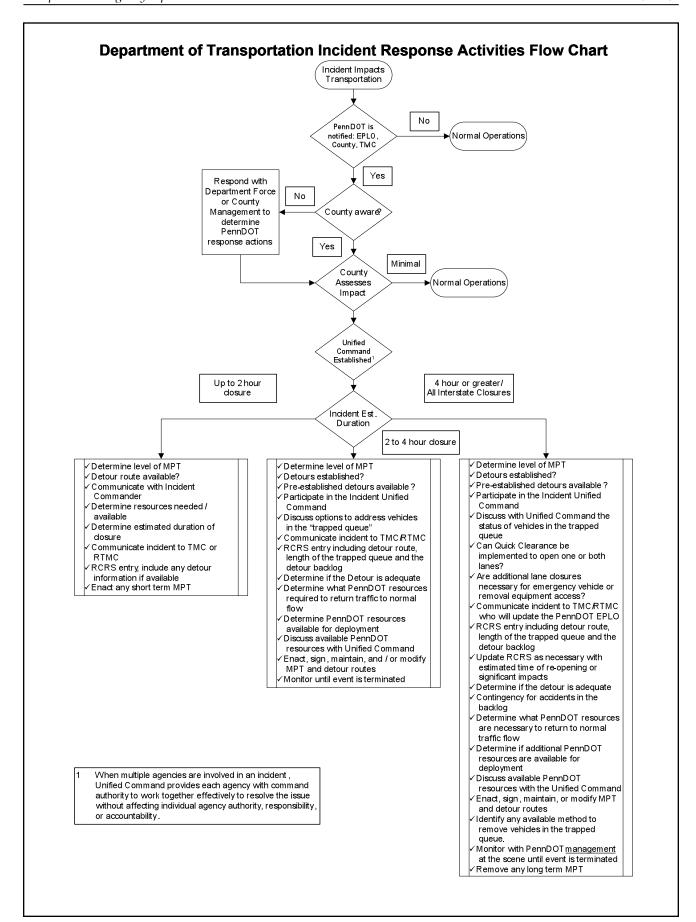
Time:

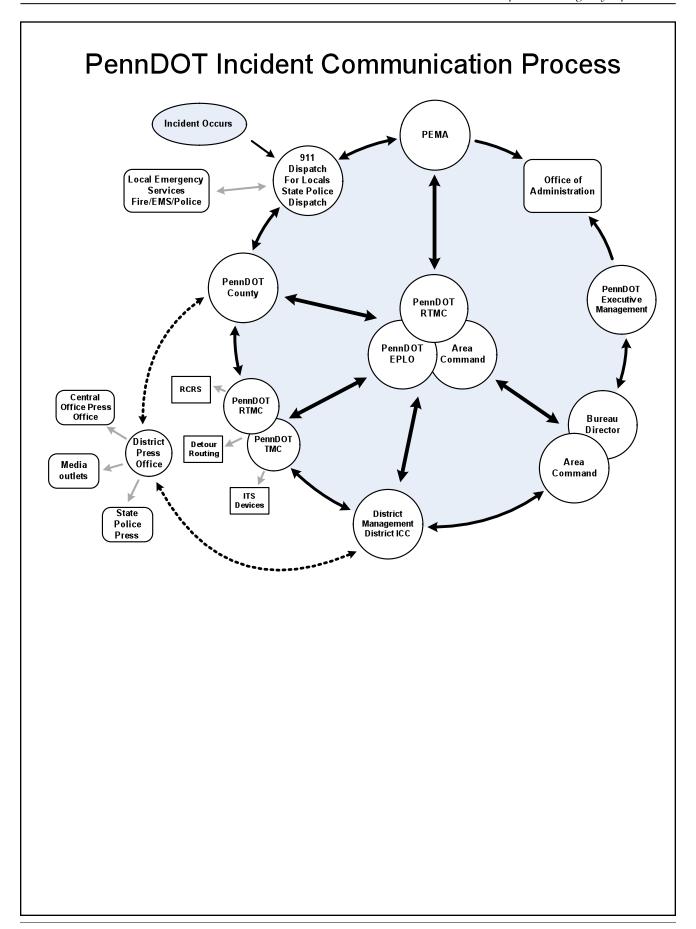
Gather and file in a folder all incident logs and pertinent information for record retention and

Sent By:

Sent By:







# CHAPTER 10 MUNICIPAL AGREEMENTS

### **TABLE OF CONTENTS**

10.1	Administrative Procedures	10 -1
10.2	Winter Services Agreements	10 -2
10.3	Comprehensive Maintenance Agreements	10 -7
10.4	Samples	10 -8

### 10.1 ADMINISTRATIVE PROCEDURES

#### INTRODUCTION

The Department of Transportation may enter into agreements with municipalities who are willing to perform certain maintenance operations on state highways (located within their municipal boundaries), where Department Forces cannot complete the task within a reasonable time. Municipalities may also maintain roadways outside their municipal boundaries if they can document insurance coverage for those roadways. Form 18-K-243 (Five-Year Winter Traffic Services Agreements for snow and ice control operations) and Form 18-K-220 (Comprehensive Maintenance Agreements for roadway maintenance activities) are the two forms used to execute these types of agreements with municipalities.

The Engineering District shall contact prospective municipalities with which the Department desires to enter into an agreement. The number and quantity of activities contained in an agreement shall depend on the county's fiscal status and the roadway conditions along with the municipality's ability to provide the service(s).

The District Executive, or his authorized representative, must initial each agreement to signify that the District has reviewed and approved the agreement. All municipal agreements must be fully executed by the Department, the Office of Chief Counsel and the Office of the Comptroller, prior to being placed in service.

#### POSTED BRIDGES

Bridges with weight restrictions posted under authority of Section 4902 of the Vehicle Code cannot be crossed by any over-posted-weight vehicle except as provided under Department Regulation 191. Under Regulation 191, the District Bridge Engineer may issue a permit authorizing an over-posted-weight vehicle to cross a posted state bridge if—for all practical purposes—the vehicle can only reach its destination via the posted bridge, and analysis of the axle weights and other data indicates that the vehicle will not have a detrimental effect on the bridge.

The County Maintenance Manager must ensure that no posted state bridges will be overloaded by equipment which is operated under a municipal agreement, so the Maintenance Manager must ensure that the municipality files the proper permit application(s) (Form M-4902) with the District Bridge Engineer for subject over-posted weight vehicles (i.e., each piece of over-posted weight equipment the municipality needs to crossover a posted state bridge to allow it to fulfill its contracted obligations to the Department—including snow and ice control operations).

All such permits by a municipality (to fulfill their obligations agreement with the Department) may be issued by the District on a non-fee basis, but the permits must be placed in the over-posted weight vehicle to be available for inspection by the police.

#### MUNICIPAL RESOLUTIONS

The Engineering District should ensure that the municipal resolution is properly signed and dated by the municipal officers prior to submitting an agreement to the District Executive for signature and forwarding to the Office of Chief Counsel for processing. Improperly signed municipal resolutions will result in the agreement being rejected by the officers of our Chief Counsel.

For the agreement and the municipal resolution, the municipal official(s) granted legal signature authority must sign on the appropriate line on the right-hand side and list their title(s). The official(s) designated to attest must sign on the left side (under the word "Attest"), and list their title(s). The dates of each person signing and attesting the municipal agreement must exactly correspond to the dates authorized by the municipal resolution to perform those duties.

#### **FUNDS COMMITMENT**

The County must establish a sufficient funds commitment for each municipal agreement using SAP transaction FMZ1. The resulting 10 digit funds commitment number will function as the agreement number. The County will encumber funds for each year of the agreement.

## LEGAL APPROVAL TRACKING SYSTEM (LATS)

After establishing a funds commitment and obtaining the agreement number, the County must enter the agreement in the Legal Approval Tracking System (LATS) of the Office of Chief Counsel. A sample LATS agreement entry can be found in Sample E. Once the agreement is

entered, the routing letter for processing the agreement must be printed from LATS by selecting the "Print routing Letter" option on the agreement's screen (see Sample E).

Agreements must be entered by an authorized LATS user. For assistance in becoming a user, or assistance with the LATS system, users should use the "Contact LATS Admin" link on the LATS intranet site. The LATS site is located at http://dot.state.pa.us/penndot/ChiefCounsel/ccpcspc.nsf

### AGREEMENT PROCESSING AND DISTRIBUTION

The District or County office initiating the Agreement should secure two (2) original signature documents from the municipality. Only one (1) original signature document along with the Encumbrance documents, the proper exhibits and a LATS routing sheet, is to be forwarded to the District Executive for forwarding to the Office of Chief Counsel for processing. The other original signature document is to be stored locally, in a safe place, to be used only if the original would be lost or destroyed.

Once the Agreement has been fully processed, it will be returned to the originating office (as signified by the routing sheet) for distribution.

Instructions for distributing the document are included on the routing sheet. NOTE: The Office of the Comptroller will not post the funds commitment prior to receipt of their copy of the Agreement.

#### AGREEMENT RETENTION

The Engineering District shall retain the Department's original municipal agreement during the time it is active and for an additional two years after the agreement is expired or canceled. Two years after its termination, the agreement shall be forwarded to the District Office's archives to be retained for an additional five (5) years.

Any agreements involved in litigation also shall be retained until the action is resolved.

#### **FORMS**

Forms applicable to this chapter are:

NUMBER	NAME	COMMODITY CODE
18-K-244	5-Year Municipal Winter Traffic Service Agreement	Reproduce Locally
18-K-243	Winter Traffic Service Supple- mental Agreement	Reproduce Locally
18-K-220	Comprehensive Maintenance Agree	Reproduce ment Locally

### PAYMENT THROUGH AUTMATED CLEARING HOUSE

For all municipal agreements, the municipality shall be paid through the Commonwealth's Automated Clearing House (ACH) Network. Municipalities not enrolled in ACH must do so within 10 days of the final execution date of the agreement (that date of the final review by Office of Chief Counsel). The current revisions of all agreement forms (September, 2008) contain instructions to the municipality for enrolling in ACH. The instructions are contained in paragraph 10 of the Winter Traffic Service Agreement (18-9-244), paragraph 4 of the Winter Traffic Service Supplemental Agreement (18-K-243), and paragraph 11 of the Comprehensive Maintenance Agreement (18-K-200).

### 10.2 WINTER SERVICES AGREEMENTS

A municipality entering into a Winter Traffic Services Agreement will be responsible for complete snow and ice control operations on the section(s) of State highway(s) covered by the agreement. These operations shall include the furnishing and application of deicing chemicals and abrasives as necessary. The State highways under agreement must be maintained to a manner acceptable to the Commonwealth and will be subject to inspection by Department officials.

Municipalities under contract with the Department and using deicing chemicals and abrasive materials to control ice and snow are encouraged to employ environmentally-soundest Management Practices.

If the District believes circumstances warrant defining particular special icing and drifting conditions for inclusion in an agreement, their correspondence with that municipality should contain a more detailed definition of the municipality's maintenance responsibilities regarding these conditions. This wording will be at the discretion of the District and be included in the Agreement.

There is only one Winter Traffic Services Agreement Form (18-K-244) available for negotiation with the municipalities, and this agreement is for five years in length. If reservations are expressed concerning the five year length of the agreement, it should be explained to the municipality that they retain the option to terminate the agreement prior to each winter season (as per the provisions defined in Paragraph 11 of the agreement). In order to terminate the agreement, the municipality must simply provide the Department a termination letter on (or before) September 15th of the winter season in question.

Municipalities entering into Winter Traffic Services Agreements with the Department will be reimbursed for severe winters by way of the following formula:

Terms of Payment: The municipality will be compensated with a lump sum payment in the amount indicated as Total Cost and as adjusted by the Department at the end of each year. The municipality will be compensated with an adjustment equal to the percentage of the Department's actual costs (for similarly serviced roads) over and above the five-year average for a particular county, less a \$1,000 deductible for municipalities with agreements totaling \$5,000.01 or more and a \$500 deductible for all others.

This reimbursement formula must appear at the bottom of Exhibit "A" for all Winter Traffic Services Agreements (see Sample C). The actual reimbursement, if any, will be calculated annually by the Bureau of Maintenance and Operations. District Offices will be notified as soon as possible prior to June 30th of each year in order to have adjustments paid prior to July 30th of each year.

In order to assure prompt payment, it is absolutely necessary for all agreements to be completed correctly by the District/County, properly executed by the municipality and forwarded as per the instructions contained on the routing sheet prior to August 15th of the subject year.

#### **SCHEDULE OF RATES (see Sample K)**

Each year, a new schedule or rates for municipal winter traffic services for each county (broken down by MFC classifications) will be determined and released by the Bureau of Maintenance and Operations and provided to the District Offices by June 30th. The rates represent the amount authorized (in a given year) for payment to the municipalities for each travel lane mile under agreement. The rates will reflect a reasonable reimbursement to municipalities entering into a Winter Traffic Services Agreement with the Department.

Rate changes within a county will be considered if the county has extremely varying weather, terrain or traffic patterns to justify such actions. Any request to change rates within county must be justified in writing and forwarded to the Bureau of Maintenance and Operations for approval consideration by the Deputy Secretary for Highway Administration. A copy of the Deputy Secretary's subsequent rate change approval letter must be included as part of the documentation submitted for any or payment funds commitment activity for a subject agreement.

#### **PLANNING**

A county entering into Winter Traffic Services Agreements with municipalities must have a complete set of snow maps. Equipment routing must be carefully examined to assure that Department equipment is utilized to the maximum efficiency. To ensure there is no duplication of effort, the County Maintenance Manager must make absolutely sure that no state highway is selected for inclusion in a municipal agreement if Department forces (in the course of performing their snow and ice control operations) would have to continue to transverse the route. Generally, major traffic routes continuing directly through two or more municipalities should not be placed under agreement.

It should not be construed that the District or County has blanket authority to include all the state routes within a given municipality's boundaries on a Winter Traffic Services Agreement. When negotiating Winter Traffic Services Agreements, municipalities should be encouraged to take on state routes they must transverse in the course of performing snow and ice control operations on their own highways; however, the Department should continue to handle priority routes. The District or County shall

not limit the municipality to the choice of servicing all state routes within their boundaries or servicing none.

Any municipality considered for a Winter Traffic Services Agreement must have the necessary equipment, materials and personnel (be it their own, leased, rented, under contract or any combination thereof) to satisfactorily perform the required snow and ice control operations in accordance with the provisions of the agreement.

#### **WBS ELEMENT**

A WBS Element shall be established via SAP transaction CJ01 for all Municipal Winter Traffic Services Agreements. This WBS Element must be established prior to processing any Funds Commitment for Municipal Winter Traffic Services Agreements.

The proper cost coding for establishing this WBS Element should be in accordance with this example:

T-0SNOWS09MSA-XXXX-712 (where XXXX=organization code)

#### **FUNDS COMMITMENT**

For each winter season, sufficient funds must be encumbered in the County's budget for each Municipal Winter Traffic Services Agreement. A funds commitment shall be created using SAP transaction FMZ1. Account Codes on the funds commitment shall be as follows:

Fund: 10582XX712

(where XX=fiscal year)

G/L Account: 6344450 Cost Center: 7841110000

WBS Element: T-0SNOWS09MSA-XXXX-712

(where XXXX=organization code)

### COMPILING AND COLLATING AGREEMENTS

Prior to submission to the District Executive for forwarding to the Office of Chief Counsel, all 5-year Municipal Winter Traffic Services Agreements must be compiled and collated as follows:

- Routing sheet with all pertinent information provided (see Sample A)
- 18-K-244 agreement (see Sample B), with all original signatures (Plus, the Certification of Funds Block and the Catalog of Domestic Assistance paragraph on the signature page must be completed)
- Municipal Resolution, with all original signatures (see Sample B)
- 1 Exhibit "A" (see Sample C)

### CLAUSES INCORPORATED BY REFERENCE

The following clauses and provisions (previously included as exhibits in Municipal Agreements) are incorporated by reference as though physically attached to the agreement, and they should not be attached to the Agreement sets:

- Commonwealth Nondiscrimination / Sexual Harassment Clause
- Contractor Integrity Provisions
- Provisions concerning the Americans with Disabilities Act (ADA)
- Contractor Responsibility Provisions

#### PROCESSING AGREEMENT PAYMENTS

Remuneration for a Five-Year Winter Municipal Traffic Services Agreement is in the form of an annual lump sum payment to the municipality for the total cost listed on Exhibit "A" (sample C) for a particular winter season.

Each year of an agreement, the proper fiscal documents should be processed in a timely manner, so the annual payment can be forwarded to the municipality on (or before) November 15th of the subject winter season. However, no SAP-8 Forms for Winter Traffic Services Agreements may be forwarded to the Comptroller's Office prior to September 15th of the subject winter season.

For processing payment in the second through fifth years of the agreement, the District/County must forward the required documents for each agreement as follows:

### BUREAU OF MAINTENANCE AND OPERATIONS

- 1 copy of Exhibit "A" (see sample C)

#### **COMPTROLLER'S OFFICE**

- SAP-8 Form
- 1 copy of Exhibit "A" for current winter season
- 1 copy of Exhibit "A" for the previous winter season

All revisions to a Winter Traffic Services Agreement, whether to mileage or routes, require the preparation and processing of a supplemental agreement (see "SUPPLEMENTAL AGREEMENTS" below).

#### NONPERFORMANCE BY MUNICIPALITY

Several instances of strikes and work stoppages have occurred which resulted in municipalities refusing to perform winter traffic services as provided for in the agreements.

The procedure for charging the municipalities for nonperformance (as a result of refusing to perform winter traffic services) is as follows:

- 1) When a municipality fails to perform the necessary winter traffic services as provided for the agreement (as a result of a strike or work stoppage), the back charge will be computed based on the actual number of days they refused to provide services. The agreement will have to run for the full winter season in order to make the computations. (Example: Actual days needed = 25 days. Municipality refused to provide services = 5 days. Contract value for the subject winter season = \$5000. \$5000 divided by 25 = \$200 per day X 5 days =\$1000 back charge.)
- 2) Documentation must be made part of the Municipal Agreement for the day(s) that services were refused, and this is to include the person's name and title in the municipality who was contacted (or who contacted the District/County) regarding this matter and the date of such notification. The record is to include the total number of days and dates involved in

- each instance of nonperformance due to a strike or work stoppage.
- 3) The Assistant District Executive for Maintenance shall forward written notice to the municipality (informing them that they will be charged according to the above procedure).
- 4) The District shall forward (to the Bureau of Maintenance and Operations) both a copy of the Department's notice to the municipality and a copy of the computation schedule for the back charge. The Bureau of Maintenance and Operations will review these documents and forward them to the Comptroller's Office for billing the appropriate municipality.

For audit trail purposes, it is required that a copy of all related correspondence and computation schedules be attached to the municipality's agreement file at the District and County.

#### **TURNBACKS**

The following guidelines are established for processing Municipal Winter Traffic Services Agreements for routes that fall under the turnback program and will be officially turned back to local control during the agreement period.

When a turnback is imminent, a Winter Traffic Services Agreement should not be negotiated for that roadway. Department forces should perform that service for the short period of time between November and the effective date of turnback.

In those situations where turnbacks are imminent but a Winter Traffic Services Agreement has been negotiated, a supplemental agreement must be executed and the amount of the contract will be prorated as per the instruction in the section below entitled "Proration of Supplemental Agreements Executed after October 15th." This will be the negotiated lump sum payment for that particular turnback road. If the turnback does not take place, be aware that an amendment will be necessary to extend the effective date for that road. Utilization of this approach may necessitate executing two Winter Traffic Services Agreements for one municipality (i.e., one for roads not scheduled for turnback and one for roads scheduled for turnback); however, this approach will increase the county's administration costs and involve additional processing time.

When a route under agreement is turned back to the municipality in the succeeding years of a 5 year Winter Traffic Services Agreement, the Engineering District must execute a supplemental agreement to delete this turnback route from Exhibit "A" of the original agreement.

#### SUPPLEMENTAL AGREEMENTS

All revisions to a Winter Traffic Services Agreement, whether to mileage or routes (or other provisions), require the preparation and processing of a supplemental agreement to implement the changes. Identify whether State highways are being added or deleted.

To determine the proper number for the supplemental agreement, a letter is added to the subject 5-year Winter Traffic Services Agreement number (for example, the first supplemental agreement for a 5-year snow removal agreement 3900000001 would be designated 3900000001-A, the second supplement would be designated 3900000001-B, etc.).

Prior to submission to the Office of Chief Counsel, all Winter Traffic Services Supplemental Agreements must be compiled and collated as follows:

- Supplemental Agreement routing sheet with all pertinent information provided (see Sample A)
- Supplemental Agreement (see Sample G), with all original signatures (plus, the Certification of Funds block and the Catalog of Domestic Assistance paragraph on the signature page must be completed).
- Municipal Resolution, with all original signatures
- 1 Supplemental Exhibit "A" (see Sample H)

#### Required for Chief Counsel Reference

 1 duplicate copy of the original Exhibit "A". If applicable, a duplicate copy of the Supplemental Exhibit "A" for any previously executed supplemental agreements must also be included.

**NOTE** - If the supplemental agreement makes any changes to the original agreement other than

just the addition or deletion of routes (or mileage), a complete duplicate copy of the fully executed original 5-year agreement will have to be attached instead of just the original Exhibit "A". A complete duplicate copy of any previous supplemental agreements would also be required.

# PRORATION OF SUPPLEMENTAL AGREEMENTS EXECUTED AFTER OCTOBER 15TH

The winter season, for the purpose of this Agreement, is the period from October 15th to April 30th of each season. If a supplemental agreement for the purpose of adding or deleting a roadway is fully signed and executed by the District Executive, Office of Chief Counsel and Office of the Comptroller after October 15th, the amount owed to the municipality by the Department (for an added roadway) or the amount owed to the Department by the municipality (for a deleted roadway) must be prorated on the basis of 198 days (or 199 days if the season includes leap-year) from October 15th to April 30th. Divide 198 days into the lump sum payment which the municipality would have received for a full season. This provides the daily rate. Multiply the daily rate by the number of the days from the date of execution (normally, this is the date of the second signature by Office of the Chief Counsel) to April 30th. Note that proration applies to Supplemental agreements only. New agreements executed after October 15th are not prorated.

### 10.3 COMPREHENSIVE MAINTENANCE AGREEMENTS

#### **GENERAL**

A Comprehensive Maintenance Agreement is used to contract a municipality to perform certain roadway maintenance activities on selected State Highways located within the municipality's boundaries. The municipality being considered must have all the necessary equipment, materials, and personnel (be it their own, leased, rented, under contract or any combination thereof) to satisfactorily perform the required service(s). The agreement may be for any activity. The activities listed on the "Comprehensive Maintenance Agreement Rate Schedule" (Example K) are for the most-often used activities only.

#### SCHEDULE OF RATES

By June 30th of each year, a new schedule of activity reimbursement rates will be determined and released by the Bureau of Maintenance and Operations for all the approved maintenance operations a municipality may be contracted to perform under a Comprehensive Maintenance Agreement (see Sample K).

#### **PLANNING**

Paragraph number 12 of the agreement establishes the maximum total amount to be paid to the municipality. This figure is to be based on a joint preliminary estimate of the work that should be performed under the contract. In order to keep funds commitment adjustments and supplemental agreements to a minimum, it is necessary to give special attention to the amount of work estimated to be accomplished by the municipality.

### COMPILING AND COLLATING AGREEMENTS

Prior to submission to the District Executive for forwarding to the Office of Chief Counsel, all Comprehensive Maintenance Agreements must be compiled and collated as follows:

- Routing sheet with all pertinent information provided (see Sample I)
- 18-K-220 agreement (see Sample L), with all original signatures (plus, the Certification of Funds block and the Catalog of Domestic Assistance paragraph on the signature page must be completed)
- Municipal Resolution, with all original signatures (see Sample J)
- -1 Exhibit "B" (see Sample K)
- SAP-8 Form

#### INSPECTION PROCEDURE

The inspection procedure requires the Assistant County Maintenance Manager (or an assigned inspector) to monitor the performance of the municipality's contracted maintenance activities. The Department personnel with the inspection responsibilities must be able to certify that the work site location(s) and the municipality's work methods were in accordance with the provisions of the agreement, and must be able to certify that the work and quantities invoiced are true and accurate. Department certification can be documented on a separate statement (see Sample L), or a Department certification statement can be included on the municipality's certification document (see Sample M).

10.4 SAMPLES (on the following pages)

	Agreement Routin	g Sheet	
Type of Agreement Agreement Number Party City County Form Number Federal ID Number Amount SAP Vendor Number	SNOW REMOVAL 3900021162 NORTH VERSAILLES NORTH VERSAILLES ALLEGHENY 18-K-244 256002343 32072.59 159194		
PLEASE SUI	BMIT ONLY 1 ORIGINAL - MAKE (	COPIES ONCE FULLY EX	ECUTED
EXECUTION PRO	CESS	RECEIVED	RETURNED
District Executive of For Signature and I Engineering Distric	Date on Agreement		
Office of Chief Cou For Preliminary/Fi Commonwealth Ke			
Office of the Comp For Audit and App	troller		
Office of Chief Cou For Date/Final Log	nsel		
DISTRIBUTION (1	copy each):		
	/ –Commonwealth Keystone Build reasury Dept., Treasury Audits, l		1
Original to: Engineed Attention: Telephone:	ring District		

MAINTENANCE MANUAL - Pub. 23

#### SAMPLE B

Municipal Winter Traffic Services Agreement Contract Form 18-K-244

(Revised 09/23/08)

### COMMONWEALTH OF PENNSYLVANIA

COMMONWEALT	
DEPARTMENT OF	F TRANSPORTATION
	* *
WINTER TRAFFIC SERVICES 5 – YEAR	AGREEMENT NO
	FID/SSN #
	SAP VENDOR #
THIS AGREEMENT, fully executed and approved this	day of, by and between the
COMMONWEALTH of Pennsylvania, acting through the De	
the	AND of the COMMONWEALTH of
Pennsylvania, acting through its authorized officials ("MUNIC	
Tomosylvania, acting anough its authorized officials (1910)	on rust 1).
WITN	ESSETH:
been adopted and taken over as part of the State Highwa	bridges with their approaches, in the MUNICIPALITY have ay System, to be constructed, improved and maintained by as and subject to the limitations contained in the Act of May; and the Act of September 18, 1961, P.L. 1389; all as
perform snow and ice clearance together with the applic Highways, including bridges with their approaches, with and has signified its willingness to furnish these winter Winter Season(s) of;	om October 15 to April 30 of each season), subject to
payment by the COMMONWEALTH to the MUNICIPA	
WHEREAS, the MUNICIPALITY shall conduct COMMONWEALTH, in order to facilitate the safe and	ct its winter traffic services in a manner satisfactory to the unimpeded flow of vehicular traffic over said State

Highways within the MUNICIPALITY in accordance with the terms, covenants and conditions herinafter set forth in this Agreement; and

WHEREAS, the MUNICIPALITY shall conduct the winter traffic services for and in the agreed amount during the term of this Agreement, regardless of the amount of work required.

NOW, THEREFORE, the parties hereto, for and in consideration of the foregoing premises and of the mutual promises set forth below, with the intention of being legally bound, agree as follows:

1. The MUNICIPALITY shall undertake and accomplish the required snow and ice clearance together with the application of anti-skid and/or de-icing materials for the State Highways, including bridges and their approaches, as indicated in Exhibit "A" attached to and made part of this Agreement. The MUNICIPALITY shall perform all work in accordance with all applicable PennDOT Specifications ("Publication 408"), policies and procedures set forth in the PennDOT MORIS Highway Maintenance Foreman Manual ("Publication 113") and the PennDOT Maintenance Manual ("Publication 23"), which all are incorporated by reference into this Agreement as though physically attached. This work shall be performed in a prompt and efficient manner so as to facilitate the safe and unimpeded flow of vehicular traffic over the State Highways within the MUNICIPALITY.

Municipal Winter Traffic Services Agreement

(Revised 09/23/08)

- 2. If, to undertake and accomplish the duties required in Paragraph (1.), the MUNICIPALITY'S forces must traverse a bridge with a posted weight restriction, the MUNICIPALITY agrees to file a permit application with the posting authority and obtain a permit to traverse the bridge pursuant to 67 Pa. Code Chapter 191. The MUNICIPALITY agrees to refile needed permit applications and obtain permits for each succeeding winter season for which this Agreement is renewed. Failure to obtain such permits shall be grounds for termination of this Agreement.
- 3. The COMMONWEALTH shall pay to the MUNICIPALITY, as reimbursement for the services contracted for in this Agreement, the total sum of the rate established for each particular season, payable on or before November 15th, for each successive Winter Season through the termination of the Agreement. The starting date of this Agreement shall be the date on which the Agreement has been fully executed and approved by the COMMONWEALTH, or the date agreed to by both the MUNICIPALITY and the COMMONWEALTH, whichever comes later. Further, the MUNICIPALITY shall not be permitted to start any work until notified by the COMMONWEALTH that the Agreement has been fully executed and approved. The MUNICIPALITY shall perform all services for this amount, regardless of the amount of work required. The COMMONWEALTH is not responsible for paying additional amounts when the MUNICIPALITY incurs costs for the work in excess of the established amount or does not otherwise meet the guidelines contained in the "Severe Winter Adjustment" set forth in Exhibit "A" of this Agreement.
- 4. The MUNICIPALITY undertakes the responsibilities as an independent contractor and its employees and/or lessors or contractors shall not be considered employees of the COMMONWEALTH for any purpose. The COMMONWEALTH shall not be liable, nor shall it indemnify, defend, or save harmless the MUNICIPALITY for the negligent acts of the MUNICIPALITY'S employees and/or lessors or contractors during the performance of, or resulting from, the performance under this Agreement.
- 5. The obligations of the MUNICIPALITY under this Agreement shall terminate and end as of midnight on April 30th for each Winter Season.
- 6. Work performed by the MUNICIPALITY under this Agreement shall be done to the satisfaction of the COMMONWEALTH. Such work shall be subject to inspection by the Secretary of Transportation, the District Engineer, and/or their duly authorized representatives.
- 7. If the MUNICIPALITY fails to comply with the terms of this Agreement to the satisfaction of the COMMONWEALTH, the COMMONWEALTH may terminate the Agreement upon giving ten (10) days written notice to the MUNICIPALITY. If the Agreement is so terminated, then the COMMONWEALTH shall not be further obligated to pay any amount of money to the MUNICIPALITY and the MUNICIPALITY shall be entitled to funds from the COMMONWEALTH in proportion to the period of the Agreement for which services were provided.
- 8. Incorporated by reference as part of this Agreement, as though physically attached to it, are the COMMONWEALTH Nondiscrimination / Sexual Harassment Clause (dated June 30, 1999), the Contractor Integrity Provisions (dated December 20, 1991), the Provisions Concerning the Americans with Disabilities Act (January 16, 2001) and the Contractor Responsibility Provisions (dated April 16, 1999).
- 9. The MUNICIPALITY agrees that the COMMONWEALTH may offset the amount of any state tax or COMMONWEALTH liability of the MUNICIPALITY or its affiliates and subsidiaries that is owed to the COMMONWEALTH against any payments due the MUNICIPALITY under this or any other contract with the COMMONWEALTH.
- 10. Because the COMMONWEALTH will be making payments under this Agreement through the Automated Clearing House ("ACH") Network, the MUNICIPALITY shall comply with the following provisions governing payments through ACH:
  - a) The COMMONWEALTH will make payments to the MUNICIPALITY through ACH. Within

Municipal Winter Traffic Services Agreement

(Revised 09/23/08)

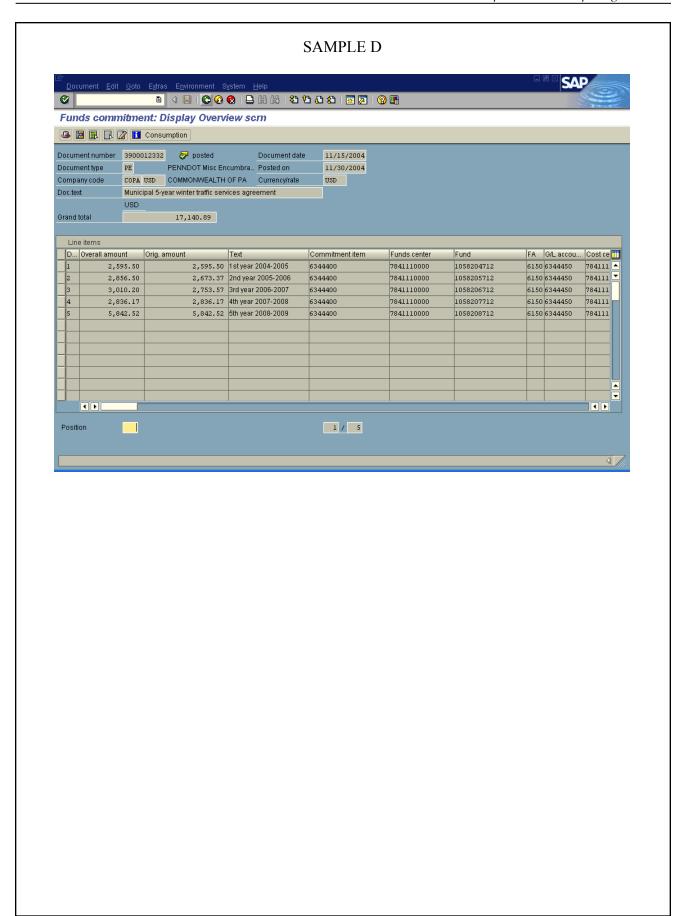
10 days of the execution of this Agreement, the MUNICIPALITY must submit or must have already submitted its ACH information on a ACH enrollment form (obtained at www.vendorregistration.state.pa.us/cvmu/paper/Forms/ACH-EFTenrollmentform.pdf) to the Commonwealth's Central Vendor Management Unit at 717-214-0140 (FAX) or by mail to the Central Vendor Management Unit, Bureau of Financial Management, Verizon Tower – 6th Floor, 303 Walnut Street, Harrisburg, PA 17101-1830.

- (b) The MUNICIPALITY must submit a unique invoice number with each invoice submitted. The unique invoice number will be listed on the Commonwealth of Pennsylvania's ACH remittance advice to enable the contractor to properly apply the state agency's payment to the respective invoice or program.
- (c) It is the responsibility of the MUNICIPALITY to ensure that the ACH information contained in the Commonwealth's Central Vendor Master File is accurate and complete. Failure to maintain accurate and complete information may result in delays in payments.
- 11. The Agreement constitutes the entire agreement between the parties. No amendment or modifications of this Agreement shall be valid unless it is in writing and duly executed and approved by both parties.
- 12. This Agreement shall automatically renew for succeeding Winter Seasons at the rate established for each particular season unless either party shall terminate upon written notice to the other on or before September 15th of the Winter Season in question.

REOF, the pa	rties have executed this	Agreement.
	MUNICIPALITY	
	BY	
DATE	Title:	DATE
lease attach a reso	olution.	
	COMMONWEALTH OF PEN DEPARTMENT OF TRANSP	
	BY	
	District Executive	Date
Date	Certified Funds Available Und SAP DOCUMENT NO SAP FUND SAR COST CENTER	
	BY	
	for Comptroller	Date
, is sponditure amo	plit%, expenditure amount of for state fund:	s. The related federal assistan The st
	DATE  lent or Vice-president a sole property of a sole attach a resolution of a sole property of a sole prop	DATE  Title:  Sent or Vice-president must sign and the Secretary, Trestest; if a sole proprietorship, only the owner must sign and the proprietorship, only the owner must sign. It lease attach a resolution.  WRITE BELOW THIS LINE – FOR COMMONWEAL  COMMONWEALTH OF PENDEPARTMENT OF TRANSFE  BY

	RESOLUTION	
BE IT RESOLVED, by authority of the	e	
of the	(Name of governing body)	County, and it
(Name of MUNICIPALITY)		
is hereby resolved by authority of the same, that	the	of
	(designate official tit	de)
said MUNICIPALITY be authorized and direct	ted to sign the attached Agreement on its	behalf.
A TOTAL OTT		
ATTEST:	(Name of MUNICIP	ALITY)
(Signature and designation of official title)	By:(Signature and designation of	official title)
		omerar arrey
I,(Name)	(Official title)	-
		est the foressing
of the (Name of governing body and MU	JNICIPALITY)	iat the foregoing
is a true and correct copy of the Resolution ado	nted at a regular meeting of the	
		20
(Name of governing body)	, held the day of	, 20
, 5 5		
DATE:	(Signature and designation	of official title)
	(Digitature and designation)	
NOTE: Signature on the Department signature	page of this Agreement must conform with sig	gnature on this Resolution.

042045 2 5	\$3.419.79 \$733.50 \$374.90 \$4.784.79 \$671.04	\$9,984.02 ads 500.00
A GREEMENT NO. YEAR OF	RATE PER TRAVEL LANE \$932 \$815 \$815 \$815 \$932 \$932	TOTAL COST =  1 by the Department of citual costs (for similar ros 5,000.01 or more and a \$1
< ≻0	NO. OF LANES 2.43 2.27 3.27	T and as adjusted Department's ac ients totaling \$5,
	MFC C C	al Cost, e e of the
T A	LINEAR MILES 1.51 0.45 0.23 0.23 0.36	0.00 9.52 0.90 0.46 10.88 icated as Tota the percentagi
SAMPLE C CONTRACT EXHIBIT A	END OFFSET 2739 2382 1200 1896 1911	======================================
CONTR	END SEGMENT 0172 0010 0070 0490 0110	MILEAGE MFC B = MILEAGE MFC C = MILEAGE MFC C = MILEAGE MFC C = TOTAL MILEAGE m payment in the 8 I with an adjustmer \$1,000.00 deductif
	BEGIN OFFSET 0000 0000 0000 0000	ifth a lump suncompensated vounty, less a \$
	BEGIN SEGMENT 0162 0010 0070 0472 0110	compensated w cipality will be or r a particular or
2002-2003 WINTER MUNICIPAL AGREEMENT COUNTY: LACKAWANNA MUNICIP: CITY OF CARBONDALE	LOCAL DESCRIPTION Salem Ave, Dundaff St., Fallbrook St. Dundaff St. Greenfield Rd. Cottage St., Pike St., and Main St. Salem Ave. to Wayne St.	MILEAGE MFC B = 0.000 TOTAL COST = \$9.5 MILEAGE MFC B = 0.000 TOTAL COST = \$9.5 MILEAGE MFC D = 0.95 MILEAGE MFC D = 0.046 MILEAGE MFC D = 0.046 MILEAGE MFC D = 0.046 TOTAL MILEAGE MFC D = 0.046 TOTAL MILEAGE MFC D = 0.046 MILEAGE MFC D = 0.0
2002-2003 WIN COUNTY: L MUNICIP: C	STATE ROUTE 0106 0107 1004 6006 1019	TERMS OF Transportati serviced) ov deductible fr



#### **SAMPLE E**

#### SAMPLE E LEGAL APPROVAL SYSTEM (LATS) ENTRY

Number 3900021162
MySAP Number 159194
EIN/FID 256002343
Contractor North Versailles
County Amount \$32,072.59

Sent to Vendor

SPC Type Org Competition

Sole Source Category

Agreement Type Snow Removal Category

Sub Category

Description 5 year snow agreement

Effective Terminate

#### **DOT Contact**

Name Phone Number Email Address

<b>Current Modifier</b>		
Form Number	18-K-244	
Received OCC	11/07/2005	
Attorney		
Returned for		
Approval/Forv	warded to Dates	
Deputy	10/06/2005	
Secretary		
OGC		
Comptroller	11/08/2005	
AG		
Comment		
Final Bur/Dist	11/14/2005	
SPC/SBC Approved		

#### **Modification History**

11/14/2005-

Final Bur/Dist date set to 11/14/2005

### SAMPLE F

	Agreement Routing	g Sheet	
Type of Agreement Agreement Number Party City County Form Number Federal ID Number	SNOW REMOVAL 3900021162 NORTH VERSAILLES NORTH VERSAILLES ALLEGHENY 18-K-244 256002343		
Amount SAP Vendor Number	32072.59 159194		
EXECUTION PRO	CESS	RECEIVED	RETURNED
District Executive o For Signature and I Engineering Distric	Date on Agreement t		
Office of Chief Cou For Preliminary/Fi Commonwealth Ke			
Office of the Comp For Audit and App Commonwealth Ke			
	ging ystone Building, 9th Floor		
			1
Original to: Engineer Attention: Telephone:	ring District		

#### SAMPLE G

Municipal Winter Traffic Services Supplemental Agreement	(Revised 09/23/08)
Contract Form 18-K-243	
COMMONWEALTH C DEPARTMENT OF T	
WINTER TRAFFIC SERVICES SUPPLEMENTAL	AGREEMENT NO FID/SSN # SAP VENDOR #
THIS SUPPLEMENTAL AGREEMENT, fully executed	and approved thisday of,
	TH of Pennsylvania, acting through the Department of
Fransportation ("COMMONWEALTH"),	
AN	D
he	of the
COMMONWEALTH of Pennsylvania, acting through its autho	
WITNES	
WHEREAS, the parties entered into Agreement No perform snow and ice clearance together with the application of	, whereby the MUNICIPALITY agreed to
Highways as set forth therein; and,	anti-skit and/of te-ferrig materials for certain State
WHEREAS, the narties desire to amend Agreement No	for the purpose of adding/deleting certain
State Highways.	
NOW, THEREFORE, the parties agree to amend Agree following:	ement No in accordance with the
	:
	is revised in accordance with Supplemental Exhibit ",'  l Agreement, for the purpose of adding/deleting the specified
2. The effective date of this addition/deletion shall be the	date on which this Supplemental Agreement has been fully r October 15 of the calendar year in which this Supplemental

Munic	ipal Winter Traffic Services Supplemental Agreement	(Revised 09/23/08)
3.	The original agreement as hereby supplemented shall continue to renew on October 15 of each through the original termination date. If this Supplemental Agreement is not fully executed a October 15 of the Winter Season for which it will initially take effect, the COMMONWEAL payment for that Winter Season only. Furthermore, the proration shall affect the <b>added/delet</b> amount to be prorated shall be based upon the percentage that the affected roadway bears to the mileage maintained by the MUNICIPALITY, multiplied by 1/198 (1/199 for leap years). This multiplied by  (a) the number of days between October 15 and the effective date of this Supplemental Agree	nd approved prior to IH shall prorate Ied roadway only. The the total State Highway is number shall be
	the rate applicable to that roadway classification. The COMMONWEALTH will then add the	resulting amount to, or
	subtract it from, the total annual payment.	
4.	Because the COMMONWEALTH will be making payments under this Agreement through the House ("ACH") Network, the MUNICIPALITY shall comply with the following provisions of through ACH:  a) The COMMONWEALTH will make payments to the MUNICIPALITY through A the execution of this Agreement, the MUNICIPALITY must submit or must have alm information on a ACH enrollment form (obtained at www.vendorregistration.state.pa.us/cvmu/paper/Forms/ACH-EFTenrollmentform.pd Commonwealth's Central Vendor Management Unit at 717-214-0140 (FAX) or by m Vendor Management Unit, Bureau of Financial Management, Verizon Tower – 6th F Harrisburg, PA 17101-1830.  (b) The MUNICIPALITY must submit a unique invoice number with each invoice su invoice number will be listed on the Commonwealth of Pennsylvania's ACH remittant.	aCH. Within 10 days of eady submitted its ACH f) to the nail to the Central cloor, 303 Walnut Street, ubmitted. The unique
	contractor to properly apply the state agency's payment to the respective invoice or p	
	(c) It is the responsibility of the MUNICIPALITY to ensure that the ACH information Commonwealth's Central Vendor Master File is accurate and complete. Failure to make the complete information may result in delays in payments.	
5.	All other terms and conditions of Agreement No not modified by this S	upplemental Agreement
	shall remain in full force and effect.	
6.	In addition to the clauses and provisions provided for in Contract Number the following clauses or provisions will apply to this Supplemental Agreement:	,

and are designated as Attachment "\_\_\_\_\_":

(Revised 09/23/08) Municipal Winter Traffic Services Supplemental Agreement THIS SPACE LEFT BLANK

Municipal Winter Traffic Servi	ces Supplemental Agreeme	ent				(Revised 09/23/08)
<b>IN WITNESS</b> Agreement.	whereof, the	parties	have	executed	this	Supplementa
ATTEST		MUNICI	PALITY			
		RV				
Title:	DATE	T	itle:			DATE
or other entity, please atta DO NOT	write Below TH	IS LINE – FO	R COMN	MONWEALTH	USE ON	ILY
				TH OF PENNS OF TRANSPOR		
		BY				
		BY Distri	ct Execut	ive		Date
APPROVED AS TO LEC	GALITY	BY	ct Execut	ive		Date
APPROVED AS TO LEC	GALITY	Distri	ct Executi	ive		Date
	GALITY	Distric Certified	et Execut	vailable Under		Date
AND FORM		Distric Certified SAP DO	Funds A	vailable Under ΓΝΟ		Date
	GALITY  Date	District Certified SAP DO SAP FUI	Funds AvCUMENT	vailable Under ΓΝΟ		Date
AND FORM		Certified SAP DO SAP FUI SAP CO	Funds A CUMENT ND ST CENT	vailable Under ΓΝΟ ΈR		Date
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Municipal Winter Traffic Services Supplemental Agreement

(Revised 09/23/08)

#### RESOLUTION

<b>BE IT RESOLVED</b> , by authority of the	
	(Name of governing body)
of the(Name of MUNICIPALITY)	, County, and it
(Name of MUNICIPALITY)	
is hereby resolved by authority of the same, that	the of (designate official title)
	(designate official title)
said MUNICIPALITY be authorized and direct	red to sign the attached Agreement on its behalf.
	ou to sign the attached rigidement on its contain.
ATTEST:	OT CAMBUQUEAL (TYP)
	(Name of MUNICIPALITY)
(Signature and designation of official title)	By:(Signature and designation of official title)
(Signature and designation of official title)	(Signature and designation of official title)
I,	,
I,(Name)	(Official title)
6.4	
Olema of gavening hadre and MU	, do hereby certify that the foregoing UNICIPALITY)
(Name of governing body and MO	(NICIPALITY)
is a true and correct copy of the Resolution adop	oted at a regular meeting of the
	, held the day of, 20
(Name of governing body)	, field the day of, 20
(Name of governing body)	
DATE:	
	(Signature and designation of official title)

NOTE: Signature on the Department signature page of this Agreement must conform with the signature on this Resolution.

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	<u>SAMPLE 1</u>		
	Agreement Routing S	heet	
Type of Agreement Agreement Number Party City County Form Number Federal ID Number Amount SAP Vendor Number	COMPREHENSIVE MAINTENANC 3900034307 INDEPENDENCE TOWNSHIP ALIQUIPPA BEAVER 18-K-220 2560001791 3016.86 159114	E	
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EXECUTION PROC	====== CESS	RECEIVED	RETURNED
District Executive o For Signature and I Engineering Distric Office of Chief Cou For Final Approval Commonwealth Ke	Date on Agreement t		
Office of the Compt			
For Audit and App Forum Place, 9th Fl	roval □-REJECTED		
	ging ystone Building, 9th Floor		
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#### SAMPLE J

Contract Form 18-K-220 (rev'd 9/23/08)

#### COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION

MAINTENANCE SERVICES

AGREEMENT NO	
FID #:	
SAP VENDOR #	

THIS AGREEMENT, fully executed and approved this day of , , by and between the COMMONWEALTH of Pennsylvania, acting through the Department of Transportation ("COMMONWEALTH"),

#### AND

the

of

the COMMONWEALTH of Pennsylvania, acting through its authorized officials ("MUNICIPALITY").

#### WITNESSETH:

WHEREAS, certain public highways, including bridges with their approaches, located in the MUNICIPALITY have been adopted and taken over as part of the State Highway System, to be constructed, improved and maintained by the COMMONWEALTH, upon the terms and conditions and subject to the limitations contained in the Act of May 29, 1945, P.L. 1108; the Act of June 1, 1945, P.L. 1242; and the Act of September 18, 1961, P.L. 1389, all as supplemented and amended; and,

WHEREAS, under the provisions of Section 561 of the State Highway Law, 36 P.S. Section 670-561, added by Act 1985-92, the COMMONWEALTH may, at the discretion of the Secretary of Transportation, enter into agreements with municipalities for the latter to perform minor routine maintenance work on the roadway and shoulders of any State Highway, or portion thereof, located within the boundaries of the MUNICIPALITY; and,

WHEREAS, the COMMONWEALTH desires to obtain the assistance of the MUNICIPALITY to carry out minor routine maintenance on the State Highways listed on Exhibit "A", which is attached to and made a part of this Agreement; and,

WHEREAS, the MUNICIPALITY has the equipment, materials, and personnel available and ready to perform all the items of repair and maintenance within the MUNICIPALITY listed on Exhibit "B", which is attached to and made part of this Agreement, in a prompt and efficient manner and has signified its willingness to furnish these repair and maintenance functions, subject to payment by the COMMONWEALTH as set forth in the List of Prices in Exhibit "B".

NOW, THEREFORE, the parties hereto, for and in consideration of the foregoing premises and of the mutual promises set forth below, with the intention of being legally bound, agree as follows:

- 1. The MUNICIPALITY shall, in a good and workmanlike manner, perform the minor routine maintenance items at the amounts set forth in the List of Prices, all as set forth in Exhibit "B", on the State Highways located within the boundaries of the MUNICIPALITY, as listed on Exhibit "A". The MUNICIPALITY shall use equipment owned or leased by it and its own materials and personnel to perform the work. All work shall be completed in accordance with all applicable Department of Transportation Specifications ("Publication 408"), and with the policies and procedures set forth in the MORIS Highway Maintenance Foreman Manual ("Publication 113"), which are incorporated by reference into this Agreement as if physically attached.
- The COMMONWEALTH shall pay the MUNICIPALITY for all authorized work performed on the items contracted for in Exhibit "B" as follows:
  - (a) Lump sum items shall be paid on a quarterly basis.
  - (b) Items performed on a unit price basis shall be paid in accordance with Paragraph 11 below.
  - (c) The starting date of this Agreement shall be either the date on which the Agreement has been fully executed and approved by the COMMONWEALTH, or another date agreed to by both the MUNICIPALITY and the COMMONWEALTH, whichever is later. Further, the MUNICIPALITY shall not be permitted to start any work until notified by the COMMONWEALTH that the Agreement has been fully executed and approved.

- 3. The MUNICIPALITY undertakes these responsibilities as an independent contractor, and its employees and/or lessors and/or contractors are not to be considered employees of the COMMONWEALTH for any purposes. The COMMONWEALTH shall not be liable, nor shall it indemnify, defend, or save harmless the MUNICIPALITY for the negligent acts of the MUNICIPALITY'S employees and/or lessors and/or contractors during the performance of, or resulting from the performance under, this Agreement.
- 4. This Agreement shall be effective for the period commencing upon written notice by the COMMONWEALTH to the MUNICIPALITY and terminating on \_\_\_\_\_\_\_, unless sooner terminated for cause upon thirty (30) days' written notice by either party to the other. Upon termination for cause, all obligations, except liability for claims arising from the MUNICIPALITY'S performance and damages incurred by the COMMONWEALTH, shall cease. In the event of termination, the MUNICIPALITY shall be paid for the work performed to the date of termination, to the extent such work has been performed in accordance with the requirements of this Agreement.
- 5. Work performed by the MUNICIPALITY under this Agreement shall be subject to inspection by the Secretary of Transportation, the District Engineer, and/or their duly authorized representatives within sixty (60) days of completion of the work. If, upon inspection, certain work is found not to be in conformance with the specifications, policies and procedures of the COMMONWEALTH, or is not performed in a good and workmanlike manner, the work shall be corrected or re-performed, as necessary, by the MUNICIPALITY, at no cost to the COMMONWEALTH. The COMMONWEALTH shall not be obligated to conduct an inspection program. Spot inspection or inspection of a particular project will be conducted at the discretion of the COMMONWEALTH.
- 6. Incorporated by reference, as part of this Agreement as though physically attached to it, are the COMMONWEALTH Nondiscrimination / Sexual Harassment Clause (dated June 30, 1999), the Contractor Integrity Provisions (dated December 20, 1991), the Provisions Concerning the Americans with Disabilities Act (dated January 16, 2001) and the Contractor Responsibility Provisions (dated April 16, 1999).
- 7. The MUNICIPALITY agrees that the COMMONWEALTH may offset the amount of any state tax or COMMONWEALTH liability of the MUNICIPALITY or its affiliates and subsidiaries that is owed to the COMMONWEALTH against any payments due the MUNICIPALITY under this or any other contract with the COMMONWEALTH.
- 8. (a) Within ten (10) days after the effective date of this Agreement and every ninety (90) days thereafter, the MUNICIPALITY shall submit a proposed work program to the COMMONWEALTH, addressed to the Department of Transportation's local County Maintenance Manager. The MUNICIPALITY may proceed to work five (5) working days after submitting its proposed work program to the COMMONWEALTH, unless notified to the contrary.
  - (b) The MUNICIPALITY may, at any time during the progress of a quarterly work program, submit, for the COMMONWEALTH'S approval, a supplemental or amended work program and may proceed to work five (5) working days after submitting such amended work program, unless notified to the contrary.
  - (c) If an emergency situation arises, the Department of Transportation's local County Maintenance Manager, who shall be responsible for declaring such an emergency situation, may give verbal authorization to perform necessary additional work. The MUNICIPALITY shall promptly confirm any emergency authorization in writing. Any emergency work authorized pursuant to this paragraph shall be limited to the categories of work for which the MUNICIPALITY has assumed responsibility under this Agreement.
- 9. The MUNICIPALITY shall be responsible for maintenance and protection of traffic at all times during the performance of its responsibilities under this Agreement. This shall be performed in accordance with the Department of Transportation's Publication 203, entitled Work Zone Traffic Control, current edition, which the COMMONWEALTH shall make available to the MUNICIPALITY upon request.
- 10. The MUNICIPALITY may submit invoices at various intervals, but in no event shall invoices be submitted more frequently than on a monthly basis. Invoices shall be accompanied by a written statement certifying that the work listed in the invoice was performed properly, specifically in accordance with the specifications, policies and procedures set forth in this Agreement.
- 11. Because the COMMONWEALTH will be making payments under this Agreement through the Automated Clearing House ("ACH") Network, the MUNICIPALITY shall comply with the following provisions governing payments through ACH:

execution of this Agreement, the MUNICIPALITY must submit or must have already submitted its ACH information on a ACH enrollment form (obtained at <a href="https://www.vendorregistration.state.pa.us/cvmu/paper/Forms/ACH-EFTenrollmentform.pdf">www.vendorregistration.state.pa.us/cvmu/paper/Forms/ACH-EFTenrollmentform.pdf</a> ) to the Commonwealth's Central Vendor Management Unit at 717-214-0140 (FAX) or by mail to the Central Vendor Management Unit, Bureau of Financial Management, Verizon Tower – 6 <sup>th</sup> Floor, 303 Walnut Street, Harrisburg, PA 17101-1830.  (b) The MUNICIPALITY must submit a unique invoice number with each invoice submitted. The unique invoice number will be listed on the Commonwealth of Pennsylvania's ACH remittance advice to enable the MUNICIPALITY to properly apply the state agency's payment to the respective invoice or program.  (c) It is the responsibility of the MUNICIPALITY to ensure that the ACH information contained in the Commonwealth's Central Vendor Master File is accurate and complete. Failure to maintain accurate and complete information may result in delays in payments.  It is understood between the parties that the maximum amount payable under this Agreement by the COMMONWEALTH to							
the MUNICIPALITY sha written supplemental agre	all not exceed the s	um of				) dollars, without a	
	,	•					
			*				

ATTEST		MUNICIPAL	ITY		
	BY				
Title:	DATE	Title:		DATE	
If a Corporation, the president or or Assistant Treasurer must attes one partner need sign; if a limited Authority or other entity, please a	t; if a sole pro d partnership	oprietorship, only , only the general	the owner mu	st sign; if a part	nership, onl
DO NOT WRITE B	ELOW THI	S LINE – FOR C	OMMONWE	ALTH USE ON	NLY
				ENNSYLVANI SPORTATION	A
		BY			
		District Ex	ecutive		Date
APPROVED AS TO LEGALITY AND FORM					
			ds Available U		
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for Chief Counsel	Date				
		AMOUNT			
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program name and number isassistance program name	1	SAP Fund			The
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Preapproved Form: OGC No. 18 Appv'd OAG 11/01/02	8-K-220				

<b>BE IT RESOLVED</b> , by authority of the	(Name of governing body)
f the(Name of Municipality)	
s hereby resolved by authority of the same, that the	eo (designate official title)
aid Municipality be authorized and directed to sig	
ATTEST:	(Name of Municipality)
(Signature and designation of official title)	By:(Signature and designation of official title)
*,	,
I,(Name)	(Official title)
	(Official title) , do hereby certify that the foregoin cipality)
	do hereby certify that the foregoin
(Name of governing body and Munic s a true and correct copy of the Resolution adopted	do hereby certify that the foregoin
(Name of governing body and Munic s a true and correct copy of the Resolution adopted (Name of governing body)	, do hereby certify that the foregoin cipality)  d at a regular meeting of the, held the day of, 20
(Name of governing body and Munic s a true and correct copy of the Resolution adopted (Name of governing body)	d at a regular meeting of the
(Name of governing body and Munic s a true and correct copy of the Resolution adopted (Name of governing body)	, do hereby certify that the foregoin cipality)  d at a regular meeting of the, held the day of, 20
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(Name of governing body and Munic s a true and correct copy of the Resolution adopted (Name of governing body)  OATE:	, do hereby certify that the foregoin cipality)  d at a regular meeting of the, held the day of, 20  (Signature and designation of official title)

### **SAMPLE K**

# ATTACHMENT "B" COMPREHENSIVE MAINTENANCE AGREEMENTS RATE SCHEDULE

#### For use during the 2009/2010 Fiscal Year

Unpaved Roads	1. Shaping	\$627.33/Mile
	2. Dust Palliative	\$0.44/Square Yard
Unpaved Shoulders	1. Grading	\$691.10/Mile
	2. Dust Palliative	\$0.43/Square Yard
	3. Cutting	\$958.15/Mile
	4. Side Dozing	\$0.74/Foot
Pavement	1. Manual Patching	\$279.23/Ton
	2. Mechanized Patching	\$76.43/Ton
	3. Base Repair	\$72.01/Ton
	4. Skin Patching	\$3.92/Gallon
	5. Single Seal Coat	\$1.89/Gallon
	6. Crack Sealing Bituminous Surface	\$1,478.57/Lane Mile
	7. Crack and Joint Sealing Concrete	\$1,769.21/Lane Mile
Paved Shoulders	1. Manual Patching	\$227.42/Ton
	2. Mechanized Patching	\$59.73/Ton
	3. Base Repair	\$99.68/Ton
	4. Skin Patching	\$3.78/Gallon
Drainage/Cleaning	1. Clean Inlets	\$34.93/Each
	2. Clean Ditches	\$1.65/Foot
	3. Clean Pipes < 36"	\$4.50/Foot
	4. Clean Pipes >= 36"	Negotiable/Foot
	5. Repair/Replace End Wall	\$424.65/Each
	6. Inlet Repair/Replace (Pre-Cast)	\$2,138.73/Each
	7. Repair/Replace Pipe and Culverts < 36"	\$52.64/Foot
	8. Repair/Replace Pipe and Culverts >= 36"	Negotiable/Foot
Miscellaneous	1. All Signs	\$30.86/Hour <sup>1</sup>
	2. Guide rail Repair	\$33.13/Hour <sup>1</sup>
	3. Mowing	\$73.56/Acre
	Mowing	\$72.15/Lane Mile
	4. Sweeping	\$99.65/Hour
	5. U-Drain	\$13.97/Linear Foot
	6. Concrete Repair (labor, materials and	
	equipment)	\$193.84/Square Yard
	7. Gabion Basket (includes everything)	\$308.57/Cubic Yard
	8. Austrian Pines 8" high - bailed and burlaped	\$326.69/Each
	9. Velvet Pillar Crabtree's	\$363.00/Each
Inc.	10. Shade Master Honey Locust Tree	\$453.77/Each
<sup>1</sup> Plus materials if the Department does No Increase is granted if Department c	not supply them. costs are less than FY 08/09 Comprehensive Agreement Rates	

#### SAMPLE L

DATE: July 1, 2004

SUBJECT: Township Agreement Number

TO:

FROM: Maintenance Manager or Asst. County Maintenance Manager

**Engineering Maintenance District** 

I certify that the units of work listed for these routes are true and accurate and that the work was completed in accordance with the specifications, policies and procedures set forth in the agreement.

List the S.R., Segment and Offset of the location where work was performed, type of work and units of work performed. Units of work performed should be totaled.

### **SAMPLE M**

### TOWNSHIP ROAD SUPERVISORS TOWNSHIP, PENNSYLVANIA

Pennsylvania Department of Tran	nsportation
Gentlemen:	
This is to verify that the following Township during the month of Ju-	g work has been completed byne 2004.
	DERS set of the location where work was performed, type of d. Units of work performed should be totaled.
	TOWNSHIP SUPERVISORS
	,
	Chairman
work was completed in accordar	
I certify that the units of work li	RTATION CERTIFICATION isted for these routes are true and accurate and that the

## **CHAPTER 11**

## SIGNS, WORK ZONE TRAFFIC CONTROL, GUIDERAIL

### **TABLE OF CONTENTS**

11.1	Policies and Responsibilities	11-1
11.2	Standardization of Signs	11-2
11.3	Maintenance of Signs	11-3
11.4	Right-of-Way Encroachments and Sign Control	11-5
11.5	Guiderail	11-10

## 11.1 POLICIES AND RESPONSIBILITIES

#### **GENERAL REGULATIONS**

With respect to the needs of motorists, the requirements for traffic control devices and work area safety compliance with the Pennsylvania Vehicle Code, the Department of Transportation has established the following regulations.

67 Pa. Code, Chapter 213, Work Zone Traffic Control

67 Pa. Code, Chapter 212, Official Traffic Control Devices

#### PROPER WORK ATTIRE

Effective November 24, 2008, all employees engaged in or entering into any field operation involving maintenance, construction, design, surveying, inspections, etc. (on or off state right-of-way) or exposed to moving vehicles and equipment are required to wear high-visibility vests which meet ANSI Class II safety garment requirements. The vest must be worn over at least a shirt with long or short sleeves. PennDOT has two (2) different colored vests currently in use. The high-visibility yellow with orange stripes and gray reflective trim (multi-colored) and the single-colored, high-visibility yellow vest both meet the ANSI Class II requirements.

Effective November 24, 2008, all employees assigned flagging duties must wear the multicolored version of the vest. Since all Maintenance employees could be called on to assist with trafffic control as some point, all Maintenance employees must be issued the multi-colored version by November 24, 2008. All other organizations may continue to use existing inventory of the single-color, high-visibility yellow vest until depleted.

A multi-colored tear-away vest shall only be worn by employees who are operating/repairing equipment where the potential to become entangled exists (e.g., a chipper during brush cutting operations). Also, there is a multi-colored vest with pockets available for Bridge Inspectors and Surveyors.

#### HIGH-VISIBILITY LEGGINGS/CHAPS

The following employees are required to wear high-visibility/reflective vest in combination with

high-visibility leggings or chaps:

- All employees engaged in flagging
- All employees exposed to moving vehicles and equipment during nighttime operations.

The high-visibility leggings / chaps must be purchased from PIBH through your local purchasing agent.

#### **RAINWEAR**

All employees engaged in or entering into any field operation involving maintenance, construction, design, surveying, inspections, etc. (on or off state right-of-way) or exposed to moving vehicles and equipment may subsitute a high-visibility/reflective raincoat for a vest during inclement weather.

If rain pants are not worn with the raincoat during inclement weather, all employees engaged in flagging and all employees exposed to moving vehicles and equipment during nighttime operations will be required to wear high-visibility/reflective leggings or chaps on combination with the raincoat.

The rainwar meets ANSI Class II garment requirements.

#### **SHADOW VEHICLE USE**

Shadow vehicles with truck mounted attenuator shall be required in maintenance work areas on freeways and expressways for all full lane, partiallane, shoulder closures or any work on the shoulder or in the immediate vicinity of the shoulder. If the shoulder is not wide enough to safely park a shadow vehicle, then the adjacent lane should be closed. On other roadways with a speed limit over 40 mph, shadow vehicles should be used at all locations where work is on the roadway or the shoulder and a shadow vehicle is shown as "optional" in Publication 213. An appropriate truck-mounted attenuator should also be used on all shadow vehicles used on roadways with a speed limit over 40 mph. For more details see Publication 46, Chapter 6.11.

# REMOVAL OF OTHER THAN OFFICIAL TRAFFIC SIGNS

Existing signs of nonstandard design or application shall be removed and replaced when

needed by new standard signs as rapidly as is economically feasible. If you are aware of maintenance problems involving signs installed by others, you should contact the responsible party. In the case of a missing or knocked down Stop sign, if the responsible party cannot be contacted in an expedient manner, it is desirable to temporarily install a Department sign until the appropriate party can install their sign.

#### REMOVAL OF INTERFERING LIGHTS

The Secretary of Transportation and local officials, in their respective jurisdictions, shall have the authority to cause the removal of all colored or flashing light signs or other lights, signs or markings so located as to interfere with traffic or to be confused with or to obstruct the view or effectiveness of official traffic control devices.

Any such devices that are observed which appear to interfere with traffic or to be confused with or to obstruct the view or effectiveness of official traffic control devices should be reported to the Engineering District for further review and/or action.

# PENNSYLVANIA STATE POLICE ASSISTANCE

The Pennsylvania State police have agreed to provide a supplemental safety effort on long and short-term maintenance projects on freeways and expressways by monitoring and controlling traffic. The officer assigned to the maintenance project will be inside a vehicle with flashing lights and be positioned at a point 1/4 to 1/2 mile in advance of the queue prior to the work area when work is in active progress. The police will be working on an overtime basis. This safety effort will be charged to the County Maintenance Office.

To receive this assistance, the County Maintenance Office shall submit a request to the District Traffic Unit to setup a 6 digit code number (ECMS) for that county along with WBS# (the county charge number). Once the code is created it will be up to the economy to notify the State Police at least two weeks prior to the start of the maintenance operation. If work is cancelled for any reason the PSP must be given 3 days prior notice or the county may be assessed for 3 hours show up time.

For more details see Publication 46 Chapter 6.15.

#### **NIGHTTIME REVIEW**

#### **Purpose**

To establish uniform guidelines for nighttime reviews of traffic control devices which provide for the safety, guidance and convenience of the night-time motorist.

#### **Policy**

All Districts should routinely measure sign reflectivity with their sign reflectometers. When such measurements are taken, they should be entered in PM for the individual signs using the IEO5 transaction.

Districts should attempt to conduct a nighttime review of all State highways as time and manpower permit. The reviews should be made during the period when standard time is in effect since this would provide more reasonable hours of darkness

All nighttime reviews should be made under normal nighttime driving conditions—reviews should not be made when rain, snow, frost or dew is present since these elements reduce the retroflectivity of signs and delineators.

Districts should consider using construction inspectors to supplement the Traffic Unit's personnel in making these reviews. Sign reflectometers will be made available to the inspectors from the Traffic Unit when needed.

All nighttime reviews should evaluate:

- (1) The need for new traffic control devices;
- (2) The effectiveness of existing traffic signs and delineators and the need to replace, wash or relocate the devices;
- (3) The effectiveness of existing pavement markings;
- (4) The effectiveness of existing traffic signals in the surrounding environment; and
- (5) The presence of any device or object which appears to interfere with traffic or to be confused with or to obstruct the view or effect of any traffic control devices.

# SIGNS AND BANNERS ACROSS OR WITHIN THE LEGAL LIMITS OF A HIGHWAY

It shall be unlawful to place any sign, banner or advertising matter of any kind whatsoever on or across any State highway or on or across any structure within the legal limits of any State-designated highway without first having the local municipality pass a resolution designating their intent to erect such a sign or banner and have a confirmation letter from the Department that we have the resolution on file.\* See Pub 212 Section 212.7 and Pub 46, Chapter 2.10.12

Any such sign, banner or advertising matter placed without the consent of the Department shall be declared to be a public nuisance and may be removed by the Department with or without notice to the persons responsible for the placing of such sign.

If such a device is observed, it should be reported to the Engineering District for review and/or action.

#### 11.2 STANDARDIZATION OF SIGNS

Each highway sign shall be used only for the specific purpose prescribed for in Department Regulations and Policies. Before a new highway or any detour or temporary route is opened to traffic, all necessary signs should be placed.

Guide signs directing traffic to and on temporary routes or detours or signs erected indicating road conditions or restrictions should be removed when no longer applicable. Uniformity of application is as important as standardization.

As of January 1, 2003, all signs and sign stands must be NCHRP-350 compliant. Temporary Type III barricades must comply with standard drawing TC-8716 or be NCHRP-350 compliant.

#### **EXCESSIVE USE OF SIGNS**

Care should be taken when placing regulatory or warning signs to effectively control traffic. Excessive or capricious use of signs will reduce their effectiveness.

#### 11.3 MAINTENANCE OF SIGNS

## MAINTENANCE OF SIGNS ADJACENT TO LIMITED ACCESS HIGHWAYS

Owners or occupants of abutting property or the traveling public have no right of ingress or egress to, from, or across a limited access highway. Outdoor advertising devices or other facilities which are off the right-of-way must be serviced from the service roads adjacent to the highway or from the network of public highways in the area.

Any violations noted should be brought to the attention of our Office of Chief Counsel after warning violators that they are subject to prosecution as trespassers.

#### REPLACEMENT OF SIGNS

A major responsibility of maintenance forces is the replacement and repair of signs and posts. A sign or post must be replaced when the sign or post has been damaged or when the legibility of the sign is impaired by fading of the sign face or by loss of retroflectivity. The history of all sign maintenace that involves the replacement of a sign must be captured in PM thru the use of a sign notification.

Particular emphasis is to be placed on assuring necessary signn repairs on limited access highways following the winter maintenance season.

Damage to small ground-mounted signs onn Type B, C or E supports are to be repaired immediately with stock signs available from the Sign Shop.

Any damage to the larger Type A signs may require replacement steel in addition to new signs. Type A signs may be obtained from the Sign Shop, while steel and associated hardware are available on Contract #9950-10. Because material orders may take up to 6 weeks, necessary Type A sign repairs should be identified by March 31st of eash year so material may be ordered. All sprintime repairs are to be completed by May 20th of each year. For this spring, it is recognized that the meterial ordering target date had passed and that the May 20th repair date is fast approaching. Therefore, for this year only, a revised Type A sign repair target completion date of July 20th is in effect if needed. Sign vegetation removal and maintenance should also be performed in accordance with existing policy as designated in SOL 462-06-09 and the Maintenance Manual.

Interstate / Expressway Signs	Maintenance Activity	Sign Activity Target Completion Date
Small ground mounted (Type B, C, E)	Repair / Replace	Immediately
Large (Type A)	ID Needs / Material Orders	March 31
Large (Type A)	Springtime Repairs	May 20

As always, any subsequent damage to interstate/expressway signs that follows completed springtime repairs should also be repaired in a timely manner throughout the year. This includes completing appropriate repairs or replacements before the winter season begins and our ability to address them is lost until the following year.

The District Traffic Unit will be responsible for performing engineering studies to identify new or revised signing needs.

Signs used for work zone traffic control shall be bright, clean and legible. Signs that are not clean, legible or in a good state of repair must be replaced. Signs that are "homemade" shall not be used for work zone traffic control. This includes all signs that are not in accordance with the Handbook of Approved Signs, Pub. 236M. Advance warning signs shall be secured to the sign stand by the pin supplied with the NCHRP-350 sign stand.

#### FIELD REPAIRS AND STRAIGHTENING

The County Sign Foreman will determine what field repairs will be done. His decision must be based on good judgment and sound economics. Field repairs must not be made unless they will be economical and effective. As noted above, any field repair that involves the replacement of a sign must have a sign notification created and closed in PM after the fact.

In the case of minor damage to a sign, such as a slight deformation, which does not impair legibility, repairs will normally be made without removing the sign from its support.

In many instances the sign support is bent or knocked out of position without damage to the sign itself. Wood posts in good condition must be reset. Metal posts, which are deformed to a minor degree, can be bent to proper shape. All non-standard posts must be replaced with a breakaway post. On an asphalt or concrete surface, a v-lock must be used with the post. Occasionally, a sign becomes loosened from its support as a result of

wind vibration or because the original installation was not properly made. Each sign crew will carry a supply of materials and suitable tools for making such field repairs. All sign supports shall conform to the criteria in the Sign Foreman's Manual, Pub. 108

#### **OBSTRUCTIONS**

Removal of vegetation around traffic signs on interstate and interstate look-alike highways is set forth in Chapter 13.5 under the heading of "Department's Operational Duties" item 11.

Removal of obstructions to visibility around signs is an extremely important maintenance task. Visibility of regulatory and warning signs is of particular importance. Special attention must be given to all STOP and YIELD signs to make sure that they are visible at all times. Where normal right-of-way mowing and trimming operations are not adequate, special mowing and trimming to make signs visible will be necessary.

Where sign visibility is restricted or entirely obscured by snowbanks, the removal of snow may require hand shoveling.

If a maintenance crew notices any obstruction to the visibility of a warning sign, that crew will take immediate measures to remove the obstruction.

A maintenance crew will not park a vehicle on the right-of-way at a place where the visibility of a regulatory or warning sign will be obstructed.

# SIGN DAMAGE BY MAINTENANCE OPERATIONS

Each maintenance crew is cautioned to use extra care when working near a road sign. If a sign is damaged in the performance of work, the crew must do what they can to repair the damage. The accident must be reported to the County Maintenance office.

#### REMOVAL OF UNNECESSARY SIGNS

Signs will lose their effectiveness if they are not removed when no longer needed. Guide signs directing traffic to and on temporary routes or detours, or signs erected indicating road conditions or restrictions should be removed when no longer applicable. Removal of any permanent regulatory or warning signs should only be accomplished with a concurrence from the District Traffic Unit. A sign notification in PM must also accompany this work and the sign equipment record flagged removed from the database.

Also, if a maintenance operation is not completed, the last thing the Foreman must do before leaving the job location at the end of the day is to be sure that all signs and other traffic devices which are not needed and might tend to confuse drivers are removed or covered.

If it is necessary to erect temporary signs at a hazard such as a pavement heave or settlement, the signs must be removed as soon as the repairs are completed.

## STORING, HANDLING AND TRANSPORTING SIGNS AND POSTS

Traffic signs will be stored under cover in a dry place and in such positions that warping or disfigurement will not take place. Signs covered with reflective sheeting are easily damaged by rough handling and must be transported and stored vertically. Shelves and vertical compartments will be constructed in such a manner that the surfacing and symbols on one sign will not come in contact with an adjoining sign. In order to protect the sign faces, slip sheeting (a heavy wax paper), thin foam, or cardboard is provided to separate signs and to protect the sign face. These separators should be kept against the sign face until the sign is installed.

Care must be exercised when the signs are being transported from the storage place to the field locations. The general practice is to have the sign replacement crew use a special truck which contains crating or racks for protecting the signs.

Posts will be stored under cover and in such a manner that they will not warp or spring. Normally, they are stacked horizontally with the bottom of each raised off the ground or floor so that an air space is between the posts and the ground or floor. When posts are being sorted or removed from storage, care must be taken not to damage the finish. The same care is necessary when posts are being transported from the storage place to the field locations.

#### **SIGN SUPPORTS**

All signs must be erected on breakaway posts. A V-lock must be used if the post is installed in asphalt or concrete surfaces. For type and number of post required, and method of installation refer to Sign Foreman's Manual Publication 108.

#### **WORK AREA PROTECTION**

Depending on the type of maintenance operation being performed, it is necessary to place Traffic Control Devices to protect the workers as well as the public. For the type of devices required for a specific operation refer to Temporary Traffic Control Guidlines, Publication 213.

## EQUIPMENT AND PUBLICATIONS FOR SIGN CREW

As a minimum, it is recommended that sign crews have the following equipment and publications available for their use at all times:

- Crew cab truck
- Pneumatic Tools (compressor, etc.)
- Power pack or generator
- Electric drill
- Electric or gasoline post driver
- Portable electric band saw
- Post puller
- Level (should be at least 2 feet long)
- Measuring devices
- Ladder
- Sledgehammers
- Wrecking bar
- Saws (hand and hack)
- Drift pins
- Mechanic's hammer
- Various mechanical tools
- Cold chisels
- Pioneer tools (axe, digging iron, pick, & shovel)
- Pruning tools
- Bandit tool
- Pop rivet gun
- Pub. 212, Official Traffic Control Devices
- Pub. 213 Work Zone Traffic Control
- Pub. 236M, Handbook of Approved Signs
- Pub. 234, Flagger Handbook
- Pub. 111M, Traffic Control Pavement Markings and Signing Standards
- Pub. 113, Highway Foreman & Payroll Manual
- Pub. 23, Maintenance Manual
- Pub. 46, Traffic Engineering Manual
- Pub.108, Sign Foreman's Manual

#### 11.4 RIGHT-OF-WAY

#### **DEFINITIONS**

**Encroachment** - any object placed within the legal limits of the right-of-way without the consent of the Department.

**NOTE:** Properly placed mailboxes are not encroachments.

**Illegal sign** - a sign located off the right-of-way which does not comply with Act No. 160 and Chapter 445.

## ENCROACHMENTS AND SIGN CONTROL POLICY

- A. All areas within the legal limits of the rightof-way shall be devoted exclusively to public highway purposes. The Engineering Districts shall be responsible for preserving the right-of-way free and clear of all public and private installations, facilities or encroachments except those specifically allowed by law which are in the public interest and will not impair the highway or interfere with the free and safe flow of traffic thereon.
- B. Outdoor advertising signs adjacent to interstate and Federal-aid primary highways shall be controlled as required by Act No. 160 of 1971 and Pa. Code Title 67, Chapter 445. The Engineering Districts shall be responsible for identifying and removing illegal signs in a timely manner.

#### TYPES OF ENCROACHMENTS

#### Type 1: Nuisance Objects

Examples: small temporary signs, junk cars, piles of building material, displays of automobiles or other products for sale, etc.

#### **Type 2: Permanent Improvements**

Examples: fences, walls, hedges, planters, buildings, parking lots, etc.

#### **Type 3: Permanent Signs**

Examples: permanent outdoor advertising signs whether advertising a commercial product or business activity.

## ACCESS FOR REMOVAL OF ENCROACHMENTS/SIGNS

Neither the Secretary of Transportation, nor any other employee acting in accordance with these instructions shall be liable for trespass based on the entry onto land and removal of encroachment issues erected and maintained in violation of Act No. 160 of 1971 and PA Code encroachments/signs Title 67, Chapter 445.

Where fences or other obstructions prevent easy access to encroachments/signs, Department employees will cooperate with the landowner by using access roads or lanes to eliminate any possible destruction to property.

When it is necessary for the Department to remove an illuminated device, the Department will notify the local electric power company to disconnect and return the power lines to their own poles. The Department will pay the power company the cost of disconnecting the power and this cost will be included when the owner of the device is billed.

#### **REMOVAL PROCEDURES**

- 1. If the owner of an illegal sign does not remove it, Federal regulations require PennDOT to remove it.
- Section 10 of Act No. 160 of 1971 authorizes such removal and is fully set forth below: Section 10. Removal of Prohibited Advertising Devices.

In addition to the penalties prescribed in this act, the secretary may institute any appropriate action or proceeding after thirty days' written notice of a violation to the person or persons maintaining or allowing to be maintained such device, to prevent, restrain, correct or abate a violation or to cause the removal of any advertising device erected or maintained in violation of the provisions of this act, or the secretary may have any such device corrected or removed by his employees. In the event of such removal, the person or persons responsible for the erection or maintenance of such device and the person or persons allowing such device to be maintained shall be liable to the department for the cost of removal or correction of such device. Neither the Secretary nor any other employee acting at his direction shall be liable in any criminal or civil action for damages for any action authorized by this act.

- 3. After the expiration of the 30 days removal period provided in Form RW-790-F, Final Notice to Remove, the District will verify whether or not the owner has removed the sign.
- 4. If not removed, the District Office will request removal by the appropriate County Maintenance Manager. Include in the request a copy of Form RW-760, Sign Data, along with photograph(s), sufficient location information, a copy of all removal notices pertaining to the sign and whatever additional information is appropriate.
- 5. Maintenance forces should remove the entire sign to ground level in the safest, fastest and least costly manner available. The owner had 2 notices and at least 60 days opportunity to salvage the sign and chose not to. Such a sign is defined in Chapter 445.8(b) of the regulations as an abandoned sign to be removed by PennDOT pursuant to 445.8(c).
- 6. When an illegal sign is removed from the right-of-way, the sign and all debris will be cleaned up and disposed of.
- 7. Access, to an illegal sign on private property, will be directly from the highway if possible. If necessary, a portion of the right-of-way fence will be removed and subsequently restored. If access from the highway is not feasible, use whatever access is reasonable and appropriate. If any person inquires as to the purpose, show the notices and explain. If any person becomes confrontational or threatening, simply leave the area and request advice from the District or Central Office.
- 8. Pennsylvania Turnpike, I-76, I-276, I-476, T.R. 43, T.R. 60, T.R. 66. If an illegal sign is on private property adjacent to the Turnpike and the most feasible access to it is from Turnpike right-of-way, the District should coordinate removal activity with the appropriate local Turnpike Maintenance Manager.
- 9. Illegal signs on private property will be cut off as close to the ground as possible. It is preferable to cut the sign to easily handled pieces for removal and disposal, and this is required if the location is close to the roadway where debris could become a traffic hazard. However, if removal from

- the site would greatly increase time, effort and costs because of terrain, distance or other factors, the cut sign sections may remain at the site.
- 10. Electrified signs require additional measures. If the electric is supplied to the sign directly from a nearby pole through its' own meter, try to get the local electric company to disconnect. If they are unwilling, power between the meter and the sign may be shut off if there is a switch or circuit breaker or by pulling the meter. Only a qualified District person should do this. If the electricity cannot be disconnected, alternative removal procedures should be considered.
- 11. The County Maintenance Manager will inform the District Office in writing when a illegal sign has been removed.
- 12. Reimbursement for Removal Costs

Chapter 17, "Reimbursement Activities", of the Maintenance Manual, provides procedures to obtain reimbursement for Department costs incurred for the removal of illegal signs on or off the right-of-way.

R/W ENCROACH	HMENT (INITIAL NOTICE)
(Date)	
Property Owner Name:	
County:	
Address:	City-Boro-Twp
State Route: Segment:	
Dear:	
Department must ensure that the "right-of-w	's responsibility for the safety of the motoring public, the vay" areas of the state's roadways remain free of objects. These objects may also interfere with safe and effective
During a recent, routine right-of-way check of that a	of State Route, we found
4)	NAME OF OBJECT)
	ty, is located within thefoot right-of-way width
of this roadway.	
We must request that you remove this	
within thirty (30) days in order to comply wit	(NAME OF OBJECT) h the state highway law.
To give you a better understanding of the p brochure entitled, "Right-of-Way Encroachmen	problems related to encroachments, we have enclosed ants and Outdoor Advertising Sign Control."
Should you have any questions concerning thi	is notice, please contact
	at
(NAME)	(TELEPHONE NUMBER)
Your cooperation is appreciated.	
Sincerely,	
District Executive	
Enclosure	

R/W ENCROAG	CHMENT (THANK YOU)
(Date)	
Property Owner Name:	
County:	
Address:	City-Boro-Twp:
State Route: Segment:	
Dear:	
I want to thank you for removing the	
adjacent to your property which had been place	(NAME OF OBJECT)  red in the highway's right-of-way area
Again, thank you for your assistance and coop	peration.
Sincerely,	
District Executive	
Enclosure	

(Date)	
Property Owner Name:	
County:	
Address:	City-Boro-Twp:
State Route: Segment:	_
Dear:	
	, the Department of Transportation delivered to you a lette
requesting the removal of your	
from the highway right-of-way of State Rout	(NAME OF OBJECT) re within thirty (30) days.
	_inspection of this roadway, we found that removal has no
(DATE) been completed.	
While we recognize that your action may have	ve been delayed for various reasons, we must again ask tha
removal be accomplished within the next fifte	
•	een (15) days. OT is obligated to remove it and to charge you for all cost
If the encroachment is not removed, PennDe associated with its removal. The law also pern We prefer not to take this action and again	een (15) days.  OT is obligated to remove it and to charge you for all cost mits possible legal action.
If the encroachment is not removed, PennDe associated with its removal. The law also pern We prefer not to take this action and again from the right-of-way.	een (15) days.  OT is obligated to remove it and to charge you for all cost mits possible legal action.
If the encroachment is not removed, PennDe associated with its removal. The law also pern We prefer not to take this action and again from the right-of-way.  If you have recently removed the encroachments	een (15) days.  OT is obligated to remove it and to charge you for all cost mits possible legal action.  request your cooperation for removal of the encroachmenter, we thank you and this letter should be disregarded.
If the encroachment is not removed, PennDe associated with its removal. The law also pend We prefer not to take this action and again from the right-of-way.  If you have recently removed the encroachment of you have any questions, please contact	or is obligated to remove it and to charge you for all cost mits possible legal action.  request your cooperation for removal of the encroachment ent, we thank you and this letter should be disregarded.
If the encroachment is not removed, PennDe associated with its removal. The law also pern We prefer not to take this action and again from the right-of-way.  If you have recently removed the encroachments	or is obligated to remove it and to charge you for all cosmits possible legal action.  request your cooperation for removal of the encroachment ent, we thank you and this letter should be disregarded.
If the encroachment is not removed, PennDe associated with its removal. The law also pern We prefer not to take this action and again from the right-of-way.  If you have recently removed the encroachment if you have any questions, please contact at	or is obligated to remove it and to charge you for all cost mits possible legal action.  request your cooperation for removal of the encroachmer ent, we thank you and this letter should be disregarded.

#### 11.5 GUIDE RAIL

#### INTRODUCTION

The transportation industry continues to conduct extensive research and development on both guide rail and concrete median barrier. Therefore, changes are frequently implemented by the Department. You should always check to see that you are following the latest procedures. You should refer to the RC-Standards and Design Manual, Part 2.

#### **PURPOSE**

The purpose of guide rail and concrete median barrier is to make the consequences of a crash less severe than if the barrier hadn't been there. Barrier should be used only where it is warranted, namely where the results of striking an object or leaving the roadway would be more severe than the consequences of striking the barrier.

# RECONSTRUCTION AND REPLACEMENT

Before repairing or reconstructing damaged barrier check the Design Manual to see if it is still warranted. In some cases conditions or policy may have changed and guide rail is no longer needed. It could be more cost effective to eliminate the guiderail than to repair or replace it.

As a general rule if more than 40% of a nonstandard barrier section requires replacement or extensive repair, the entire section should be replaced with a standard barrier system. You should refer to the RC Standards and the Guide rail and Concrete Median Barrier lesson plan for guidance in the proper installation.

Tables listing general barrier requirements for embankment heights, fixed objects and clear zone widths are shown in this section. These tables should be used as a guide. Sound engineering judgement should prevail in all cases.

#### **MEDIAN BARRIER**

Median Barrier may be either steel or concrete. Steel guide rail should be repaired or replaced using the guidelines established for standard guide rail. Concrete median barrier does not usually require extensive maintenance, because it is extremely rugged and is seldom damaged sufficiently to require maintenance. Concrete sections are usually held together by plate

connections. If they become damaged it may be necessary to replace the section. Spalls and chips may be formed up and repaired.

#### LOW TENSION CABLE GUIDE RAIL

All replacement posts will be galvanized W6 x 8.5 post, spaced at 12'-6" and aligned to facilitate the installation of beam type railing in the future. These posts should be ordered with holes punched in the web to accommodate cable ends and the end turnbuckle rods on existing fence. Guide rail salvaged from other projects could be used to replace low tension cable guiderail. However, the entire run must be replaced and end sections constructed.

High-tension cable barrier systems are installed in medians to reduce the number of severity of cross-median crashes. These systems are primarily installed along divided highways such as Interstates and other limited access freeways.

Because high-tension cable barrier systems are proprietary, the manufacturers have specific requirements and procedures for installation, maintenance, and repair. The District and/or County Maintenance Offices shall maintain files for these systems that document: (1) where these systems are located; (2) what was approved for manufacturing and installation (e.g., shop drawings); (3) what the manufacturer's requirements are for installation, maintenance, and repair; (4) who to contact for replacement parts for customer support (e.g., contact information)

#### STRUCTURE MOUNTED GUIDE RAIL

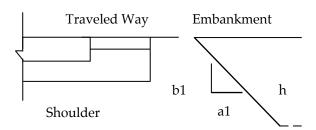
For structure mounted guide rail refer to Design Manual Part 4 Standard Drawing BC-738 was discontinued in 1999. for the latest requirements. For approach guide rail attachment to bridge parapet, refer to BC-739M.

#### **INSPECTIONS**

Inspections should be made at least twice a year, in the spring after the snow season is over, and in the fall prior to the snow season. These inspections should be concerned with alignment, appearance and general condition. Any sections in need of repairs or maintenance should be noted and scheduled for repair by the County Manager.

Removal of vegetation aaround traffic signs on interstate and interstate look-alike highways is set forth in Chapter 13.5 under the heading of "Department's Operational Duties" item 11.

BARRIER REQUIREMENTS FOR EMBANKMENT HEIGHTS				
EMBANKMENT SLOPE	_	MBANK GHTS (H		ET
(S=A1:B1)	AVERAGE DAILY TRAFFIC (ADT)			
	> 5000	751- 5000	401- 750	<=400
1 1/2:1	4.0	6.0	9.0	17.0
2:1	8.0	10.0	16.0	31.0
2 1/2:1	12.0	16.0	25.0	49.0
3:1 or Flatter	Guiderail Not Required			



# GUIDERAIL REQUIREMENTS FOR FIXED OBJECTS WITHIN THE CLEAR ZONE

FIXED OBJECTS WITHIN THE CLEAR ZONE	BAR REQU	
	YES	NO
1. Sign Support (Ground Mounted)		
( - · · · · · · · · · · · · · · · · · ·		X
(a) Post of Breakaway Design	v	Λ
(b) Sign Bridge Supports	X	
(c) Concrete Base Extending 4 Inches or More		
Above Ground	X	
Thore Ground	7.	
2. Lighting Poles and Supports		
of Breakaway Design		X
3. Bridges, Piers and Abutments		
at Underpass	Χ	
4. Culvert Headwalls 4 Inches		
or More Above Ground	X	
5. Trees *		X
J. Tiees		Λ
6. Utility Poles *		X
	v	
nigh mast Lighting	Λ	
8. Retaining Walls **		X
7. Lighting Poles with High Mast Lighting	X	X

- \* THE DESIGNER SHALL EXERCISE SOUND ENGINEERING JUDGEMENT AND CONSIDER PROTECTION IN SOME SPECIAL CASES WHERE SUCH OBSTRUCTIONS ARE LIKELY TO BE HIT DUE TO GEOMETRIC ROADWAY CONDITIONS (OUTSIDE OF A CURVE, STEEP GRADE AT BEGINNING OF CURVE, ETC.). PROTECTION SHOULD BE CONSIDERED IN SENSITIVE AREAS, SUCH AS SCHOOL PLAYGROUNDS OR RESERVOIRS.
- \*\* A JUDGEMENT DECISION BASED ON RELATIVE SMOOTHNESS OF WALL AND ANTICIPATED MAXIMUM ANGLE OR IMPACT.

		1	FORESLOPE		l	BACKSLOPI	E
DESIGN SPEED	DESIGN ADT	1V:6H OR FLATTER	1V:5H TO 1V:4H	1V:3H	1V:3H	1V:5H TO 1V:4H	1V:6H FLATTER
40 mph or less	Under 750 750-1500 1500-6000 Over 6000	7 10 12 14	7 12 14 16	** ** ** **	7 10 12 14	7 10 12 14	7 10 12 14
45-50 mph	Under 750 750-1500 1500-6000 Over 6000	10 14 16 20	12 16 20 24	** ** ** **	8 10 12 14	8 12 14 18	10 14 16 20
55 mph	Under 750 750-1500 1500-6000 Over 6000	12 16 20 22	14 20 24 26	** ** ** **	8 10 14 16	10 14 16 20	10 16 20 22
60 mph	Under 750 750-1500 1500-6000 Over 6000	16 20 26 30	20 26 30 30	** ** ** **	10 12 14 20	12 16 18 24	14 20 24 26
65-70 mph	Under 750 750-1500 1500-6000 Over 6000	18 24 28 30	20 28 30 30	** ** ** **	10 12 16 22	14 18 22 26	14 20 26 28

<sup>\*\*</sup> Since recovery is less likely on the unshielded, travesable 1V:3H slopes, consider removal of fixed objects present beyond the toe of these slopes. Determination of the width of the recovery are provided, if any, at the toe of slope should take into consideration right-of-way availability, environmental concerns, concerns, economic factors, safety needs, adn crash histories. Also, the distance between the edge of the through traveled lane and the beginning of the 1V:3H slope should influence the recovery area provided at the toe of the slope.

Because interstates/expressways ususally carry higher valumes of traffic, it is important that damaged guiderail systems in need of repair are done so in a timely manner to minimize risk exposure to the department and our motorists. Particular emphasis is to be placed on completing necessary springtime guiderail system repairs following the winter maintenance season, especially those repairs that could not physically

be made over the winter months. By May 20th all identified springtime repairs are to be completed on the interstate and expressway highways. For this spring, it is recognized that the May 20th repair date is fast approaching. Therefore, for this year only, a revised traffic barrier repair target completion date of June 20th is in effect if needed.

Interstate / Expressway Traffic Barrier	Maintenance Activity	Traffic Barrier Target Completion Date
Impact Attenuators/Crash Cushions     Guiderail End Treatments     Guiderail W-beam panels/posts     Concrete Median Barrier     Cable Median Barrier	Springtime Repairs	May 20

#### 11.6 PAVEMENT MARKINGS

Prior to the beginning of the paint season, the Ditrict Traffic Units in conjunction with the Maintenance Districts, must review all interstate and expressway highways to determine if the existing pavement markings are expected to be adequate through summer months. If the markings are not adequate, or not expected to last through the September Labor Day holiday, then those identified interstates/expressways are to be painted first and completed by May 20th. The review and subsequent line painting for interstates and expressways is to be done for each route on a district wide basis and not on a county-by-county basis.

Interstate / Expressway Line Painting	Maintenance Activity	Line Painting Activity Target Completion Date	
White & yellow pavement markings	Lines painted on identified necessary Interstate/Expressway routes.	May20	

	CLI	EAR ZONE WIE	)TH		I				
	(in fact fr	om edge of trav	alad waw)				Under 250	11	12
	(in feet if	om euge of trav	eied way)		12	12	12	*	16
					15	14	13		10
	SIGN	AVERAGE					251-800	13	14
CU	Γ SECTION				14	14	14	*	17
FIL	L SECTION				16	15	14		17
SI	PEED	DAILY	3:1	4:1	10			1.4	4 =
5:1	6:1	8:1	3:1	4:1		50	801-2000	14 *	15
5:1	6:1	8:1			15	16	16	*	18
N	ИРH	TRAFFIC			17	16	15		
		OR					2001-6000	16	16
		OR			17	18	18	*	22
					20	18	16		
		<b>FLATTER</b>					Over 600	16	18
		FLATTER			19	20	20	*	24
					22	20	18		
Ιρς	s Than	All	C 1	ear		_*			
		ablished at 10 fe					Under 250	12	12
the		adiisiled at 10 le	et of 1 0 be	yond	13	14	14	*	18
me.		T (C: -	- C	41	16	15	14		10
1	40	Traffic	of	the	10	15		10	1.4
curt	in urban are	as.			4.4	4.6	251-800	12 *	14
					14	16	16	^	20
		Under 250	10	10	18	17	16		
10	10	10	*	12		55	801-2000	14	16
11	10	10			16	18	18	*	24
		251-800	11	11	22	20	18		
11	11	11	*	13			2001-6000	16	18
12	11	11			20	22	22	*	28
	40	801-2000	12	12	26	24	22		
12	12	12	*	14			Over 600	18	20
14	12	12		11	22	24	24	*	30
17	12	2001-6000	14	14	28	26	24		50
1.4	1.4		1 <del>1</del>	17	20	20	24		
14	14	14		17			11 1 250	1.1	17
16	14	14	4=	4=	1.0	17	Under 250	14 *	16
		Over 600	15	15	16	16	16		22
15		15	*	18	20	18	16		
18	17	16					251-800	15	18
					18	18	18	*	26
		Under 250	11	11	24		18		
11	11	11	*	14		60	801-2000	16	20
13	12	12			22	22	22	*	30
		251-800	12	12	28	24	22		
13	13	13	*	16			2001-6000	18	22
14		12			24	25	26	*	30
	45	801-2000	13	13	30	28	26		
14		14	*	18			Over 600	20	24
	14	14		10	26	27	28	*	30
10	17	2001-6000	15	15	30	30	28		30
17	16		15 *	15	30	30	20		
	16	16	<del></del>	22			111 050	1/	10
19	17	16	4.7	17	10	10	Under 250	16 *	18
<i></i> -		Over 600	16	16	18	18	19	•	30
17		17	*	24	26	24	20		
21	19	18					251-800	18	20
					I				

20	20	22	*	30
28	24	22		
	70	801-2000	20	22
22	22	24	*	30
30	28	24		
		2001-6000	22	24
24	26	28	*	30
30	30	28		
		Over 600	24	28
30	30	30	*	30
30	30	30		

<sup>\*</sup> When the fill slope is steeper than 3:1, see Table 2.12.5 in Design Manual Part 2, for barrier requirements. 3:1 slope is traversable but not recoverable. if the required clear zone width is not available within the roadway slope limits due to a non-recoverable slope, the recovery area may be provided beyond the toe of the slope. See Figure 2.12.1, in Design Manual Part 2.

# CHAPTER 12 BUILDINGS AND GROUNDS

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#### 12.1 INTRODUCTION

#### **PURPOSE**

The purpose of this chapter is to provide guidelines for the maintenance, repair, construction and operation of County Maintenance facilities. The term "facilities" as used herein is intended to include all buildings and grounds used by County Maintenance personnel as offices, equipment repair or storage areas, crew assembly areas, roadside rest or picnic areas, truck escape ramp areas, scenic overlook areas or other lands owned or leased by the Department that are not considered part of the normal highway right-of-way.

#### **POLICY**

It is the policy of the Department of Transportation to provide sufficient facilities within the County Maintenance District for the purpose of conveniently and efficiently conducting the business of the Department, to maintain these facilities in a neat and tidy manner consistent with the surrounding community, to promote safety and mitigate potential health problems to employees and the public, to observe applicable Federal and State laws and PennDOT Policy in the operation of these facilities and to endeavor to be environmentally responsible.

## 12.2 MANAGEMENT RESPONSIBILITIES

#### **MAINTENANCE**

The responsibility for the Maintenance and Repair of buildings and grounds rest with the County Maintenance Manager. Managers should assign and develop a schedule for periodic inspections and identify qualified individuals for the inspection of all county maintenance facilities.

An action plan should be developed for items needing repair or maintenance with a follow-up inspection within thirty (30) days to ensure required work was completed in a satisfactory manner.

Department personnel may be utilized to perform maintenance and repair activities. Generally, department force performed work will be routine maintenance or repair and should be performed by individuals sufficiently knowledgeable and proficient to perform the activity. However, trade work must be done in compliance with Labor and Industry codes, performed by a licensed or qualified tradesman and inspected as required by code enforcement.

Work authorized by the District/County and performed by contract shall be accomplished in accordance with DGS Field Procurement Handbook.

All expenditures for building and grounds shall be paid from County budgets unless a separate allocation has been established for specific projects.

All stockpiles, buildings, structures and tanks will be numbered utilizing a seven (7) digit code. The first two digits indicate the Engineering District, the third digit indicates the County, the fourth and fifth designate the stockpile number or letter designator, the sixth and seventh digits are either 00, indicating the grounds, or 01 thru 99, indicating the building number on that site.

#### **SPECIAL PROJECTS**

Annually, each County Maintenance Office shall submit to their District Facilities Administrator a list of requested projects as part of the Four Year Facilities Plan. This list should be coordinated with the Assistant District Executive-Maintenance.

#### **EMERGENCY FACILITIES REPAIRS**

The District or County must consult with the District Facilities Administrator for all facility repairs. If an emergency repair is to be performed by a contractor, the policies and procedures related to emergencies listed in both, the Pennsylvania Procurement Handbook, published by the Department of General Services, and Publication 358, PennDOT s Purchasing Manual, must be followed.

An emergency procurement may be appropriate when a threat to public health, welfare, or safety exists or the circumstances outside the control of the state agency create an urgency of need which does not permit the delay involved in more formal, competitive methods. Situations caused by agency procrastination are not considered to be emergencies.

While the Department of General Services had delegated authority to PennDOT to authorize use of emergency purchasing process for services when one of the conditions listed above are met. All emergency purchases for facilities-related items must be pre-approved by the Director of Bureau of Office Services.

Work with your trained purchaser and your District Facilities Administrator on all emergency repairs.

#### **GROUND MAINTENANCE**

The area around the County Maintenance Headquarters should be maintained in such a manner that the general appearance of the entire installation will be enhanced. Areas adjacent to the main building should be planted with appropriate vegetation. Driveways, walkways and vehicle parking areas should be surfaced. Designated parking for visitors and access to buildings for handicapped individuals will be provided. Areas utilized for the storage of equipment and materials should be screened from the highway by plantings and fenced to protect against theft and vandalism. Gates should be closed and locked during off duty hours.

The entire area around the County Maintenance Headquarters should be graded and maintained in such a manner as to assure proper drainage. Any area used for the storage and parking of motorized equipment should be surfaced and properly maintained. The remainder of the area for parking and storage should be well stabilized and kept in good condition.

#### **BUILDING MAINTENANCE**

District/County should consult with the District Facilities Administrator for all repairs, alterations and new construction. Service Purchase Contracts for maintenance are recommended and shall be coordinated with the Facilities Administrator.

Boilers at County buildings will be inspected yearly. The Department of Labor and Industry is responsible for the periodic inspection of boilers. In the event the boiler facility at a maintenance building does not receive its annual inspection, a request for inspection should be sent to the District Facilities Administrator. Upon completion of inspection, and/or necessary repairs, a "Certificate of Inspection" will be issued which will displayed in the boiler room at all times and should be protected to prevent damage.

#### PUBLIC ROADSIDE FACILITIES

Public roadside facilities such as safety rest areas, picnic areas, scenic overlooks, park and ride areas, or other such facilities established for the convenience and use of the general public may be authorized by the Secretary of Transportation.

The routine maintenance and upkeep of authorized public roadside facilities will be under the general supervision of the County Maintenance Manager. The Roadside Rest checklist should be completed and forwarded to the Facility Administrator as outlined in The PennDOT Facilities Manual, Publication 284.

## 12.3 PROCUREMENT AND DEVELOPMENT

#### LAND PROCUREMENT

The Department's ultimate goal is to own or have under long term lease (20 years or more) permanent maintenance stocking areas. A permanent stocking area is defined as a stockpile site used year-round by maintenance forces for the storage of materials and/or the parking of equipment and/or assembling of personnel.

Each Maintenance District should develop a stockpile consolidation plan indicating the number and geographic location of all stockpiles. Chapter 4, Section 2 of this manual contains stockpile location guidelines. Rental stockpiles should be reduced in accordance with the Maintenance District stockpile consolidation plan and replaced with Department-owned sites. Purchases should proceed by priority with rental sites having potential environmental problems or high rental fees avoided. Poorly located or undesirable rental sites should not be developed because of the high cost of major improvements.

Request to purchase stockpile sites are to be submitted to the Facilities Management Division. Acquisition guidelines are discussed in The PennDOT Facilities Manual, Publication 284.

The following information will be helpful in processing this request:

- 1) Acreage
- 2) Geographical Area Serviced
- 3) SR, Segment, Offset of Adjacent Route
- 4) Specific Address and/or Location

- 5) Township and County
- 6) Owners Full Name, Address, and Phone Number
- 7) Deed Book and Page Number
- 8) Distance to Nearest Town
- 9) Utilities Available
- 10) Other Pertinent Comments (Access, Easements, etc.)
- 11) Environment Statement
- 12) Phase I Environmental Assessment

#### STOCKPILE DEVELOPMENT

All Department owned or long-term leased stockpiles must be included in the approved Maintenance District stockpile location and site development plan. Development of the site should be in accordance with the relative importance of the stockpile.

All new construction must be coordinated with the Facilities Management Division. All new construction must be authorized by FMD. All winter material storage buildings and newer construction <\$100,000 must be done utilizing the Facilities ITQ contract. New construction in excess of \$100,000 (except winter materials storage) must be bid and constructed by the Department of General Services Public Works Division through FMD. Development is to include all items required to establish a proper maintenance facility and the following items are to be considered:

- Grading
- Draining
- Utilities
- Water at Stockpiles
- Public Water and POTW (Public Owned Treatment Works)
- Well water and POTW
- Well water and no POTW
- Paving
- Parking
- Exterior Lighting
- Interior Lighting
- Buildings
- Emergency Containment
- Salt, Premix, and Treated Material Storage Building
- Three-sided single bay building or material storage tarp, minimum lease of

- 5 years or department owned.
- Three-sided multi bay building, minimum lease of 10 years or department owned.
- High-arch Gambrel or Husky building, minimum lease of 25 years or department owned.
- Composite salt storage building, minimum lease of 25 years or department owned.
- Personnel Staging Buildings
- Fleet Maintenance Buildings
- Safety Stations
- Equipment Wash Buildings
- Landscaping
- Fencing
- Signing
- Permits
- Final Design Approval
- Construction changes or modifications, from final design, must be approved by:
  - Federal (if applicable), State and Local authorities
  - County Maintenance Manager or designee
  - FMD
- Final Inspection
- Final Acceptance-contractor must provide the following to FMD
  - Operations, maintenance and training manuals
  - Warranties-Contractors and Manufacturers
  - All required permits
  - Telephone numbers for 24 hour emergency contact in case of building system failure during warranty period.
- As built drawings
- All training to operate any facility system or component to PennDOT designated personnel.

#### 12.4 FACILITY DIVESTITURE

#### STOCKPILE DIVESTITURE

The authority to divest PennDOT facilities lies with the Bureau of Office Services. Upon the determination to divest either leased or owned stockpiles by the County Maintenance Manager, concurrence must be attained from the Assistant District Executive-Maintenance (ADE-M) and the District Facilities Administrator (DFA.) Listed below are the process and time frames required to divest PennDOT facilities and are included in the Facilities Manual Publication 284.

- The Assistant District Executive-Maintenance submits a written request for the divestiture to the Director, Bureau of Maintenance and Operations, 90 days prior to the termination of operations. Upon approval, the request will be forwarded to the Director, Bureau of Office Services for final approval. Written approval from the Director, Bureau of Office Services will be required prior to initiating further divestiture processes.
- A Phase I Environmental Site Assessment (ESA) is required to be completed within 2 months of termination of operations at any leased or owned facility.
- The District Environmental Manager or designee conducts a phased Environmental Site Assessment (ESA) in accordance with the Waste Site Evaluation Procedures Handbook, Publication 281. The results of the Phase I ESA will determine if additional site assessment will be required as outlined in Publication 281.
- The Environmental Quality Assurance Division, Bureau of Design, determines any necessary remedial actions to comply with the provisions of the Pennsylvania Land Recycling Program (Act 2) based upon the findings of the ESA, the future land use, funding and additional considerations.
- At the completion of the Phase I ESA, when no additional site evaluations are indicated, divestiture of the property is to begin immediately and be completed within 5 months unless constrained by contractual or legislative conditions. The Assistant District Executive-Maintenance submits a request for extension to the Director, Bureau of Maintenance and Operations and Bureau of Office Services, if extenuating circumstances prohibit the divestiture within 5 months.
- When additional environmental site assessment is indicated, a Notice to Proceed for the additional phases of the ESA is to be executed within 4 months of the completion of the Phase I ESA.

- The Assistant District Executive-Maintenance submits a status report to the Director, Bureau of Maintenance and Operations, at the completion of the ESA and at the final divestiture of the facility. The Bureau of Office Services will be copied on the correspondence.
- The Bureau of Maintenance and Operations tracks the progress of the facility divestiture. The Bureau of Maintenance and Operations advises the Bureau of Office Services should any schedule deviations occur.
- Department entities involved in the divestiture should include interaction with the following private entities during the process where and when appropriate:
  - Local officials and community organizations
  - Potential buyers
  - Property owner (if leased)
- The Environmental Quality Assurance Division, Bureau of Design, and the District Environmental Unit remediate the facility as planned.
- The Bureau of Office Services and the Office of Chief Council coordinate the Act 2 Buyer-Seller Agreement (if applicable.)
- The Environmental Quality Assurance Division, Bureau of Design, and the District Environmental Unit formally enter the Act 2 Program and attain the clean-up liability protection (if applicable.)
- The District Right of Way Administrator divests leased stockpiles.
- The Bureau of Office Services divests property through DGS Bureau of Real Estate, where applicable.

#### **12.5 TANKS**

#### STORAGE TANKS

All above ground storage tanks for bituminous materials shall be assigned an equipment number by the District Storage tank Coordinator.

The management of all above ground and underground storage tanks, including installation, modification, operation or removal shall be in accordance with the policies and procedures provided in Chapter 21 of this publication.

#### COMPRESSED GAS CYLINDERS

Portable compressed gas cylinders shall be stored in a well ventilated area, on a firm, level surface and shielded from prolonged exposure to the sun. All cylinders, full or empty, will be secured with non-metallic bindings; protective collars/cap shall also be in place and secure.

Full/empty cylinders to be segregated in a properly signed and identified area. All other required signage and safety equipment will be in place.

Storage area shall be a minimum of ten (10) feet from property lines, walkways or occupied buildings.

Propane gas is heavier than air and therefore escaping gas will collect at the lowest spot in a confined area. If stored inside vents should be located at floor level.

Additional information may be secured by contacting the State Fire Marshall or referencing National Fire Protection Association (NFPA) publication number 58 - latest edition.

#### 12.6 ESCAPE RAMPS

#### **EMERGENCY TRUCK ESCAPE RAMPS**

The County Maintenance District is responsible for the periodic inspection of emergency truck escape ramps located within the respective county.

Emergency truck escape ramps shall be composed of a short approach ramp and an arrestor bed. The arrestor bed is most commonly constructed with a loosely consolidated aggregate such as AASHTO No. 57 and may include deceleration mounds and/or impact attenuator barrels.

To maintain optimum conditions for successful truck capture, the arrestor bed should be reworked or fluffed after each use or at a minimum of twice each year (Spring and Fall) to ensure that the aggregate remains loosely consolidated.

A mechanical drag as shown in Figure 12-1 or similar device may be pulled back and forth over the arrestor bed to fluff the aggregate. Sufficient passes should be made to ensure that a minimum depth of 24 inches is reworked.

To fluff beds containing deceleration mounds requires the removal of the mounds. After fluffing, the mounds are reconstructed at their original location and configuration. Figure 12-2 provides typical mound dimensions.

Winter snow coverings will not generally have an adverse effect on the beds' effectiveness. However, beds should be inspected for a frozen crust during periods of freezing rain or extreme freeze/thaw cycles and salt applied if a crust has formed.

Every escape ramp should also include an anchor block to which a tow vehicle can attach when pulling a vehicle from the gravel bed. The anchor block should be located 74 feet from the front edge of the gravel bed and towing service vehicles must be required to attach to the anchor to prevent damage to the pavement.

Periodic inspections must take note of the condition of the advance ramp signing, delineators, lighting, etc. and damaged fixtures shall be repaired or replaced as soon as it is feasible.

#### 12.7 STOCKPILE

#### ENVIRONMENTAL MANAGEMENT

Since 1992, PennDOT, Bureau of Maintenance and Operations has monitored the impact that our field maintenance operations have had on the environment at our stockpiles. In 2002, the Department strengthened its commitment to environmental stewardship by implementing a plan to have all Engineering Districts ISO 14001 registered.

The Stockpile Environmental Management Process was developed in 2004 through a joint effort of the Bureau of Maintenance and Operations, the Facilities Management Division and the Strategic Environmental Management Program (SEMP.) This process will not only add emphasis to the environmental quality of our maintenance stockpiles, but it will prevent future environmental impacts and nurture environmentally sound stewardship.

Each Assistant District Executive-Maintenance is responsible for maintaining the Engineering District's ISO 14001 registration.

#### 12.7.1 FREQUENCY

All 01 stockpiles and all non 01 stockpiles will be reviewed annually by the Penn State Facilities Engineering Institute (PSFEI), with results forwarded to the respective District Executive and ADE-M after review by the BOMO Maintenance Programs Section.

Each District is to maintain with the BOMO Maintenance Programs Section a list of primary contacts who will be notified by PSFEI 48 hours prior to conducting the assessment.

The Facilities Management Advisory Committee (FMAC) will perform quarterly field reviews to assess PSFEI's performance.

## 12.7.2 CONTINUOUS QUALITY IMPROVEMENT

For all Stockpile Environmental Q.A. Reviews that receive a final overall rating, of "Needs Improvement, "Unsatisfactory or "Automatic Unsatisfactory", the following will be required:

- 1. An After Action Review (AAR) will be conducted with the individuals working out of and/or assigned to the stockpile. An Action Plan will be developed to correct the noted deficiencies. In addition, Districts will complete CAR/PAR form, in accordance with ISO 14001 requirements.
- 2. Tentative completion date to rectify the deficiencies will be listed.
- 3. A letter from the District Executive, outlining the corrective action plan to the Director, Bureau of Maintenance and Operations, attesting to the completion or scheduling of actions on deficiencies within 30 days of written notification by BOMO.
- 4. The District Executive at their discretion may protest the overall scoring of the review. Protests must be submitted in writing to the Director, Bureau of Maintenance and Operations, within thirty (30) days of written notification of the review.

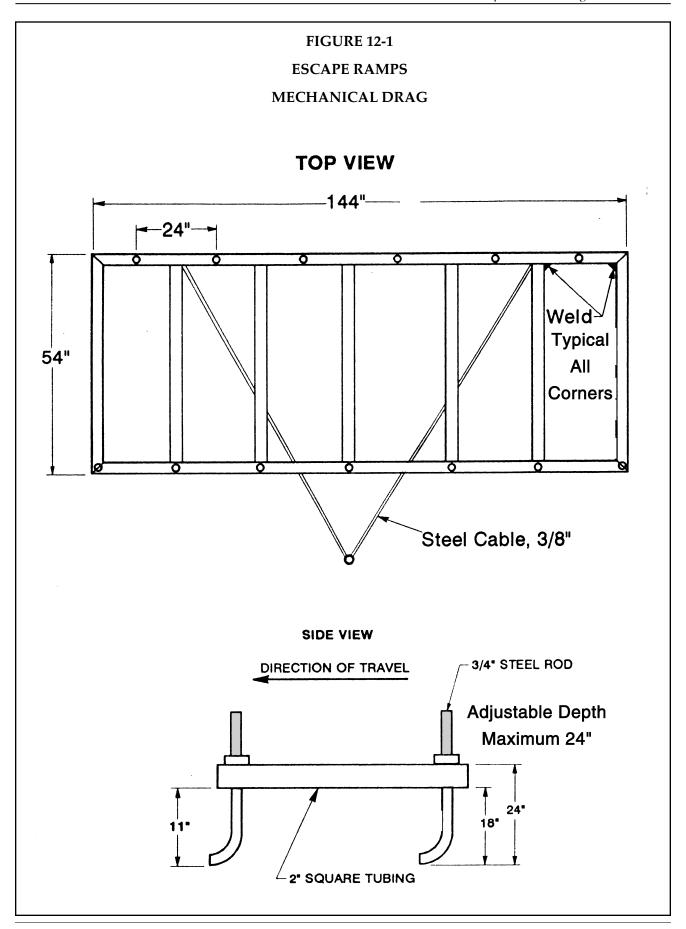
#### **FOLLOW-UP**

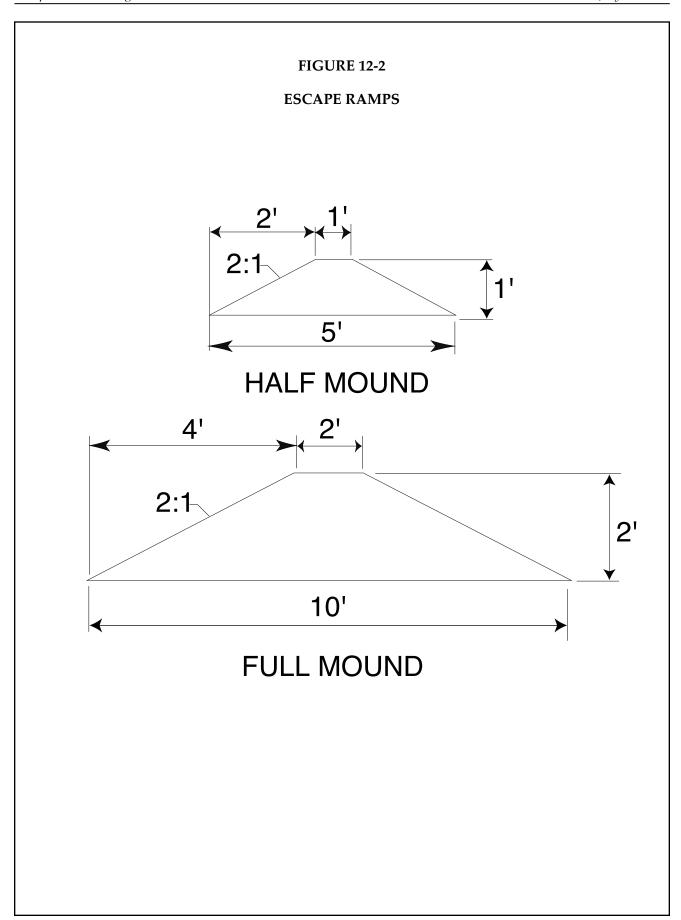
Individuals from BOMO, Quality Assurance Section and or Maintenance Programs Section, will monitor the corrective action plan until deficiencies are corrected.

#### **CLOSE-OUT**

The Stockpile Environmental Quality Assurance Review closeout strategy will be consistent with the letter referencing the same dated July 29,2008 (SOL 462-08-03.) That is in part:

- 1. If the final overall rating is in the "Exceeds Expectations or "Satisfactory range, the PSFEI Reviewer will:
  - a. close-out with the PennDOT representative at the stockpile if available.
  - b. attempt to closeout with the County Manager, Assistant County Maintenance Manager or Equipment Manager in the case of an 01 stockpile, in person if available at the completion of the assessment.
- 2. If the final overall rating is in the "Needs Improvement, Unsatisfactory or "Automatic Unsatisfactory range, the Quality Assurance Reviewer will:
  - a. close-out with the PennDOT representative at the stockpile if available at the completion of the assessment
  - b. If a PennDOT representative is not available at the completion of the assessment, PSFEI will attempt to conduct a phone close-out with the County Maintenance Manager, or designee, within twenty four hours of the assessment.





#### FOREMAN'S CHECKLIST

Quarterly the Foreman's Quarterly Stockpile Checklist, form OS 641 04/06, should be performed as part of the ISO 14001 registration process. This checklist and directions for its application are included in the PennDOT Facilities Manual, Publication 284. The Bureau of Maintenance and Operations will have no involvement with this completed checklist and it will not be forwarded to BOMO.

#### CRITERIA

The areas and criteria for each item listed will be reviewed for compliance as part of the Stockpile Environmental Q.A. Review.

WETLAND – If wetlands are present at stockpile, no filling or encroachment is permitted; wetland boundaries must be identified / delineated in a visual manner with appropriate signage.

WINTER MATERIALS – All solid deicing chemicals, salt, mixed or treated material must be stored under roof, on an impervious pad, not above the structure fill line. Winter materials must be kept at least 10' away from the doorway unless the face of the material is completely tarped. The 10' rule is not applicable between November 1 and March 31 to facilitate winter operations. Care should be used during the winter months to prevent winter materials closer than 10 from the doorway from being exposed to precipitation and to reduce salt laden runoff. Bagged deicing chemicals must be stored under roof and on pallets to allow for proper air circulation.

**ASPHALT STORAGE TANK** CONTAINMENT- All asphalt tanks shall have proper containment; containment shall be built on a pad which is impervious to the material being stored within the tank. Containment must be capable of holding 110% of the largest tank rated capacity; there shall be no major spillage outside the containment area or no spillage of stored product within containment as evidenced by greater than 50% surface area or approximately 20 gallons of product; no excessive, standing water 1% of containment volume; containment release valve must be in a closed position and secured / locked at all times. Containment area will be free from loose materials such as pails, tools, equipment, trash, vegetation, etc.

HAZARDOUS WASTE DRUM STORAGE - All containers or drums containing hazardous waste shall be stored in an emergency containment area built as an impervious, monolithic structure capable of holding 110% of stored contents, free of standing water. A compliant fire extinguisher shall be located within 50 feet of the storage area. All containers are to be properly labeled identifying contents, dates and risks, not to exceed 90% full. Drums will be identified with the date the hazardous material was introduced. DEP regulations require hazardous waste drums may only be stored for 179 days from the start date. Storage drums are to be serviceable, no rust, dings or corrosion; drums should be stored on pallets to protect from standing water. Lids and /or bungs should be in place and tight. Adequate spill stabilization materials are to be stored close at hand and area identified. Drums are to be stored in a manner that allows for visual inspection and not stacked more than 2 drums high. Hazardous waste areas are to properly signed "Hazardous Waste and only hazardous waste is to be stored in this area.

RESIDUAL WASTE DRUM STORAGE - All containers or drums containing residual waste shall be stored in an emergency containment area built as an impervious, monolithic structure capable of holding 110% of stored contents. A compliant fire extinguisher shall be located within 50 feet of the storage area; all containers are to be properly labeled identifying the contents, date and risks and not to exceed 90% full. Storage containers are to be serviceable, no rust, dings or corrosion; drums should be stored on pallets to protect from standing water. Lids and / or bungs should be in place and tight. Adequate spill stabilization materials are to be stored close at hand and area identified; no barrel stored more than 179 days past its closure date. Petroleum products may be mixed in same container with the exception of gasoline mixed with other petroleum waste. Anti-freeze must be separate from petroleum products. Area properly signed "Residual Waste" and only residual waste is to be stored in this area.

PRODUCT DRUM STORAGE – All containers or drums containing a product are to be properly labeled with contents identified; stored in properly constructed emergency containment capable of holding 110% of stored contents. A compliant fire extinguisher shall be located within 50 feet if stored product is flammable. Area is to be properly signed and only new product is to be

stored in this area. Product grounded where required.

VEGETATIVE DAMAGE – Vegetation on or adjacent to the site shall be protected from damage due to contaminated run off containing salt or other pollutants from a PennDOT facility.

RUN OFF – All run off from a department facility must be maintained as sheet flow or directed to a sediment trap. Sediment traps or catch inlet basins that can directly receive contaminants from equipment operation or loading operations will be removed or protected from having raw material enter the system. No evidence of pollutants adversely impacting adjacent lands.

COMBINED FACILITIES RESPONSE PLAN (CFRP) – An approved and signed stockpile specific CFRP plan shall be posted in plain view in staging or office building. CFRP plan will be reviewed and approved at a minimum annually and updated as changes to the plan are necessary. All employees assigned to the stockpile should be familiar with the plan contents.

STOCKPILED FILL MATERIAL -All material stored at a stockpile and designated to be later used as roadway fill shall not be commingled or contaminated with metal, wood, plastic or rubber products. Household refuse, general demolition waste or residual waste shall not be commingled with the fill material. Neither shall it be contaminated with fuels, lubricants, anti-freeze, sludge or other liquid residual or hazardous waste.

RECLAIMED ASPHALT PAVEMENT (RAP) Reclaimed asphalt pavement (RAP) shall be stored in compliance with current PennDOT policy and due diligence. This material cannot be used as site fill. Required run off controls will be properly installed.

OIL FILTERS (WASTE / USED) – All purchased oil filters shall be non-terne or lead free. Upon removal from equipment, canister will be punctured and drained before disposal. Drained oil is to be captured into "waste oil container" and filter placed in a steel drum marked "used oil filters". Drained oil should be recycled.

BATTERIES, VEHICLE (USED) – All used batteries shall be stored in a designated area and either within a leak free container or on an impervious surface with emergency containment; the storage shall be properly identified and signed.

If batteries are not stored in an enclosed area, they are to be protected from the intrusion of water. Storage area shall be well ventilated.

FUEL DISPENSING AREA – Fuel dispensing area should be neat and clean with no evident spillage or all spills promptly cleaned. A spill kit or sorbent material is available at fuel dispensing area. All required regulatory signing in place and legible. A compliant fire extinguisher will be within 50 feet and accessible.

STAINED SOIL – Care shall be taken that spillage of Hydrocarbons or other residual waste fluids do not occur at our stockpiles. However, if spillage of the above mentioned products, areas greater than two square yards with a penetration greater then 1/4 " shall be cleaned up immediately and contaminated soil properly disposed.

STAINED SOIL WINTER MATERIALS -Care should be taken with the handling of winter materials at our stockpiles. Spillage or tracking of salt or salt laden materials from salt handling or transport will be cleaned up within 48 hours of the conclusion of winter storms to prevent leaching of salt into the ground. Salt staining in excess of five square yards with a penetration equal or greater than 1/4 shall be cleaned up immediately and contaminated soil properly disposed.

ASPHALT STORAGE TANK (OPERATION) Any tank(s) used for asphalt product storage shall have its contents identified; the safe heating temperature and flash point for same will be conspicuously posted; a compliant fire extinguisher within 50 feet and accessible. The tank(s) will be registered as required with the certificate posted at the site. A "No Smoking / Open Flame sign shall also be permanently posted. A Labor and Industry permit shall also be posted where required. Under no circumstances shall the stored material be heated above the safe heating temperature. When not in use, asphalt storage tanks will be visually identified with proper signage as "empty.

EROSION – All stockpile surface areas should be protected from erosion, bare earth areas or areas of vegetation damage should be seeded. Area should be graded to direct and control water flow. No evidence of erosion on embankment slopes. If necessary, appropriate erosion control measures will be put in place and properly maintained. All related best management practices (BMP's), Pub. 464 will be followed.

WINTER MATERIAL (LIQUID) – All liquid winter material storage shall be placed within an impervious, monolithic emergency containment structure. The emergency containment area shall be capable of holding 110% of the largest tank within the area. Tank contents must be identified on tank and required signage in place. No standing / stagnant water. Drain valve must be in the closed position and secured from accidental opening.

COMPRESSED GAS CYLINDERS – All compressed gas cylinders shall be stored in a designated, well ventilated area. Cylinders will have collard or in place caps to protect the valve assembly hand tight. All compressed gas cylinders will be secured to protect from tipping by non¬metallic bindings.

BURNING – There shall be no open air burning of any substance or material at stockpiles, whether by PennDOT employee, other Commonwealth employees, contractors or others using our stockpiles.

SITE FILL – All site fill, that is solid material, used to expand the useable area of a stockpile or material disposed at a stockpile shall be free of contaminates. E & S controls shall be in place and maintained where required. Exposed fill areas will be seeded within 30 days of closure. No slope area greater than 1000 square feet will be left un¬vegetated for more than 30 days.

EMPTY DRUMS – All empty drums that contained non hazardous materials will be stored in a signed, designated area. An empty drum is a drum that may contain less than one inch of residual material. Lids and bungs will be in place and secured, end drums blocked to prevent rolling, fill and vent plugs shall be in a plane parallel to the ground (horizontal plane); no leakage of residual material is evident; drum storage location does not permit surface water to collect around drums or wash through area to drainage facilities. Drums stacked on their sides no more than three high.

COLD MIX – Cold mix material shall be stored on an impervious pad and under roof or 100 % covered with tarp. Cold mix material not contaminated with foreign materials rendering the material unsuitable for use. Storage location does not permit surface water to collect around or wash through the area.

STOCKPILE INLETS – All stockpile inlets will be cleaned semi-annually to prevent the accumulation of sediment and to allow for proper operation of the inlet. Properly maintained inlets prevent sediment from leaving PennDOT property and complies with the requirements of the PennDOT NPDES Municipal Separate Storm Sewer System (MS4) permit.

# CHAPTER 13 ROADSIDE MANAGEMENT

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#### 13.1 INTRODUCTION

Roadside management activities and responsibilities involve the art and science of vegetation establishment and maintenance within the highway righof-way. Safety rest areas, parking areas, scenic views and roadside litter pick-up/disposal are also management responsibilities included in this Chapter.

Roadside vegetation is managed with the road users' requirements as the first consideration. Safety rest areas, picnic areas and scenic views provide the motoring public with facilities designed and managed to increase safety and provide areas from which to view the state's natural beauty.

The District Roadside Specialist is the technically responsible individual for directing and monitoring all roadside management programs and activities routinely performed by county or contract personnel who are directly responsible to the County Maintenance Manager.

Routine roadside management programs and activities include the following:

- 1) Mowing
- 2) Herbicide vegetation control
- 3) Mechanical and manual vegetation control (trimming and removal activities)
- 4) Revitalization, wildflowers, planting and plant maintenance
- 5) Operation and maintenance of safety rest, picnic and scenic view areas
- 6) Roadside litter control
- 7) Other public service activities

Care must be taken to assure that each work activity is properly coded by cost function. The Highway Maintenance Foreman's Manual Pub 113 identifies the proper coding for each activity along with the activity requirements, performance standard, method and procedure and other information on the conduct of the activity.

Roadside activities are incorporated into each major highway construction project as part of the contractor's responsibility. Until such time as the project is completed, no Department Force roadside maintenance work is to be conducted within the limits of the project. However, where a

section of roadside maintenance must be initiated to aid in the establishment of desirable trees, shrubs and turf to prevent loss of plant material or invasion of prohibited or undesirable plant growth, roadside maintenance can be conducted.

Scheduling of all roadside maintenance activities shall follow these general priorities:

- 1) Maintenance Function Code (MFC) A & B Urban
- 2) MFC A&B Rural
- 3) MFC C, D&E Urban
- 4) MFC C, D&E Rural

Roadside activity reporting is made by the use of the Form M-609 (Roadside Activity Report) for the following activities:

- 1) All herbicide, insecticide or other pesticide applications, including plant growth regulators, stump treatment and dormant basal applications.
- 2) All contract roadside maintenance activities, except routine rest area maintenance.

All pesticide applications require detailed documentation and this form, when properly completed and signed, will serve this purpose. The completed M-609 for contract work, serves as documentation for work performed, materials and equipment utilized and hours worked. The contractor's invoice for this work must agree with the signed M-609's. A copy of the M-609 shall remain with the contract files in the appropriate County and District offices to document performance and payment.

#### 13.2 VEGETATION MANAGEMENT

#### **PURPOSE**

Roadside vegetation management is intended to provide safety, utility, economy and beauty to the roadside area. Utility is provided by stabilizing roadside soils and preventing erosion and by growing and encouraging desirable vegetation in place of undesirable and future problem vegetation. Economy is provided by the selection of vegetation such as Crownvetch which needs no mowing or fertilization, low maintenance grasses or other types of vegetation which can withstand

roadside environmental contaminants such as salt, ozone, etc. Beauty is provided by green and well maintained turf, Wildflowers, Crownvetch, the propagation of native plants (Mt. Laurel, Rhododendron, Dogwood, etc), the screening of department facilities and through the planting of trees and shrubs.

### **OBJECTIVE**

The objectives of Chapter 13, Sections 1-6 are to identify the various methods by which roadside vegetation successional development can be managed to accomplish the purposes mentioned above. Methods available can be broadly classified as biological/cultural, chemical and mechanical/manual. This is collectively identified as an Integrated Vegetation Management (IVM) program.

#### **BIOLOGICAL/CULTURAL**

These practices involve the use of beneficial insects to damage, destroy or abate the growth of undesirable plants and the use of desirable plants to suppress or crowd out unwanted vegetation. In the European Pennsylvania, (Rhinocyllusconicus) was released in 1975 and has proven beneficial in controlling nodding or musk thistle. Other beneficial insects are being evaluated for Canada thistle control. Culturally, Crownvetch, fine fescue grasses, daylillies and wildflowers are used for their ability to establish and suppress unwanted weeds and for beautification and conservation purposes. Crownvetch has shown the ability to suppress the invasion of forest tree species and to extract nitrogen from the air to sustain healthy growth without any maintenance fertilization.

#### **CHEMICAL**

Herbicide applications are an essential part of a sound, economic vegetation management program. Selective, non-selective, basal stem and plant growth regulator applications are the main control methods. The cost effectiveness of managing roadside vegetation with specific herbicides is well documented and is an integral part of the Department's Integrated Vegetation Management program.

### MECHANICAL/MANUAL

Mowing, brush cutting, tree trimming and removal with equipment operated by skilled

personnel has been and will remain an important part of the roadside vegetation management program. Mowing has been and will remain the foundation of the IVM program and basic to vegetation control. Urban areas in particular do not lend themselves to biological/cultural and many herbicide management practices. However, managing vegetation by mechanical/manual techniques is costly, energy consuming and in many cases a traffic control/safety problem.

### 13.3 MOWING (ASSEMBLY 714-7711-01 & 02)

#### **GENERAL**

Roadside mowing is an essential maintenance activity which contributes to motorists' safety, sign visibility, vegetation control and roadside appearance. Mowing is required to maintain safe unobstructed views at intersections, traffic divider islands, driveways, signs and official/emergency median crossings. The increased use of smaller vehicles compounds the sighting problems caused by overgrown vegetation.

Mowing is an essential activity of the Integrated Vegetation Management program and must be routinely performed in designated areas to prevent growth and development of noxious or invasive weeds and trees. Proper and timely mowing creates a favorable public impression of highway maintenance. The public's conception of highway maintenance is frequently based upon visible features such as height of grass, presence of weeds and litter, or the encroachment of brush and tree limbs into the roadway.

### **POLICY**

Annual mowing schedules and mowing cycles shall be determined by the District Roadside Specialist and County Maintenance Manager guided by Standard Limits of Mowing (13-4, 13-5) and conducted based on financial, climatic, environmental or emergency conditions that exist.

The District Roadside Specialist shall be responsible for advising the County Maintenance Managers on the technical aspects of grass maintenance and herbicide applications. Maintenance Managers shall monitor county programs to assure that mowing equipment is cutting to uniform heights. The cutting heights shall be determined by the number of mowing cycles per year.

Note: Slopes flatter than 3:1 shall be mowed once annually beyond the Type "L" mowing to designated mow lines. Beyond 10' refer to Figure 3 (Standard Limits Woody Growth)(page13-30).

#### No Mow Areas

- Behind designated mow lines or no mow areas. Cut or fill slopes, medians or interchange infield areas established to Crownvetch, wildflowers, reforestation, installed landscapes or other stands of desirable plants.
- On any slope area steeper than 3:1, or flatter where the equipment may damage turf or capsize.. Refer also to figure 3 (Standard Limits Woody Growth).

Optional: Mow lines may be permanently established by placing three foot high channel bar posts, on 50 foot centers, around the area to remain unmowed. Every third or fifth post should have the standard A2-1-1 MOW/LINE sign affixed to the top of the post. The District Roadside specialist is responsible for determining, altering and designating establishment of mow lines. Promptly repair damaged signs and posts.

# MOWING PROCEDURES ESSENTIAL STEPS FOR EFFICIENT OPERATIONS

Scheduling personnel must consider the following items for efficient mowing operations:

### A) The Grass Growth Inhibitor Application Schedule

Herbicides are available to control the height and seed head formation of many grasses. The economic value of a grass growth inhibitor program is dependent upon the following factors:

- 1) Cost of material and application as compared to cost of conventional mowing.
- 2) Acreage of treatment involved and ability to treat at the optimum stage of growth for maximum control.
- 3) Required mowing before or after treatment to attain maximum control.
- 4) Traffic hazard created by presence of mowing equipment throughout the summer.

The District Roadside Specialist shall be responsible for the development of the program for plant growth regulators.

### B) The Broadleaf Weed Control Application Schedule

Herbicides are available to control broadleaf weeds and vegetation in grass areas where uniform texture and height are desirable.

No mowing is scheduled for one week before or after a herbicide treatment.

The District Roadside Specialist shall provide technical directions in the timing and application technique.

### C) Basal Stem Application Schedule

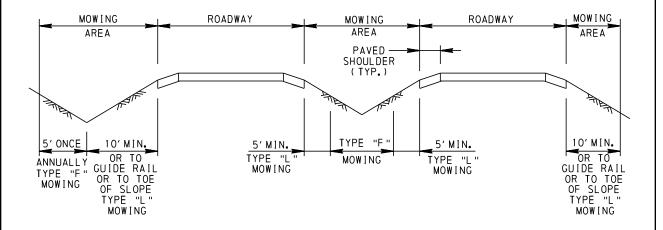
Herbicides are available to selectively control woody invasion in reduced mowing areas during the growing and dormant times of the year.

### D) Preliminary Litter Pickup Schedules

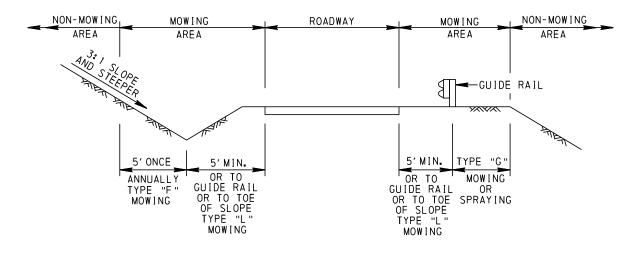
The cleaning of the mow areas before mowing must not be a responsibility of the mower operator, or mowing production will be greatly reduced. However, any litter or debris which has accumulated in the mowing area between the cleanup and actual mowing must be removed to prevent equipment damage, being thrown into passing vehicles or unsightly aftereffects. One of the major causes of mower equipment downtime is attributed to hitting vehicle parts, rock sand litter, tires being punctured by glass, portions of reinforcing rods and protruding remnants of channel bar or telespar posts.

# STANDARD LIMITS OF MOWING

### FIGURE #1 MOWING FOR FOUR OR MORE LANES UNCURBED HIGHWAYS (NOT TO SCALE)



### FIGURE #2 MOWING FOR TWO OR THREE LANES UNCURBED HIGHWAYS (NOT TO SCALE)



### STANDARD LIMITS OF MOWING

### (continued)

### **Mowing Types**

- "L" Mowing is restricted to a single pass and the right side of the travel lane shall be cut to the minimum in figure #1 or #2 where achievable or to guiderail or toe of slope. Widths greater than the minimum are allowable if accomplished within the single pass.
- "F" Mowing is full-width with multiple passes and shall be done once annually after July 1st or every other year to eliminate woody plan establishment and maintain the 30 foot recovery zone or to the limits of the right of way. Consider extending type "F" mowing cycles to two years where achievable.
- "G" Mowing is behind guiderail using a boom arm mower to the maximum of eight feet as described in Chart A for the various types of guiderail and shall be done once annually or every other year. Proper selective herbicide treatment may be performed in complement or in place of mowing.

Non-mowing areas are maintained with selective herbicide treatment. Guiderail areas are maintained with non-selective herbicide treatment.

Type "L" Mowing Limits – minimum mowing widths of a single pass

(uncurbed)	<u>4 or more lanes</u>	<u> 2 or 3 lanes</u>
Right side	min. 10'	min. 5'
Median	min. 5'	min. 5'
Back of Swale (once annually)	min. 5'	min. 5'
Interchanges & Traffic Islands	min. 5'	min. 5'

To handle seasonal fluctuations, the district executive may expand mowing widths in type "L" cycles on a year by year basis in affected areas to maintain sight distance at crossovers or gore/ramp areas and to control noxious weeds. Cut the back slope of a swale annually after July 1st to maintain a clear drainage channel and adequate sight distance of signs where it is possible to achieve.

Mowing Cycles	<u>Urban</u>	<u>Rural</u>
Limited Access	3 to 5	1 to 3
Other roadways	2 to 4	1 to 2
Mowing Heights	cutting cycles/year 3 or more	minimum remaining height 4"-6"
	1 or 2	5"-8"

Grass shall not be cut lower than 4 inches in areas with 3 or more cutting cycles. Grass shall not be cut lower than 5 inches in areas with less than 3 cutting cycles.

#### General

Do not mow within eighteen inches of landscape trees and shrubs. District Roadside Specialist determines mowing beyond standards for a particular area due to vegetation management objectives such as sight distance, drainage and invasive weeds.

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### E) Route Scheduling and Operating Time (Department Equipment)

Each foreman shall develop an efficient routine for carrying out the mowing operation to be performed in his area.

A planned method of operation will minimize unnecessary doubling back and excessive turning and maneu-vering. The schedule and routine should allow the operator(s) to efficiently mow going out and again on the return trip. There should be little or no dead heading. A scheduling system, similar to that developed for snowplowing, identified on county maps will increase operational and administrative management efficiency.

Increasing the amount of actual operating time on a piece of equipment is of major importance in reducing the cost of carrying out an efficient mowing program. The following are considered necessary for a proficient operation:

- Hand mowing and the use of small mowers shall be kept to a mini-mum. Mowing of this classification is to be confined to those areas where tractor mowers cannot operate or grass growth inhibitor use is unavailable or ineffective.
- 2) Each mower crew must leave their headquarters on time daily.
- 3) All equipment operators shall check and inspect their equipment thoroughly before leaving their headquarters. The mower cutting height must be checked daily or a "stop" permanently affixed to insure that the minimum height which is dependent on a number of yearly cycles is achieved after cutting. Each operator shall obtain the following days work area assignment at the close of work. This information is indicated on Form 6146 (weekly work schedule).
- 4) When it is inappropriate to return equipment to the county or to a satellite maintenance building for overnight storage, the operator should seek permission to park the equipment in a well lighted and secure area, at a service station or other recognized area. (The operator or foreman must arrange to place the equipment on the gas truck schedule for routine servicing.)

5) The foreman must insure that all personnel assigned to tractor mowers are certified operators. It is his responsibility to take or recommend disciplinary action against any operator(s) who damage plants or plantings or equipment through careless or irresponsible actions.

### F) Correct Type and Number of Mowers to "Fit" the Mowing Section

MFC A & B highway systems are characterized by wide, fully graded medians with 6:1 to 4:1 sloped grass roadside areas adjacent to paved shoulders and interchange areas. These systems carry the major volume of traffic. In order to maintain uniformity of mowing treatment and reduce the effects on traffic flow, the operation should be performed quickly and with maximum regard for traffic safety. Mowers capable of mowing large swaths without throwing litter into traffic should be utilized. Irregular areas and any "cleanup" mowing required should be performed by a smaller piece of equipment working with the large mower as required. This tandem operation will simplify traffic protection signing and permit assistance in case of breakdown.

For other highway systems which require shoulder or limited one swath slope mowing, the tractor mowers with underslung rotary and/or side mounted cycle bar or flail should be utilized. Operating independently, this equipment can, throughout the mowing season, normally accomplish the mowing cycles required and handle the majority of mowing complaints. Utilize equipment that minimizes clumping of the cut material

### **CROWNVETCH AREAS**

Pennsylvania's Beautification Conservation plant Penngift Crownvetch has been so proclaimed by the 165th Pennsylvania General Assembly under Act No. 150 on June 17, 1982. Many complaints are received from adjacent property owners and the motoring public when mowing of any Crownvetch occurs. However, where Crownvetch grows into the mowed grass areas established at interchanges, medians or roadside areas, it should be controlled by mowing and/or broadleaf weed control applications. No Crownvetch shall be mowed on slopes or other areas where it has been established for (1) erosion

control, (2) as a low maintenance vegetation in interchanges and median areas, or (3) as a vegetation to suppress forest invasion. The District Roadside Specialist shall select and direct the vegetation management program for these areas so that ultimately a stable vegetative community is attained.

Mowing within the right- of -way by utility companies or adjacent roadside property owners is to be authorized, as appropriate, under the provisions of a Vegetation Management Permit Form M-688. This is a no -fee permit procedure which will protect the Department's interest in the affected vegetation and save the Department and its employees from any property damages or claims resulting therefrom.

### **CONTRACT MOWING**

Contracts for county mowing will be coordinated through the District Roadside Specialist, but contract mowing inspection, acceptance and invoicing shall be conducted by and through the Maintenance Manager and his organization.

Mowing schedules, frequency, traffic protection, quality, liability and other requirements are defined in each mowing contract.

### **MOWING SAFETY**

All mowing operations are to be performed incompliance with Pub 213.

Department equipment operators must routinely (daily as a minimum) inspect cutting blades, teeth, tines and shields to assure that all mower parts are secure and not subject to being thrown into passing vehicles or onto adjacent property.

Personnel mowing with small rotary mowers, sickles or scythes must be careful to maintain good footing and be constantly aware of the proximity of fellow workers. The foreman must insist on a safe spacing distance between workers using cutting tools.

### 13.4 HERBICIDE VEGETATION CONTROL

#### **POLICY**

The Department conducts annual herbicide programs to economically and effectively manage roadside vegetation within each county. The Department's position on the use of herbicides is covered and may be quoted as per the sample letter (Herbicide Use Position) included in this section.

### **PURPOSE**

The purpose of herbicide application is to control or eradicate prohibited and noxious plants, as required by law, and to control other undesirable vegetative growth within the highway right- of -way. Through prudent and timely application of herbicides, the frequency of side dozing, mowing, tree trimming and future tree removal is substantially reduced. This represents cost savings in maintenance operations, savings in energy consumption and a reduction in motorist/maintenance activity conflicts.

#### PROGRAM CONTROL

Herbicide material, application technology, Federal and State regulations and public acceptance are continually changing in this program. Close coordination and communication must be maintained between the Department's representative on the Governor's Pesticide Advisory Board, District Roadside Specialist personnel and county maintenance operations, if maximum benefits are to be attained. Each complaint must be promptly investigated.

### HERBICIDE USE POSITION

All motorist and highway frontage residents are exposed to the Department's roadside vegetation management practices. It is prudent that all people impacted by this program understand the Department's problems, herbicide policies and practices relative to roadside vegetation management.

The management of roadside vegetation in Pennsylvania is dictated by the need to maintain a travel way free of obstructing vegetation, as first priority. Quite naturally the roadside aesthetic quality is influenced by the local environment, financial resources available for maintenance and the professionalism of the roadside manager. The use of beneficial insects, desirable vegetation and appropriate herbicides are all employed by the Department to control the invading forest and undesirable growth. The vegetative succession is complicated by the individual or collective desires of our twelve million residents and by highway construction and reconstruction programs which keep roadside vegetation in a near perpetual state of pioneer plant development. Most pioneer species such as brambles, locust, sumac, etc. are undesirable "Front Yard" vegetation.

Our program of vegetation control involves three major functions: mowing, herbicide spraying and manual tree trimming or removal. The Department uses modern herbicides primarily because of the financial advantages, safety and effectiveness these chemicals have provided. Generally, herbicide spraying accounts for less than 25% of our total vegetation management program, and is based upon legal, moral, administrative and financial dictates. Act No. 74, (Noxious Weed Law) identifies Canada thistle, Johnson-grass, multiflora rose and marijuana as some of the weeds which must be controlled from spreading and polluting adjacent land. The Department is morally obligated to control or destroy poison ivy and other roadside vegetation which adversely affects thousands of motorists and roadside visitors.

Administratively, it is the Department's policy to conduct a herbicide application program each year along segments of the state highway system, in order to eradicate or control undesirable vegetation and to reduce expensive roadside mowing and brushing activities. Our employees lost time accidents are reduced in direct proportion to the effectiveness of a herbicide program which controls poison ivy and other noxious and irritating vegetation. Financially, there is an enormous saving through the utilization of herbicides as compared to performing these vegetative management operations with hand labor, mechanized equipment or by other means.

The Department's policy regarding herbicides is to refrain from using hazardous or restricted use materials. All chemicals must be approved for use by the Environmental Protection Agency, and applied by certified applicators approved and licensed as required by the Pennsylvania Pesticide Act. Our program is carefully planned and monitored to assure the most effective and environmentally safe results. The safety of pesticide chemicals (particularly the herbicides

used along Pennsylvania's roads) are given additional credence by the intensive research and laboratory tests required by the E.P.A. prior to approval for marketing.

The Department also retains a research contract with Penn State University's College of Agriculture, for the purpose of evaluating our overall management practices and herbicide screening. In addition to the evaluations concerning pesticides they are also examining the feasibility of using low maintenance grasses and/or groundcovers along the roadways in order to minimize the need for chemical controls.

Laws and other resources directing pesticide use in Pennsylvania include the federal Insecticide, Fungicide, and Rodenticide Act as Amended, and the Pennsylvania Pesticide Act of 1973 as Amended. Other valuable sources of information relative to pesticide safety and uses are:

- -American Council on Science and Health 47 Maple Street Summit, NJ 07901
- -National Agricultural Chemical Association 1155 15th St., N.W. Washington, DC 20005
- -U.S. Dept. of Health & Human Services Hyattsville, Maryland 21745
- -Environmental Protection Agency Region 3 841 Chestnut Building Philadelphia, PA 19107
- -Pennsylvania Department of Agriculture Bureau of Plant Industry 2301 N. Cameron Street Harrisburg, PA 17110
- -Bureau of National Affairs 1230 25th Street, N.W. Washington, DC 10032

Considering safety, cost and effectiveness, it is impractical to attempt vegetation control on 150,000 acres of right- of- way utilizing only the mechanical methods. Based on all the facts and available data, and consistent with management practices nationwide, the economic impact and dangers imminent to the elimination of herbicides appear to be a far greater risk than the use of chemicals.

The management of vegetation along Pennsylvania's highways is a diverse and sizeable task, accomplished in constant view and scrutiny of the public. With due respect to the safety of the traveler as well as the safety of all our citizens, the Department of Transportation seeks understanding and support for this program.

#### **GENERAL GUIDELINES**

Delay in responding to a complaint aggravates the complainant and diminishes the ability to secure correct information, soil or tissue samples and other necessary evidence and documentation.

The Department utilizes only those herbicides that are state and federal registered for highway right -of- way use. Only those materials which are approved by Program Services, Bureau of Maintenance and Operations shall be utilized in Department programs. The evaluation of new products shall be sanctioned and coordinated through Central Office and when products demonstrate acceptability, they are placed in the annual pesticide contract for statewide use.

All personnel involved in this program must be Certified Applicators or otherwise meet the requirements of the PA Pesticide Act; and utilize all herbicides in accordance with labeled instructions. The misuse of herbicide materials is a violation of State and Federal law. It places the applicator, supervisor and the Department in a position for a lawsuit and jeopardizes the Department's entire pesticide program. Each material and program requires separate precautionary practices in handling and application.

Both Department and contract applicator personnel and equipment are involved in applying herbicides. For Department applicators and contracts other than end result (performance), all herbicides are purchased, stored and dispensed by the Department through the R/3 SAP Plant Maintenance system. The performance contracts require the contractor to furnish materials and all incidental supplies as listed in contract specifications. The Department, however, will specify a list of acceptable materials for each spraying function. A Department representative must be delegated the responsibility for assuring that all herbicide material dispersed to any pesticide applicators, is utilized along highways programmed and that all unused material is returned and credited to stores.

Form M-609 is the control document in this program and indicates, in part, the herbicide used, ratio of mixture, date, location and climatic conditions at time of application and other necessary information. This document must be completed and distributed as per the instructions on this form. On contract application work the original copy of the M-609 shall be utilized to

verify accuracy of the contractor's billing after which it is affixed to a copy of the contractor's invoice and retained in county files.

The District Office copy of Form M-609 shall be placed in a loose leaf binder with the respective county treatment maps and retained in the District Roadside Specialists office for a period of three years.

#### PROGRAM PREPARATION

The District Roadside Specialist is technically responsible for the District herbicide program. The District shall assist and/or direct the Maintenance Manager in the preparation of county program maps and monitoring of the program. This involvement includes the selection, storage and proper dispersal of herbicides, the inspection of Department and contract applications and monitoring of the programs.

Annually, during the third quarter of the fiscal year, Central Office Bureau of Maintenance and Operations may review each District Roadside Units annual work plan. A Quality Assurance Review Form will be used to measure the extent and quality of each District Roadside Management Program.

### HERBICIDE TREATMENT RECORDS

Individuals, utility companies or others who perform herbicide applications within the highway right- of- way must have approval in accordance with State Highway Law Regulations. Copies of permits or other approval documents shall be filed with the District's respective M-609's and county program accomplishment maps for the application year and retained for a minimum of three (3) years.

#### **COUNTY MAP PREPARATION**

Two Type 3 county program maps for each county in the District shall be prepared by January 1 of each year. Bureau of Maintenance and Operations personnel will review the maps as part of the Roadside Planning review conducted during the third quarter of the fiscal year. The following color coding is to be utilized.

<u>Program</u>	<u>Herbicide Material</u> <u>or Use Areas</u>	<u>Color</u> <u>Coding</u>
7711 (Chemical Mowing)	P.G.R.'s (Plant Growth Regulators)	Lt. Green
7712 (Non- Selective)	Residual (Non- Selective	Red
7713 (Selective- Weed Control	Products for thistle control and broad- leaf weed control in mow areas	Dk. Green
7713 (Selective	Products for Brush Control	Brown
7714 (Selective Tree Growth & Control)	Materials for brush and tree growth control and side trimming operations	l Blue
No Spray Area	s	Yellow

Where all routes in a geographical portion of a county are being treated uniformly, appropriate color shading or cross hatching, rather than coloring each route separately is acceptable.

Along with the preparation of the proposed program maps, one Type 3, county map indicating the county's current year accomplishment is also required.

### HERBICIDE APPLICATION

The Department's herbicide programs are performed under five Assembly activities, i.e. 7711, 7712, 7713, 7714 and 7715. All or any of these activities can be performed with Department equipment and personnel, or by contract applicator services.

For both Department's and Contract applications, a Pesticide Application Business License is required. All vehicles involved in the operation shall have the BU (Business License) number displayed (in figures 3 inches high) on both sides of the vehicle at a readily visible location. All applications shall be made by either a certified applicator or a noncertified employee acting with the instructions and under the control of a certified applicator physically present at the application site, the certification for the applicator shall be in Right -of- Way Category 10 for Roadside applications and Park Pest Control Category 23 for Safety Rest Area and Roadside

Rest Pest Controls. Where contract applicator services are required, service purchase contracts are to be developed by the District Roadside Specialist and the standard specifications appropriate for the activity.

Ground application contracts are to be solicited and affected for the period from January 1 through December 31 so that no contractual and operational interruption occurs during the application season. Solicitation for bids should be made in the following District sequence so that qualified contractors may bid across the entire state with the knowledge of their previous bids and commitment to other Districts.

Districts	Bid Opening
1, 4, 6 and 9	1st week in November
2, 5, 10 and 12	2nd week in November
3, 8 and 11	3rd week in November

This will provide appropriate lead time to inspect proposed complements, and process and award contracts for the subsequent year's work. A multi-year renewal option should be included.

### PRE-APPLICATION REQUIREMENTS

The cardinal rule in herbicide application is to read the label and not violate any of the instructions which could lead to claims for improper use. The District Roadside Specialist is the individual to consult for directions on specific application rates and techniques as the labeled information relates to his roadside vegetation management program.

Prior to the application of any herbicide material, personnel training and calibration of equipment is required to assure the proper application rate for the area and vegetation treated. Each piece of equipment will require this calibration weekly or more frequently in the case of wettable powders, as the spraying activities continue.

Recommendations on periods of application and methods and procedures are covered in the Performance Standards of the Highway Maintenance Foreman's Manual Pub 113 Activities number 714-7711-03 thru 714-7715-03.

### ASSEMBLY CODING

Under the five assembly activities, covering herbicide application, there are six distinct vegetation control objectives and respective coding as follows:

- I Grass growth and height control -attained with grass growth regulator chemicals (Cost Function 7711-03).
- II Bare ground -attained with non-selective herbicides (Cost Function 7712).
- III Broadleaf weed and thistle control attained with selective herbicides (Cost Function 7713).
- IV -Brush and tree growth control -attained with selective herbicides (Cost Function7713).
- V Side trimming, forest invasion, and canopy thinning -attained with the selective herbicide fosamine (Krenite), (Cost Function7714).
- VI Basal Bark and Dormant stem applications (Cost Function 7715-03).

### I. Grass Growth and Height Control

Most herbicide manufacturers have been diligently evaluating grass growth regulators to reduce or replace mowing requirements, conserve petroleum products and reduce mowing cycles and the frequency of conflict between mowing equipment and highway traffic. (A major safety consideration).

Research conducted by Penn State University has resulted in the recommendation of several materials or combinations of materials which are effective in suppressing leaf growth and seed head formation of grasses. The recommendations are listed in the Penn State research project annual reports supplied to the District Roadside Specialists.

Primary treatment areas are those which are difficult or impossible to mow, or all mow areas if determined to be economically feasible. Areas at guiderails and other roadside areas where height of vegetation must be controlled while preserving the vegetative turf for erosion control, should be prime target areas.

Treatment can be made using ground equipment. Adherence to labeled instructions is particularly important when using these relatively

new, very selective herbicide products to assure quality of results.

Where broadleaf weeds infest these mow areas the inclusion of a compatible weed control herbicide is recommended.

### II. Bare Ground Objective

Herbicides which are identified as non-selective are utilized for this purpose. They are selected by the District Roadside Specialists based upon their ability to work effectively and control and/or prevent any vegetation from growing in the treated area. There are both preemergence herbicides, (those which are applied to the soil area before any vegetation appears in the spring), and post-emergence herbicides, (those which eliminate vegetation which is present at time of application).

### AREAS, MATERIALS, TIMING AND PRECAUTIONS

Primary treatment areas are joints in concrete divisors and paved traffic islands, areas beneath the guiderail, around headwalls, delineator and sign posts in mow areas, in storage yards and at other areas where any vegetation is objectionable. With a few exceptions, most non-selective materials work through the soil and root system of plants in the treated areas. For preemergence materials, best results are obtained by early spring treatment after the soil is thawed, but before vegetation growth appears. Treatments made after growth appears (post--emergence) requires the use of herbicides which possess both contact and residual control properties or a combination of herbicides to accomplish complete and season long vegetation eradication. The Foreman's Manual contains recommendations for late season applications and approved tank mixes. This tank mix recommendation is most appropriate for treating soil areas wider than two feet.

Special Considerations should be made under the following conditions:

 Adjacent to trees, shrubs or lawns where the spray material may penetrate the soil and effect the root system of desirable plants or where rainwater may flush over the treated area and move the applied herbicide into the root system area of desirable plants or turf.

- Where the adjacent landowner is maintaining the area by mowing or other acceptable method.
- 3) Where the soil areas have been seeded, sodded or vegetatively treated to prevent soil erosion, i.e., guiderail areas on newly seeded construction projects, etc.
- 4) Where soil erosion is taking place or where road drainage is concentrated and discharging over a fill slope or onto private property.

#### III. Broadleaf Weed and Thistle Control

Herbicides developed to control broadleaf weeds, including Canada thistle, Johnson-grass, multiflora rose, marijuana and other noxious weeds as identified under the provisions of Act No. 74 approved April 7, 1982, are broadly classified as selective herbicides. The presence of and need to control undesirable plants is a continuing science. The economic, legal, aesthetic and moral factors are all interrelated in this program.

#### DEPARTMENT RESPONSIBILITY

ECONOMIC -By controlling weed growth in mow areas the frequency of mowing is reduced substantially, and turf quality is greatly enhanced, providing the maximum soil stabilization and erosion control for the roadside area.

LEGAL -Safety for the traveling public and a safer work environment for our employees are the major priorities of roadside maintenance. The State Highway Law of 1945 and other related statutes mandate the responsibility for highway maintenance to the Department. Appropriate and consistent vegetation management provides a safer roadway environment and thereby reduces the Department's exposure to tort liability. Additionally, the use of herbicides is crucial to the control of noxious weeds and compliance with the state law regulating the growth and spread of these weeds. The Pennsylvania Pesticide Act controls the use of these materials in Pennsylvania including the requirements regarding hypersensitive individuals.

AESTHETIC -An attractive roadside is the secondary benefit of a sound vegetation management program. The major purpose of maintaining and controlling vegetation along the highway is to provide safety for the traveler and to assure the stability of the roadway section. The aesthetic quality attained by well managed and

weed free roadside turf areas reflects favorably upon the Department and its maintenance ability. Most motorists and roadside tenants have very definite opinions as to what represents quality roadside maintenance and form opinions of our overall program by the aesthetic quality of our roadsides.

MORAL -The Department is obligated to cultivate the goodwill of both the motorist and roadside neighbors. We are morally obligated to maintain our roadside vegetated areas to a quality compatible with the adjacent culture. In urban and developed areas we should maintain the roadside area to a higher degree than is demanded through agricultural forested areas, i.e., all weedy plant growth should be controlled in the early stages of growth to prevent seed development and possible contamination of adjacent lawns and gardens. Ragweed, poison ivy, and similar vegetation which is physically discomforting to the motorist or our roadside neighbor should also be eradicated or controlled by broadleaf weed control applications in compliance with our moral obligation.

### MATERIAL SELECTIONS, TIMING AND PRECAUTIONS

The "Annual Research Reports" compiled from the research project retained with Penn State University's College of Agriculture are the primary sources of information relative to the methods and materials best suited for roadside vegetation management functions. Also, review and follow methods and procedures outlined in the Foreman's Manual and as detailed in the Quality Assurance Policy for Roadside Planning.

For all pesticide applications but especially broadcast foliage, extreme care must be exercised as many adjacent agricultural crops and other vegetation are sensitive to these herbicides.

#### **NEVER SPRAY:**

- 1) When wind speed exceeds 10 mph or when debris is being blown around.
- Near homes, gardens, flower beds, lawns, through towns, and villages or beyond the right- of- way.
- 2, 4-D or related material on Crownvetch in an effort to eradicate or control scattered objectionable plants growing in a predominately pure stand of Crownvetch.

- Use materials or methods which will not damage the Crownvetch or open a soil area to future weed invasion.
- 4) When it is raining or rain occurs within one hour of treatment. When rain does occur within one hour of treatment, retreat the area, unless label directions indicate otherwise.
- 5) With untrained or unqualified personnel. Training must be conducted annually due to changes in materials, equipment, techniques, rules and regulations or program adjustments.

### IV. Brush and Tree Growth Control

Perhaps more than any other herbicide program, the broadcast foliage application conducted for the control of brush and small trees, generates the most criticism. This is due to dead foliage resulting from the herbicide application, which (with the exception of fosamine) creates a "brown-out" when all adjacent or untreated foliage is alive and green.

Selective herbicides are available from the annual pesticide contract and based upon their ability to control brush and tree growth, are to be selected for this program by the District Roadside Specialist.

The need to utilize herbicides, other than fosamine, in this control program is dictated by:

- A. The relative resistance of certain plant species such as Box Elder, Wild Cherry, Sassafras and Aspen.
- B. The need to apply herbicides throughout the growing season to effectively utilize personnel and equipment and complete the annual program.
- C. The need to apply herbicides to control individual plants which are mixed in with desirable plants to be saved.
- D. The need to perform some treatments in the late fall or early spring when foliage treatments are not appropriate or possible. Review and follow the Performance Standards in the Foreman's Manual (PUB 113) Pages 1-4 and Assembly numbers 714-7xxx-xx. The precautionary use instructions enumerated in Subsection III (Broadleaf Weed and Thistle Control) also apply to this program. Special precautions must be exercised when applying any "restricted use" materials.

### V. Side Trimming Forest Invasion and Canopy Thinning

Pennsylvania is 60% forested and roadside areas are continually invaded by forest tree growth. Controlling this invading forest through manual tree trimming and removal operations is five to ten times more costly than by the use of the herbicides.

The development and use of the herbicide fosamine has enabled the Department to recover much ground lost in maintaining appropriate vehicular clearances, control forest invasion along highways constructed in the 1960's and 1970's, and reduce the shading (both summer and winter) created by tree branches over the roadway.

The application of fosamine from August through September permits herbicide penetration of buds and prevents any or the full development of leaves the following spring. Leaves that are present during this late summer application are generally only slightly discolored, therefore the "brown-out" condition does not occur to generate criticism. The leafless branches which occur the following spring are generally not objectionable or in most cases not obvious to the motoring public. Fosamine is not translocated to the unsprayed portions of the plant, therefore, only that portion treated is controlled.

Ground application equipment is ideally suited for fosamine side trimming and limited forest invasion control. Pioneer species such as Birch, Locust and Sumac are easily controlled and should be treated before they attain heights exceeding ten feet

Where undesirable individual or scattered clumps of plants are developing in roadside areas or invading within thirty feet of the roadway, a dormant basal or low volume foliar treatment is recommended. Where populations of these undesirable plants approach 1000 or more stems per acre, and are not intermixed with desirable plants, broadcast foliage applications of fosamine should be programmed. The width of treatment up cut slopes should be thirty to fifty feet extending from the ditch line. The area behind the guiderail and down -fill slopes should be thirty to fifty feet depending upon the shoulder width and fill gradient, i.e., the narrower the shoulder and the steeper the fill, the nearer the traffic will be to the encroaching forest vegetation, therefore the wider the treatment area.

Many roadways, particularly MFC C, D & E types, are completely canopied over by the tree branches and obstruct or hinder sunlight penetration. With the shading provided, roadway drying is therefore delayed. This greatly affects snow and ice melting and the frequency of snowplowing and use of salts and abrasives for motorist safety. Where canopy exists beyond acceptable spraying limits, cutting (ground to sky) may be the only option.

### STORAGE AND HANDLING OF PESTICIDE PRODUCTS

A person may not use, handle, transport, store, display or distribute a pesticide in a manner that is inconsistent with its label; or endangers man or the environment; or contaminates food, fertilizers, seed or other products that may be handled, transported, stored, displayed or distributed with the pesticides.

All pesticides must be stored in accordance with the Department of Agriculture Regulations.

Guidelines are as follows:

- 1) Enclosed heated building, with a minimum temperature of 40°F. Not subject to water dampness or other adverse conditions.
- 2) Area must be completely enclosed and locked.
- 3) Adequate space available to accommodate the County's annual pesticide requirements; and to allow for similar chemicals to be stored together.
- 4) Area must be accessible for handling pelletized materials and 30 gallon drums.
- 5) Must have windows or other means of ventilation if and when needed.

Only authorized individuals shall be permitted to sign out pesticide materials. These individuals must be certified applicators and generally include the District Roadside Specialist and/or designated county personnel.

The District Roadside Specialist should periodically inspect the storage area using the following checklist::

- 1) Is area heated and weather proof?
- 2) Is area properly secured?
- 3) Are all materials properly stored and labeled?
- 4) Are pesticides separated from seed, fertilizer, food items or other products which could be contaminated?
- 5) Is area neat and readily accessible?
- 6) Can the area be properly ventilated?
- 7) Is there adequate lighting?
- 8) Is there proper signing (warning, etc.)?
- 9) Are there any outdated materials being stored?
- 10) Any sign of leakage or spillage?
- 11) If floor is concrete -are containers off the floor?
- 12) Is there an emergency plan posted and filed with appropriate local agencies?
- 13) Is the current list of emergency phone numbers posted?
- 14) Are dispersal records being kept properly and up to date?

### 13.5 TREE TRIMMING, SELECTIVE THINNING, AND REMOVAL

The following is an overview of the laws and policies governing this activity.

- 1. "The Department of Transportation shall have the absolute right to trim, cut and remove any trees, grasses, shrubs and vines growing within the legal right- of- way of any state highway, and to trim and cutaway any trees, grasses, shrubs and vines growing on adjacent property insofar as they overhang or encroach upon the legal right- of way of any state highway."

  [Act of June 1, 1945, P.L. 1242 (36 P.S. §670-410) as amended July 7, 1972, P.L. 738 Act No. 173].
- 2. "It is the duty of the property owner to remove from the property any tree, plant, shrub or other similar obstruction, or part hereof, which obstructs the view of any driver and constitutes a traffic hazard.

When the Department determines that a traffic hazard exists, it shall notify the owner of the property to remove the hazard within ten days." [Act of June 17, 1976, P.L. 162, Act No. 81'1 (75 PA C.S. §6112(a))]

The fine for non-compliance is \$10.00/day for each day the owner fails to remove it.

- 3. No trimming, thinning, damaging or removal of vegetation within the legal right- of -way of any state highway is permitted, unless a Vegetation Management Permit or other agreement has been issued. [(Act of June 1, 1945, P.L.1242 as amended July 7, 1972, P.L. 738, §1(36 P.S. §670-410)]
- 4. Where trimming, thinning, damaging or removal has been performed without a permit, and the individual is found guilty of a summary conviction, a fine of between\$100 and \$300 for each cutting, trimming, thinning, removal or damaging can believed [Act of June 1, 1945, P.L. 1242 as amended July 7, 1972, P.L. 738 §1 (36 P.S.§670-410)].
- 5. The Department is required to issue permits to outdoor advertising device owner for remedial action in relation to vegetation screening an existing sign permitted by the Department if the sign owner meets the requirements of the Highway Vegetation Control Act, Act 79 of the 1983, 36 P.S. §2720.1 et seq. (Act 79 of1983). The Department uses M-700 permits for this purpose. See subsection below entitled."Permits for Vegetation Control to Improve the Viewing Zone for an Outdoor Advertising Device."
- 6. Vegetation Management Permits (Form M-688) and Permits for Vegetation Control to Improve Viewing Zone for an Outdoor Advertising Device (Form M-700) may be issued for all types of highways -non-limited access highways and limited access

- highways, including interstates.
- Vegetation Management Permits (Form M-688) for any type of vegetation control within the right of way of limited access highways including interstates must follow the instructions listed in the subsection below entitled "Program Procedures for Managing Vegetation Along Limited Access Right of Way" except for those relating to utility companies. Permits for limited access right of way having plantings require a maintenance agreement attached and forward for review and approval by the Bureau of Maintenance and Operations. Except for when reviewing a request for a M-700permit under Act 79 of 1983, the Department strictly prohibits any act of vegetation control within the right of way limited access highways, including interstates, which would directly improve visibility of or for roadside enterprises such as junkyards, billboards and other business without justifiable benefit to the roadway or the roadside environment. See subsection below entitled "Program Procedures for Managing Vegetation Along Limited Access Right of way."
- 8. When trees located within the legal rightof- way of the state highway have blown down on private property, it is permissible and normally desirable, from a public relations standpoint to remove the wood from the private property once the property's owner's permission is secured.
- 9. The Department is not required to provide vertical clearance to permit the operation of vehicles exceeding a height of 13'6", with the exception of buses permitted by and operated wholly within the municipality if approves by the P.U.C. In such cases, the total height, including load, shall not exceed 14'6" [Act of June 17, 1976, P.L. 162,No. 81, '§1 (75 PA C.S. '§4922)]

### THE DEPARTMENT'S RESPONSIBILITIES REGARDING OVERHEAD CLEARANCE

- 1. To maintain vertical and horizontal vegetation clearance along the roadway as well as over the roadway when conducting tree trimming operations with Department or contract personnel.
- 2. Assumes no responsibility for overhead clearance in all classes of cities, boroughs, and incorporated towns.
- 3. Not responsible where a township has adopted an ordinance assigning a clearance requirement to adjacent property owners. Where no such ordinance exists and the township does not assume responsibility, the Department has the right, but not the duty to maintain the overhead clearance.
- 4. Have overall maintenance responsibilities within the right -of- way of limited access highways unless otherwise defined by a construction and maintenance agreement.

### THE DEPARTMENT'S RESPONSIBILITIES REGARDING CURBLINES

- 1. County Highways Taken Over by Act 615of 1961 and Highways in First Class Cities. Department of Transportation may not perform any maintenance beyond the face of curb. (Full maintenance on bridges, however, is the responsibility of the Department).
- 2. Highways in Boroughs, Incorporated Towns and Cities Other Than First Class. Department of Transportation will not perform any maintenance beyond curblines except as required to maintain the structural integrity of the highway such as slopes, walls, etc. Where some properties are curbed and others are not, the curbline can be projected on the uncurbed properties. If there are no existing curblines, the Secretary can indicate on a plan of public record the width of the street or highway the Department will maintain.
- 3. Highways with Four- Digit S.R. Numbers beginning with a 1, 2, 3, or 4 in Townships. Department of Transportation may perform maintenance beyond curblines. Townships are not obligated to do so.
- 4. Highways with Four- Digit S.R. Numbers

- proceeded with one or more zeros in Townships. Department of Transportation will perform maintenance beyond curblines.
- 5. Department of Transportation may perform maintenance beyond curblines when it is apparent that the Department must act to correct a situation existing outside its normal area of maintenance responsibility in order to correct serious deficiency or hazards.

### THE DEPARTMENT'S RESPONSIBILITIES REGARDING DRIVES

### (PRIVATE OR BUSINESS)

Abutting landowners are responsible for ensuring visual clearance at business and private drive intersections. The Department will not improve visual clearance at business or private drive intersections except when it is apparent that the Department must correct a serious deficiency or hazard. When business and private drives intersect a state highway and vegetation within the state highway right- of- way obstructs the view from the travel lane, the Department may issue a Vegetation Management Permit to the business or private drive owner upon request. When issuing a permit, the safety of the through traffic, and the vegetation value or function must be the primary consideration in determining clearance permitted. The District Roadside Specialist shall review the driveway in the field and determine the conditions relative to permit approval. If property owners prove uncooperative, the roadside specialist should review the situation with the District permit supervisor.

### THE DEPARTMENT'S OPERATIONAL DUTIES

- 1. These procedures apply to both Department force and contract operations.
- 2. No Department Force or contract operations shall be performed to specifically increase the visibility of roadside businesses or activities.
- The Department may issue permits or agreements for the removal of vegetation to increase visibility of roadside activities or businesses.
- 4. The Department may negotiate, on a case by case basis, a Vegetation Management Permit whereby the abutting property

owner would be responsible for vegetation control in return for the Department not using herbicide spraying. This permit would require an indemnification agreement supported by insurance in an amount sufficient to cover any Department liability.

- 5. Wherever another public road intersects a state highway, the vegetation within the right -of -way limits of the state highway shall be maintained to provide reasonable unobstructed sight distance in both directions. The municipality is responsible for removing any obstructions outside the state highway right- of way which limits sight distance.
- 6. Any dead, weakened or decayed trees and limbs within the right- of- way which constitute a dangerous condition of the state highway (as verified by the District Roadside Specialist) shall be scheduled for removal.
- 7. During the conduct of tree removal or trimming activities within the right- of way, if the Department determines that it must extend these activities beyond the right- of -way in order to comply with proper arboreal procedures, written approval of the property owner must first be obtained.
- 8. Where the Department has been notified that dead, weakened or decayed trees and limbs exist beyond the right -of- way limits and pose a hazard of falling onto the Department's right- of- way, the Department shall:
  - (a) Notify the property owner by certified mail of the condition and advise the owner of the owner's responsibility to remove or be subject to future damage claims if the tree falls or
  - (b) If the tree is an imminent danger to the highway, seek authorization from the property owner to remove or trim. Any Authorization to Enter Form prepared in triplicate, must be used or
  - (c) If an emergency arises, enter the property and perform the necessary work without prior notice.

All work outside the department right- of way must be done at a reasonable time and in a reasonable manner under all the surrounding circumstances. All work must

- be documented as fully as possible. The Department should seek contribution from the property owner for removal or trimming costs.
- 9. Hazardous trees and trees near utility lines shall be removed by skilled and adequately insured tree expert contractors. Department forces shall not attempt to remove any vegetation from utility lines, and shall contact the appropriate utility company in all such situations, including emergencies. Do not jeopardize Department personnel or ill-equipped crews to perform these tree removal activities.
- 10. On free access right- of- way, all wood resulting from removal activities of trees that measure 4 inches or larger in diameter at a point four and one half feet from the surface of the ground (diameter at breast height -DBH) shall be offered to the abutting property owner. The abutting property owner should be provided reasonable notice prior to cutting operations and advised that they may have the resulting wood and the Department policy to cut into lengths of not less than 2feet and place it on private property at the right of way line. Reasonable notices are personal contact with or certified mail to the abutting owner. Door hangers may be used to initiate personal contact. Standard language for use in making contact with abutting owners is set forth in Figure #4 (page 13-31). All contacts with abutting owners will be documented in the project file. These notification requirements do not apply for trees that constitute a dangerous condition of the State highway and require immediate removal. Where the abutting owner refuses the wood, the Department will appropriately dispose of the wood. On limited access right- of- way, wood will not be offered to abutting owners.

All brush resulting from trimming and/or removal activities shall be chipped and uniformly blown onto the adjacent slope area, where appropriate, or into an enclosed chip box and disposed of at the most convenient and acceptable location near the job site. Wood and chips resulting from these operations shall not be sold or utilized by Department employees for personal gain. The stockpiling and use of these chips for Department landscape mulching purposes is encouraged.

The standards for managing vegetation

within the highway right- of -way are shown in Figure #3 (page 13-30) and in Chart A (page 13-33).

11. Removal of vegetation around official traffic signs to include but not limited to guide signs, warning signs, general motor service signs and PA Tourism (Logo) signing trust signs is set forth in Figure #5 (page 13-32). This applies only to interstate and interstate look-alike highways. The BOMO Quality Assurance staff will review interstates for the spring standard of care. A written confirmation is to be submitted by the District Executive to the Director, Bureau of Maintenance and Operations on an annual basis. The confirmation is to be submitted annually between April 15 and the preceding Memorial Day.

Public safety is our first priority. The line of- site between the roadway and informational signs such as logo trust signs is critical for motorist safety. Routine vegetative management practices are necessary in continuing this safety effort. The PA Tourism signing trust acts on behalf of the Department and does not require as M-688 Permit

### PERMITS FOR VEGETATION CONTROL TO IMPROVE THE VIEWING ZONE FOR AN OUTDOOR ADVERTISING DEVICE

Applications to trim or remove vegetation under an M-700 must be forwarded to the District Roadside Management Office. If necessary, the District Roadside Specialist shall consult with the District Outdoor Advertising Control Manager to determine whether an M-700 should be issued. See generally Section 8.02 (entitled "Vegetation Control") of the Bureau of Design's Beautification Manual.

M-700s may only be issued in relation to existing outdoor advertising devices with a valid Department permit. They may not be issued to improve visibility for the erection of new outdoor advertising devices or the repair and maintenance of existing outdoor advertising devices.

The requirements for issuing an M-700 are different from those in relation to issuance of an M-688 Vegetation Control Permit. Over time, vegetation may grow to screen permitted devices and Act 79 of 1983 gives the owner a right to remediate the screening to allow the device to properly function.

An outdoor advertising device is considered

screened by vegetation if its view is obstructed as viewed from the center of the lane of traffic of the highway and from a height of no more than 60inches above the highway surface. A device's view is obstructed when the intent of the advertising is not discernible for a total of five seconds in the viewing zone. The viewing zone of a device is that distance measured along the center of the lane of traffic of a highway over which a vehicle will travel at the posted speed limit. Vegetation is defined as all trees, grasses, shrubs and vines growing within the legal right- of- way of interstate or federal aid primary highways (now considered the National Highway System).

In short, the vegetation that can be removed under an M-700 is only that necessary to reestablish the outdoor advertising device's five second viewing zone from the highway. The five second viewing zone is determined from the center of the appropriate lane of traffic at a height of no more than 60 inches above the highway surface from a vehicle traveling at the posted speed limit.

The M-700 permit request requires the applicant to provide a sketch showing the kind, size and type of vegetation to be controlled, a statement of the remedial action proposed for the viewing zone, and a photograph of the screening proposed to be remedied. Permit requests that do not include these details or other submissions as required by the M-700 permit request should be denied as incomplete.

The District Roadside Specialist and the District Outdoor Advertising Control Manager are to inspect the device and the surrounding area to determine whether an M-700 should be granted. The device owner/applicant should be informed of the date and time of the inspection so the device owner/applicant may be present at that time.

If an M-700 is granted, the permittee shall be authorized to do one or any combination of the following:

- a. Raise, lower or adjust the device to reduce the conflict with the vegetation so as to eliminate, as nearly as possible, the screening. (This option is not available, however, to non-conforming devices. Nor should a permit be issued if the adjustment violates another statute, regulation, or ordinance.)
- b. Prune or trim the vegetation to reduce or eliminate the screening.

c. Prune, trim, relocate or remove individual plants in the vegetation to reduce or eliminate the screening.

The device owner/applicant may be required to post security in the form of a blanket bond if a permit is issued.

Vegetation management under an M-700 may not conflict with normal conservation practices.

It is imperative that M-700 applications be addressed promptly because Act 79 of 1983 includes a 30-day deemer provision:

Section 4(c) of Act 79 of 1983 provides for an automatic approval as follows: "If the application neither is approved nor disapproved within 30 days of the filing therefore, the application shall be deemed to be approved and the permit shall be deemed to have been granted immediately."

## PROGRAM PROCEDURES FOR MANAGING VEGETATION ALONG LIMITED ACCESS RIGHT-OF-WAY

### I. Procedural Statement and Program Overview

The Pennsylvania Department of Transportation (PennDOT) recognizes the benefit of providing high quality, aesthetically pleasing views to highway users, along with recognizing the views to commercial properties adjacent to the highway are an integral part of the State's business and marketing economic plan. Permits for maintaining vegetation within the right of way of limited access State highways that are controlled for maintenance purposes are covered in this standard procedure. As a result, this standard procedure will establish statewide practices and procedures for trimming, removing and maintaining vegetation within the right of way of limited access highways, including interstates, while enhancing the views of the motoring public. While recognizing the need for the viewing enhancements, the development of the highway and safety of the motoring public shall continue to outweigh the importance of enhancing the views to office, institutional, commercial, and industrial developments.

The standard procedures will be overseen by the Bureau of Maintenance and Operations to provide uniform standards of acceptable maintenance practices for the maintenance and replacement of vegetation along highways. The District Maintenance Offices will have primary responsibility for reviewing, approving and

monitoring applications and work under the procedures.

Vegetation maintenance activities include the vegetation trimming, thinning or removal of vegetation planting, herbicides application, mowing, landscape design, work site access, litter removal, and other related vegetation management activity.

Vegetation management under these procedures will only be permitted for opening visibility to existing facilities owned by the applicant that have already been constructed or where existing development is being reconstructed or modified. Permits will not be granted for the accommodation of new construction. Owners of existing outdoor advertising devices may, in the alternative, apply for a Permit for Vegetation Control to Improve the Viewing Zone for an Outdoor Advertising Device (M-700) under the provisions of Act 79 of 1983.

These procedures do not apply to vegetation management by utility companies who will use Form M-688U Vegetation Management Permit to maintain their existing utility corridors.

These procedures include the requirement to provide replacement vegetation plantings or compensation for vegetation removed and to provide other vegetation maintenance of right of way adjacent to replacement plantings.

The M-668 Vegetation Management Permit issued under these procedures authorizes the trimming, thinning and removal of vegetation within the limited access right of way, while maintenance agreement under these procedures authorizes placement of replacement plantings and maintenance within the right of way as approved by the Department.

A maintenance agreement under these procedures is an agreement between PennDOT and the permit applicant listing the work to be performed, how it will be performed, what materials will be used, and other information that is specific to the permit when landscaping is installed that needs continual maintenance.

The work site under these procedures is the specific section of right- of- way between the beginning and end point of the approved location where vegetation maintenance activities shall be performed.

Access to the work site must use existing points of access along the limited access highway, and must be approved by PennDOT. No permit work or staging is allowed within the travelled way of the limited access highway. Staging is allowed within shoulders of the highway. The applicant will furnish, erect, and maintain all signs as required in the current Pub 213 and MUTCD, as well as any additional special work zone provisions that may be made applicable.

### II. Authority

It is unlawful to trim, thin, damage or remove vegetation within the legal right- of way of any state highway without first having obtained the consent of the Department. [Act of June 1, 1945,

P.L. 1242 as amended July 7, 1972, P.L. 738, §1 (36

P.S. §670-410)]. This consent must be evidenced by a Vegetation Management Permit (From M-688), a Permit for Vegetation Control to Improve the Viewing Zone of an Outdoor Advertising Device (M-700), or written agreement.

#### III. References

- A. PennDOT Pub. 13M (DM-2), Chapter 8 Landscape Planting Design
- B. PennDOT Pub. 23 (Maintenance Manual), Chapter 13 – Roadside Management
- C. PennDOT Pub. 213 Temporary Traffic Control Guidelines
- D. PennDOT Pub. 408 Specifications
- E. PennDOT Pub. 450 -Roadside/Landscape Development Construction Inspection Handbook
- F. PennDOT Pub. 461 Roadside Planting Guidebook
- G. PennDOT Form M-609 Roadside Activity Report
- H. PennDOT Form M-688 -Vegetation Management Permit
- I. PennDOT Form M-700 -Permit for Vegetation Control to Improve the Viewing Zone for an Outdoor Advertising Device
- J. FHWA's Manual of Uniformed Traffic Control Devices (MUTCD), current edition

K. American National Standard Institute (ANSI)A300 (Part 1) -Pruning, current edition

### IV. Scope

County, District, and Central Office personnel shall be involved in the review and/or granting of permits and entering into maintenance agreements to maintain and replace vegetation within the right of way of limited access highways, including interstates.

#### V. Procedure

- A. Permit application process
  - 1. Permit applications for selective vegetation thinning, pruning, removal or planting will be made by the applicant to the PennDOT District Maintenance Office on Form M-688. A separate application must be submitted for each work site. This application and pending permit does not cover earthwork or grading performed on the right- of -way or the erection or maintenance of an outdoor advertising device; separate permits must be obtained for such work.
  - 2. A permit must be secured prior to performing any vegetation thinning, pruning, removal or planting. The permit shall be effective for one year from the date of issuance unless tied to a maintenance agreement that provides for a different term. Any permitted work not completed before the expiration of the one -year period may not be performed; the permittee must submit a new application.
  - 3. All permit applicants must submit a complete M-688 for vegetation trimming, removal and/or planting, as shown in Appendix A, with all required documentation, to the respective District Maintenance Office before a permit and agreement to maintain vegetation will be granted. The following is a list of all required documentation that must be submitted with the completed M-688:
  - a. Certificate of comprehensive general liability insurance, property damage insurance and automobile liability insurance. The minimum amounts of coverage shall be \$250,000 per person and \$1,000,000 per occurrence for bodily injury, including death, and\$250,000 per

person and \$1,000,000 per occurrence for property damage.

These coverages shall be occurrence based. The policy(ies) shall name the Commonwealth as an additional insured and shall contain a provision that the coverages afforded there under shall not be cancelled or changed unless at least thirty (30) days prior written notice has been given to the Commonwealth.

- b. If the application is for opening a view to an advertising device, the advertising device's state permit number.
- c. A detailed site plan identifying at a minimum, the following items:
  - i) Limits of the work site,
  - ii) Existing vegetation,
  - iii) Detailed description of the requested action with the caliper inch for any existing and proposed replacement vegetation and diameter at breast height (DBH) for marketable timber
  - iv) Right- of -way line
  - v) Proposed work crew access to the work site
  - vi) Edge of pavement line
  - vii) Site plan scale showing actual distances
  - viii) Table or key identifying vegetation and other icons indicated on the site plan.
- d. Photographic images of the proposed work site.
- e. A written report signed by a certified arborist or certified forester identifying the existing vegetation and the requested action for each. A statement shall be included that the work performed is consistent with arboricultural standards. Also, the replacement cost of all desirable vegetation is to be included in the report.
  - An arborist is considered certified if she or he is on the list published by the International Society of Arboriculture. A forester is considered certified if she or he is on the list published by the Society of American Foresters.

- Desirable vegetation is that vegetation determined desirable by either a District Roadside Specialist or a certified arborist/forester because it has either an aesthetic or monetary value and is not considered dead or unwanted vegetation by the responsible District Maintenance Office. Plants listed on a recognized invasive or noxious plant listing are not considered desirable and will not be replaced. Desirable trees are species having attractive flowers or marketable timber value with a caliper of 1.5" or greater and any plant that was planted as part of a PennDOT planting project. If the tree is multi--stemmed, the largest caliper stem will be measured.
- f. Security in the amount of \$10,000 or the cumulative replacement cost of all desirable vegetation, whichever amount is higher, to run concurrently with the M-688permit and maintenance agreement, if applicable, unless sooner released or permitted to be reduced by PennDOT to the amount of \$10,000. The purpose of the security is to secure restoration of the right- of way to its original condition or there placement site to its replacement condition or its natural condition if damage occurs. The type of security required will typically be a performance bond.
- g. A certified statement that all federal, state and local laws, regulations, ordinances or rules have been or will be met in performing the proposed work, including but not limited to all state and federal environmental requirements, in particular those relating to threatened or endangered species, wetlands and historic and archeological elements.
- B. Permit Application Considerations
  - Applicants must provide compensation for desirable vegetation and incorporate proper pruning practices. Work will be limited to the work area described in the application and no equipment or work shall be beyond the work site limits.
  - 2. Applicants must provide proof that they own the land which will have an enhanced view following the permitted work.

- Selective vegetation thinning and removal will only be permitted for opening visibility to facilities of the applicant that have already been constructed or where existing development is being reconstructed or modified.
- 4. Applicants are responsible to ensure compliance with all federal and state environmental requirements, in particular those relating to Threatened and Endangered (T&E) specie and wetlands located in the proposed project area and historic and archaeological requirements. These must be completed prior to submitting the permit application. The requirements regarding T&E will be accomplished using the Department of Conservation and (DCNRs) Natural Resources Pennsylvania Natural Diversity Inventory (PNDI) Tool. The online review tool can be located at www.naturalheritage.state.pa.us under the special links click on the PNDI project planning Environmental Review tool and follow the online instructions. If there are no species of concern in the project location take the receipt that will be generated by the system and include it with the application. If there is a species of concern located in the project area, coordinate with the agency with jurisdiction for the species indicated on the receipt. Once the coordination process has been completed attach the documentation to the application package. Documentation as to wetland and historic and archaeological coordination, if applicable, must also be attached to the application package.
- 5. All work must conform to current state and federal law and must comply with the following current procedures and policies as applicable:
  - a. Landscape Planting Design (Pub. 13M, Chapter 8).
  - b. Maintenance Manual, (Pub. 23, Chapter 13 – Roadside Management)
  - c. Roadside Planting Guidebook (Pub. 461).
  - d. Roadside/Landscape Development

- Construction Inspection Handbook (Pub. 450).
- e. Highway Specifications (Pub. 408).
- f. Temporary Traffic Control Guidelines (Pub. 213) and the MUTCD on work zone traffic control, as well as any additional special work zone provisions that may be made applicable.
- 6. Vegetation used as a living snow fence must be maintained to allow vegetation to continue functioning as a living snow fence.
- 7. All bare ground left exposed after the removal of vegetation must be seeded in accordance with Pub 408, Section 804 Seeding and Soil Supplement.
- 8. All trimming and removal work performed must be in compliance with M-688 "Requirements Governing Vegetative Management By Utility CO's Or Other, Within The Highway Right-Of -Way," as shown in Appendix B, except that compliance with these procedures is deemed a determination that the work is a justifiable benefit to the roadside environment.
- 9. If the application for vegetation cutting is for a site located within the corporate limits of a city or town, local officials must be given an opportunity to review and comment on the application.
- 10. Pruning and Thinning
  - a. Only pruning and thinning identified in the certified arborist/forester's written report attached to the application will be permitted.
  - b. PennDOT must approve the specific trees, shrubs, and other vegetation that may be pruned or thinned in the worksite.
  - c. Pruning must be performed in accordance with the natural shape and appearance of the vegetation and must follow the current arboricultural standards of ANSI A300 (Part 1) Pruning.

### 11. Removal and Compensation

- a. Only vegetation removal identified in the certified arborist/forester's written report attached to the application will be permitted.
- b. PennDOT must approve the specific trees, shrubs and other vegetation that may be removed within the limits of the work site.
- c. Trees that are removed will have their roots left undisturbed so no soil is disturbed.
- d. All wood chips may be distributed evenly on the site to a depth of not more than four inches unless PennDOT requires off site removal.

The vegetation management activities must comply with all Department of Agriculture (PDA) quarantines. If the work site or any part of it is in a quarantine area, a PDA compliance agreement is required for moving regulated articles out of the quarantine area.

- e. When desirable vegetation is removed, the Department shall be compensate done hundred and fifty percent (150%) of the replacement cost of all desirable vegetation removed either by a planting of compensatory vegetation or payment for the desirable vegetation removed.
- f. PennDOT shall make the final determination on the replacement cost of desirable vegetation removed and whether a payment for compensation or the planting of compensatory vegetation will be required.
- g. Compensatory vegetation is PennDOT approved vegetation that is purchased, planted, and guaranteed to survive as described in the current edition of the Publication 408 Specifications. Compensatory trees will be at least1.5" in caliper at six (6) inches above the ground unless otherwise accepted by PennDOT.
- h. If compensatory vegetation

replanting is required, PennDOT will determine the details, final approval and location of the compensatory vegetation replanting based upon the replacement cost of the desirable vegetation removed.

- i. A suitable list of trees and shrubs are available in Pub 461 -Roadside Planting. Other trees and shrubs may be used with the approval of PennDOT.
- j. Compensatory vegetation shall be planted in accordance with the current versions of Pub 408 Highway Specifications and Pub 461 Roadside Planting Guidebook.
- k. After the establishment period of twelve (12) months, the security for compensatory vegetation will be considered for release or reduction to \$10,000.

### 12. Maintenance Agreements

- a. All landscaping and compensatory vegetation planting must have a Maintenance Agreement. This agreement will control the landscaping and planting, including but not limited to administrative procedures, maintenance work and a maintenance schedule showing vegetation maintenance to be performed by the applicant.
- b. Each Maintenance Agreement is unique and some modifications of the Standard Vegetation Maintenance Agreement (Appendix C) (page 13-34) will be considered. The proposed Maintenance Agreement shall be submitted to the District Maintenance Office for routing through the Bureau of Maintenance and Operations, Office of Chief Counsel, and Federal Highway Administration if necessary.
- c. The Maintenance Agreement will include a scope of work consisting of two exhibits. Exhibit A will be the completed M-688, while an Exhibit B will need to be developed delineating the replacement plantings and continuing vegetation

- maintenance requirements. Plans and specifications to be approved by PennDOT will be required and referenced in the Agreement but not attached as an exhibit.
- d. The work site under the Maintenance Agreement will be described in terms of the State Route, which direction of travel (e.g. southbound), and the segment/offset to segment/offset area within which the applicant will be performing the initial and continuing vegetation maintenance activities.
- e. Notices under the Maintenance Agreement are to be provided to the District Office.
- f. Failure to comply with all the requirements specified in the Maintenance Agreement may result in immediate cancellation of the agreement and forfeiture of all or part of the performance bond.
- g. The Maintenance Agreement will include the M-688 permit as an attachment. The M-688 authorizes the thinning and removal upon full execution and approval of the Maintenance Agreement.

#### C. Issuance or Denial of Permit

- 1. Within sixty (60) days following receipt of the application for vegetation maintenance, PennDOT will approve, deny or return for more information the application after performing an onsite inspection. This time period does not include the time necessary for central office review and execution of the Maintenance Agreement, if necessary.
- 2. If the M-688 permit is approved, a copy of the permit must be onsite during any work activities to show proof of legal access to the limited access right -of- way.
- 3. If the application is denied, PennDOT will advise the applicant, in writing, of the reasons for denial.
- 4. All or part of the application may

be denied by PennDOT when it determines:

- a. Removal of vegetation will adversely affect the safety of the traveling public or the public right-of-way, or is otherwise not in the best interests of PennDOT or the Federal Highway Administration.
- b. The application is for opening of view to an advertising device which has been declared illegal or is currently involved in litigation with PennDOT.
- c. The facility is not screened from view.
- d. Trees, shrubs or any vegetation that was planted in accordance with a local, state, or federal beautification project are identified as being removed.
- e. Planting was done in conjunction with a design noise barrier, living snow fence, visual barrier, erosion control, or an aesthetics enhancement to the roadside.
- f. The identified vegetation has aesthetic value as viewed from the highway.
- g. The applicant has not performed satisfactory work on previous permits.
- h. The proposed removal would open views to junkyards.
- The work site is within one thousand feet (1,000') of any State Scenic River or Scenic Byway. A Scenic Byway is any linear transportation corridor designated or as may hereafter be so designated by PennDOT under the Pennsylvania scenic byways program as having outstanding scenic qualities. A State Scenic River is a river that is classified, designated and administered as Wild, Scenic, Pastoral, Recreational and Modified Recreational River according to the Pennsylvania Scenic Rivers Act.

- j. The proposed work is not incompliance with federal, state and local laws, regulations, ordinances or rules, including but not limited to state and federal environmental requirements, in particular those relating to the Threatened and Endangered review in PNDI and wetland and historic and archeological requirements.
- k. Access from the travelled portion of the limited access highway is deemed unsafe due to crash history, geometric features or otherwise.
- A. Conditions, Enforcement and Inspection of Permit and Permit Work
  - Payment or planting of the compensatory vegetation must be completed before any vegetation removal may occur unless approved by PennDOT in advance.
  - 2. PennDOT inspections will occur at a minimum at the following times:
    - a. After the application is submitted and before the permit is approved or denied.
    - After the tree pruning, trimming, removal and/or planting is completed.
    - c. If the planting has been performed, two weeks before the end of the establishment period of twelve (12) months has expired per the maintenance agreement.
      - PennDOT will document each inspection with a Roadside Activity Report (M-609). After the final, the PennDOT inspector will document an approved permit by listing the permit number and the wording "Approval of Final Inspection" in the remark section of the M-609.
  - 3. Once the permitted work is completed and approved, the permit is terminated. After the permit is terminated, a new permit must be issued before reentering the worksite. The Maintenance Agreement will remain in place following completion of the work authorized by it.

- The permittee or his agent shall not impede traffic on the highway in performing the permitted work. Access to the work site must be approved by PennDOT and must be made from existing points of access along the limited access highway. No permit work or staging is allowed within the travelled way of the limited access highway. Staging is allowed within shoulders of the highway. The permittee will furnish, erect, and maintain all signs as required in the current Pub 213 and MUTCD, as well as any additional special work zone provisions that may be made applicable. If PennDOT deems access from the travelled portion of the highway is unsafe, the application will be denied.
- 5. Any damage to vegetation, highway fences, signs, paved areas, ditched or other department property will be repaired or replaced by the permittee to the satisfaction of PennDOT. All cut brush, logs and other debris will remain on the site spread across a location outside the thirty foot recovery zone and wood chips uniformly spread out to a depth of no more than four (4) inches unless directed otherwise by PennDOT.
- 6. Brush and tree stumps must be cut within four (4) inches of the ground unless the area will be mowed than cut all stumps flush to the ground. No burning or burying will be permitted on the highway right -of way.
- 7. Upon satisfactory completion of all work, PennDOT will notify the permittee in writing of accepting the performed work, terminate the permit, and return the performance bond required by the permit.
- 8. Failure to comply with all the requirements specified in the permit, unless otherwise mutually agreed to by the permittee and PennDOT, shall result in the immediate revocation of the permit and forfeiture of part or all of the performance bond as determined by PennDOT.

### 13.6 REVITIALIZATION (ASSEMBLY 7716)

Revitalization work consists of applying lime, fertilizer, seed and mulch to roadside earthen areas where the existing vegetation is weak, deteriorating, damaged or in such a condition that erosion is imminent. This work is also performed where Department grading operations have taken place and erosion is considered a problem.

The furnishing and placing of topsoil, sod, ground cover plantings and erosion protection materials as specified in the Pub 408, are also items appropriate for revitalization activities.

This work shall be programmed in coordination with the District Roadside Specialists who will determine the seed formula, lime, fertilizer and mulch types and rates for the particular problem areas. A calendar year contract should be available at all times for District use.

The Maintenance Manager should report problem areas or anticipated work areas to the District's Roadside Specialist for his review and inclusion in the District's annual revitalization service purchase contract. Under this program, revitalization work can be performed within a 7day scheduling period, depending upon the timeliness for seeding, mulching, planting and placement of erosion protection materials.

### WILDFLOWERS (ASSEMBLY 7717)

The Wildflower program consists of all activities associated with the establishment of herbaceous plants having conspicuous and desirable flower characteristics; and the propagation and enhancement of naturally occurring plants having equal traits. The primary purpose of establishing cultivated areas of "wildflowers" is to draw attention to the aesthetic quality of plants, kindling an awareness to the beauty of the natural environment. In this way the Department can maintain public acceptance of a low maintenance roadside program.

Preferred locations for "cultivated" wildflowers include high visibility areas along the interstate system as well as other major highways, especially in medians and at intersections; gateways to cities; and major points of interest. Sizes of areas and flower varieties must be appropriate to the travel speed, terrain and natural surroundings of each particular location.

The wildflower program may also create an interest in our citizens and roadside tenants to become involved in partnering with the Department through the various adopting programs.

Additional policy requirements and program guidelines are detailed in the performance standards of the Foreman's Manual.

Wildflowers provide good public relations and create a positive attitude for the traveler. They assist the traveler in providing natural delineation of the roadway and a keener sense of alertness to the roadway surroundings thereby contributing to the traveler's safety.

### 13.7 ROADSIDE PLANTING

The Department is dedicated to the design, construction and maintenance of the "complete" highway. This philosophy incorporates the need for roadside plantings of trees, shrubs and vines. Each new highway construction project is analyzed in the design stages relative to the need for roadside plantings, and appropriate planting is included.

There are many miles of highway which have not been planted and along which specific planting could be accomplished. There are locations where accent plantings would provide a useful purpose such as framing an exceptional panoramic view, screening an objectionable feature or providing a psychological or noise abatement screen for a roadside property owner.

Planting of evergreen seedlings for live snowbreak purposes or for reforestation of roadside areas which are appropriate for this purpose are programs covered by this activity. All plantings conducted beyond the right- of- way must be covered by properly executed planting agreements. Old snowbreak plantings are covered by agreements which are still in effect as per the language of these agreements.

### MINOR PLANTINGS (ASSEMBLY 719)

Minor plantings include reforestation, snowbreak and replacement plantings and are performed by the county roadside crew, or by contract. Plantings performed with Department Forces require prior purchase of plant material from outside sources, the Department of Conservation and Natural Resources (DCNR), Correctional Industries or are transplanted from Department plantings. When performing replacement plantings, the original species and sizes should be specified unless planting site or availability conditions justify changes. Turf areas and plantings which are destroyed by errant vehicles or by vandalism should be evaluated by the District Roadside Specialist and replacement cost in kind and size determined.

Losses resulting from errant vehicles should be referred to the Damage Claim Coordinator for reimbursement purposes. The Damage Claim Coordinator will bill the responsible party for the cost of removing and replacing the planting (and any additional damage, e.g. guiderail, signs, etc.)in accordance with Chapter 14 (Damage Claims). Losses resulting from vandalism may require investigation by the Department and the State Police in an attempt to identify the responsible party. In many cases, sufficient guilt cannot be established to file criminal action under P.L. 1212 and recover damages; however, it is the Department's responsibility to pursue this action to its conclusion. (Failure to obtain criminal restitution does not preclude the Department from pursuing reimbursement through action). Where vandalism has occurred, replanting with desirable material is necessary to prevent erosion and preserve the aesthetic quality of the area.

Orders for plant material from Correctional Industries should be prepared and submitted on Field Limited Purchase Orders. These orders must be placed early in February to provide for the spring planting season or by July to provide for fall planting.

The Service Purchase Contract procedures, utilizing the standard specification, provides for furnishing and planting. It is important to prepare these contracts on an annual basis, as required, so that plantings are performed as intended and no one year expenditure is excessive.

### MAINTENANCE OF PLANTINGS (ASSEMBLY 719)

Plantings cannot serve their intended purpose unless intensive maintenance is provided during the establishment period. This activity begins with the final acceptance of the project from the contractor, or as soon as plantings are established by Department Forces. This maintenance consists of mowing, weeding, cultivating, pruning, mulching, fertilizing, spraying and other operations related to plant establishment and care.

Competing vegetation, rodents, insects and disease, climatic conditions and mowing equipment are the major factors which must be controlled or modified to permit desirable plants to establish along the roadside.

The maintenance of clean tree pits around new plantings will eliminate vegetative competition, reduce a favorable habitat for rodents and many insects and keeps mowers away. Nonselective herbicides when used as per labeled instructions are recommended for use around individual plants. Caution must be exercised when utilizing herbicides to prevent plant injury.

Insects and disease are ever present and their control is important to prevent ultimate destruction of the plants. Generally, it requires several seasons of an uncontrolled population growth before plants are severely damaged so that control programs can be formulated after observing the initial damage. Where insect and disease damages occur, the respective County Agent's Office should be contacted to determine the insecticide most effective, and best spray schedule for your particular problem. Again labeled instructions must be followed to prevent improper application or applicator injury. Where Department applicators are not certified in the proper category a contract should be considered.

Timely watering during extremely dry periods following planting is an absolute necessity to plant establishments. Where this operation cannot be assured with Department equipment and personnel, emergency service purchase contracts should be executed to perform this service.

In those counties with extensive planting programs and little or no personnel available for plant maintenance, annual service purchase contracts utilizing the standard specifications are recommended. It is advisable to incorporate watering equipment by use of a separate item into this contract.

### 13.8 PUBLIC SERVICE FACILITIES/OPERATIONS AND MAINTENANCE

General maintenance begins before the respective area is opened in the spring for use by the traveling public. As a preseason preparation at all roadside rests, parking areas, picnic table areas and scenic views, the following work should be done respective to the area:

- Grass areas mowed, raked, reseeded and fertilized as required.
- 2) Shrubbery and trees pruned and fertilized as required.
- 3) Driveways and parking areas repaired.
- 4) Structures repaired and painted.
- 5) Fireplaces refinished and repaired.
- 6) Shrub beds cultivated, edged and mulched.
- 7) All signs refinished and erected.
- 8) Refuse containers repainted.
- 9) Toilets cleaned.
- 10) Picnic tables refinished and placed.
- Execution of service purchase contracts for the pumping of privy vaults and refuse collection.

Following this initial work, a schedule of follow-up maintenance should be planned. The details will depend on the use of each particular area.

### INTERSTATE SAFETY REST AREAS

The Interstate Safety Rest Areas/Welcome Centers are staffed 24 hours a day either by contract or department forces.

General operational procedures include general cleaning consisting of the complete day to day cleaning and operation of the rest area and welcome center buildings and grounds.

Carpentry consists of repairs to the buildings, tables, benches, doors, partitions, windows and general building trade items.

Painting consists of refinishing both interior and exterior painted or varnished surfaces.

Mowing and landscape maintenance services

consists of mowing and edging the complete lawn and weeding of all plant beds, shrub beds and tree pits each week unless otherwise directed.

There is a "No Smoking" policy at all areas.

For specific instructions and guidelines on the operation and maintenance of all Interstate Safety Rest Area Facilities refer to the individual contract specifications.

### **ROADSIDE PICNIC TABLES**

Roadside picnic tables on the interstate highway system will only be placed at locations where adequate deceleration and acceleration lanes are available. This will limit the installation of picnic tables to rest areas.

Roadside picnic tables on federal aid primary limited access highways may be placed in accordance with the following:

No tables are to be placed on short sections of limited access highways.

No tables are to be placed along sections of limited access highways within five miles of an existing roadside rest area.

Tables should be placed only where sight distance is adequate (a minimum of 1000 feet in both directions).

### 13.9 ROADSIDE LITTER PICKUP AND DEBRIS REMOVAL

The Department Maintenance Forces are ultimately responsible for litter and debris removal within the right- of way of our state highways. Litter and debris includes, but is not limited to, fallen branches, rocks, articles from vehicles, rubbish, junk and dead animals. Remove all litter and debris from the travel portion of the highway. Public perception as well as health and safety concerns require removal of dead animals not only from the travel portion of the roadway, but from areas within the highway right of way that are visible to the traveling public. Utilize department forces and/or current contracting methods to remove and properly dispose of dead animals.

With the exception of the sections of highway covered by the Adopt -A- Highway, the Litter Brigade's or other litter control efforts, the Department Maintenance Forces will conduct litter pickup as follows:

-All MFC A and B roads and MFC C, D and E roads with an ADT in excess of 1500 vehicles should be scheduled three (3) times per year:

1) Early Spring 2) Midsummer 3) Fall

The spring pickup should be scheduled prior to mowing or earth moving operations.

-Other MFC C, D and E routes should have one general clean-up scheduled in the spring prior to the mowing operation.

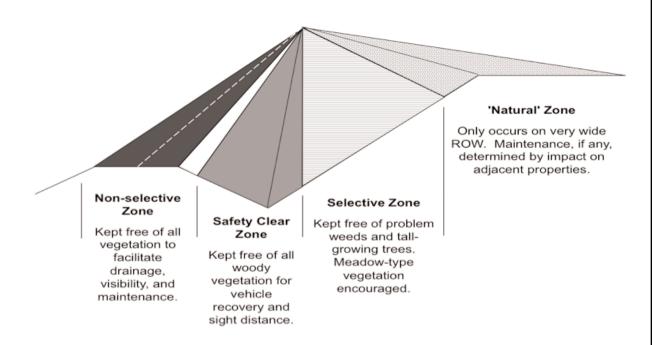
-Expressway Interchanges should be scheduled monthly or more frequently if directed by the Maintenance Manager. These areas should be the first priority for inclement weather pickup or as alternate work activity, if scheduled project is delayed or canceled.

NOTE: It is a requirement that litter bags be carried in all Department Maintenance vehicles at all times in order to facilitate pickup efforts

### STANDARD LIMIT~ WOODY GROWTH

### Zone Concept Figure #3

(Planted or Volunteer)
To Be Maintained Along Uncurbed Highways



Non-selective: Target: all vegetation (bareground)

**Focus areas:** quiderails, signposts, concrete islands and barriers.

**Objective:** promote water flow off of the road surface.

Safety Clear Zone: Target: woody plants

Focus areas: dependent on size of right-of-way (ROW)

large ROWs – 30 feet from edge of roadway

2. small ROWs— on a 33 foot ROW, from the outer edge of the non-selective zone to the ROW

boundary (only a few feet).

**Objective:** provide recovery zone for vehicles that have left the

travel lane.

Selective Zone: Target: tall-growing tree species and noxious and

invasive plants.

**Focus areas:** wider ROW, extends from the edge of the safety

clear zone to a distance of up to 80 feet from

roadway.

**Objective:** remove trees and problem weeds through occasional

mowing (once every 2-3 years) and/or periodic

herbicide applications.

Natural Zone: Target: noxious and invasive plants

**Focus areas:** wide ROW, extends outward from the edge of selective zone.

**Objective:** perform maintenance activities only if noxious or invasive

weeds are present.

### STANDARD LETTER OF CONTACT

Figure #4

uring the weeks/months of		
ear of		
you are interested in the resulting wood from to roperty, please contact the following PennDOT office	re listed below by:	g you
Address:		_
City:		_
Contact Person:		_
Telephone:		
E-mail:		_
•		
you do not respond by the above date, the Department.	rtment will appropriately dispose	of th

# VEGETATION REMOVAL TO IMPROVE SIGN VISIBILITY

### Figure #5

Signs play an important role in providing information to the road user about the rules of the road, potential situations that might not be readily apparent and guidance. To accomplish this, signs have to be readily visible, both day and night, through proper retro reflectivity and visibility. One factor that can significantly reduce visibility is vegetation growing near signs that obstruct the line of sight between oncoming traffic and the sign face. To address this situation, the following factors should be considered as part of routine maintenance of highway signs:

- 1. Maintain adequate visibility distance. As a general rule- of- thumb, the full sign face should be visible to oncoming traffic for a distance in feet equal to 10 times the speed limit. Therefore, if the speed limit is 65 mph on a limited access highway, all signs should be visible for a minimum distance of 650 feet. On a highway where the speed limit is 35 mph, all signs should be visible for a distance of 350 feet. These distances are applicable to all lanes on a multiple lane approach.
- 2. When removing vegetation from in front of the face of a sign, clear vegetation for 15 feet to the right of way line, whichever is less, on both sides and behind the immediate face of the sign and 10 feet from the top of the sign. This will greatly reduce the time before main-tenance will again be required to remove vegetation to restore adequate visibility. When cut-ting the main stem of trees 4" dbh (diameter breast height) or greater, the remaining stump shall be within 4" of the ground and sprayed with herbi cide to prevent re-sprouting. All sidetrimming will be to the branch collar (Diagram 1) within the right- of- way (ROW) and where permission is given beyond the ROW. Cut all other vegetation to within 12" of the ground or less if the sign needs additional clearance. Maintain at all times a vegetative groundcover along the area cleared for sight distance to limit soil erosion.
- 3. If a sign requires the removal of vegetation more often than once annually, the District Roadside Specialist should be consulted for treating unusual vegetation situations.

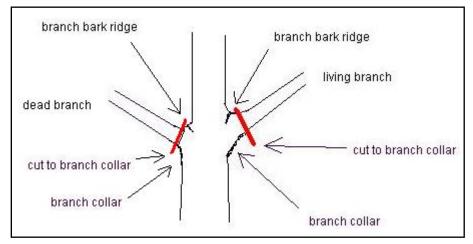


Diagram 1 - Branch collar cuts

### **CHART A**

### MINIMUM UNOBSTRUCTED DISTANCE BEHIND GUIDERAIL

(ENGLISH)				
Guide- rail Type	Description	Minimum Unobstructed Distance	Post Spacing	
2-W	Weak Post W-Beam Guiderail (Normal Post Spacing) 8'-0		12'-6"	
2-WC	Weak Post W-Beam Guiderail (Close Post Spacing)	5'-0"	6'-3"	
2-S	Strong Post W-Beam Guiderail (Normal Post Spacing)	4'-0"	6'-3"	
2-SC	Strong Post W-Beam Guiderail (Close Post Spacing)	2'-0"	3'-1-1/2"	
2-WM	Weak Post W-Beam Median Barrier	7'-0"	12'-6"	
2-WCC Weak Post W-Beam Guiderail (Very Close Post Spacing)		4'-0"	3'1-1/2"	
	(METRIC)			
Guide- rail Type	Description	Minimum Unobstructed Distance	Post Spacing	
2-W	Weak Post W-Beam Guiderail (Normal Post Spacing)	2.1 m	3810 mm	
2-WC	Weak Post W-Beam Guiderail (Close Post Spacing)	1.5 m	1905 mm	
2-S	2-S Strong Post W-Beam Guiderail (Normal Post Spacing)		1905 mm	
2-SC	Strong Post W-Beam Guiderail (Close Post Spacing)	0.6 m	952.5 mm	
2-WM	Weak Post W-Beam Median Barrier	2.1 m	3810 mm	
2-WCC	Weak Post W-Beam Guiderail (Very Close Post Spacing)	1.2 m	952.5 mm	

<u>Append</u>	<u>lix C</u>	November 10, 2009
		Agreement No Federal Tax I.D. No SAP No
	HIGHWAY VEGETATION	ON MANAGEMENT AGREEMENT
Transportation		, its agents and
	w	VITNESSETH:
State highway Commonwealt	system, to be construct th pursuant to the Act of	have been adopted and taken over as part of the ted, improved, and maintained by the f June 1, 1945, P.L. 1242, the Act of September ay 29, 1945, P.L. 1108, as amended; and,
	d outdoor advertising de	ted by State and Federal law with jurisdiction over vices within and along State-designated
		uested a permit to trim, remove and maintain limited access State highway; and
"Scope of Work und maintenance r	k") shall consist of the v der the M-688 permit as	under this Agreement (hereinafter referred to as vegetation maintenance activities (including the well as the replacement plantings and continuing n Exhibits "A" and "B" attached hereto and
		leration of the foregoing premises and the mutual ention of being legally bound, agree as follows:
1) SCOPE OI	F WORK.	
activitie	s set forth in Exhibit "A"	under this Agreement shall consist of those (the M-688 permit) and Exhibit "B" (addressing tinuing maintenance requirements).

Appendix C	November 10, 2009

b)	The work site within v	which the Scope	of Work will take	place is along	State Route
	, bound	d, from Station _	to Station		

c) All work under this Agreement shall be accomplished in accordance with the Scope of Work (Exhibits "A" and "B") and all other the terms of this Agreement, as well as the latest PENNDOT vegetation management procedures (Publications 23 and 461), design criteria (Publication 13M), construction and materials specifications (Publications 408 and 450), and maintenance and protection of traffic (Publication 213 and the MUTCD).

### 2) OBLIGATIONS OF THE APPLICANT.

- a) The APPLICANT agrees to furnish, at no cost to PENNDOT, a complete set of the Plans and Specifications in a timely manner for review and approval by PENNDOT and, if necessary, the FHWA. The APPLICANT agrees to cooperate with PENNDOT and, where necessary, the FHWA in obtaining the approval of the Plans and Specifications by all necessary parties.
- b) The APPLICANT agrees to pay the entire cost of activities under this Agreement including, but not limited to, construction, inspection, supervision, sampling and testing, and landscape maintenance, as detailed in the Plans and Specifications and in subsequent change orders. As used herein, "cost" means that total initial contract price adjusted upward or downward for change orders and claims made under the Pub 408 Highway Specifications or under this Agreement.
- c) The APPLICANT agrees to provide PENNDOT an executed copy of any contract between the APPLICANT and any other person or entity for any part of the work to be performed pursuant to this Agreement.
- d) The APPLICANT and all contractors performing work authorized by this Agreement shall maintain comprehensive general liability insurance, property damage insurance and automobile liability insurance throughout the term of this Agreement in the minimum amounts of \$250,000 per person and \$1,000,000 per occurrence for bodily injury, including death, and \$250,000 per person and \$1,000,000 per occurrence for property damage. These coverages shall be occurrence-based. The policy(ies) shall name the Commonwealth as an additional insured and shall contain a provision that the coverages afforded there under shall not be cancelled or changed unless at least thirty (30) days prior written notice has been given to the Commonwealth. Certificates of insurance reflecting the requirement coverages shall be provided to PENNDOT prior to the commencement of work.
- e) The APPLICANT shall provide security in a form acceptable to PENNDOT in the amount of \$10,000 or the cumulative replacement cost of all desirable vegetation as determined by PENNDOT, whichever amount is higher, to run concurrently with the term of this Agreement, unless sooner released or permitted to be reduced by PENNDOT.

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Appendix C

November 10, 2009

- f) The APPLICANT shall insure that any contractor performing work authorized by this Agreement strictly abides by the terms of the M-688 and this Agreement.
- g) The APPLICANT shall comply with all federal, state and local laws, regulations, ordinances or rules in performing the proposed work, including but not limited to all state and federal environmental requirements, in particular those relating to threatened or endangered species, wetlands and historic and archeological elements.
- h) The APPLICANT shall reimburse PENNDOT all costs associated with inspecting any work performed under this Agreement.

### 3) OBLIGATIONS OF PENNDOT.

PENNDOT agrees to grant to the APPLICANT M-688 Permit No. \_\_\_\_\_\_ to use and occupy the work site for purposes of vegetation management activities as set forth therein. The permit is hereby incorporated into this Agreement as Exhibit "A."

### 4) LANDSCAPING REQUIREMENTS.

- a) Work under the Agreement will be performed in accordance with the terms of this Agreement and the Plans and Specifications by contract or by the APPLICANT's own forces.
- b) The APPLICANT shall prepare Plans and Specifications for any change orders required for satisfactory completion of the work, which change orders will be subject to the review and approval of PENNDOT.
- c) The Plans and Specifications shall include a certification that the landscaping is completed in accordance with the provisions of the Agreement and in accordance with the current PENNDOT Pub 408 Specifications and other appropriate and applicable specifications.
- d) If the APPLICANT does anything contrary to the approved Plans and Specification and after due notice, fails to correct such action, PENNDOT may take those measures contained in the Pub 408 Specifications to ensure full restitution and compliance.
- e) Highway property disturbed by the APPLICANT shall be restored using materials, design and workmanship in conformance with Pub 408 Specifications, Pub 13M, chapter 8 – Landscape Planting Design or other existing Department Standards.
- f) Access to the work site is only allowed as designated on the Plans and Specifications; access will only be granted from existing access points along the travelled way of the limited access highway.

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### Appendix C

November 10, 2009

- g) Work requiring personnel or vehicles on the shoulders shall comply with all of the work zone traffic control requirements of the MUTCD and PENNDOT Pub 213, as well as any additional special work zone provisions that may be made applicable. Failure to comply with these requirements will be cause for immediate suspension of contract work until the proper traffic controls have been provided.
- h) The APPLICANT, upon completion of the work, shall leave the highway right of way clean of all rubbish, excess materials, temporary structures and equipment and all parts of the highway right of way disturbed by the PROJECT shall be left in acceptable condition.

### 5) NOTICE.

Notice under this Agreement shall be directed as follows:				
Applicant's Name:	PennDOT:			
Address:	Address:			
Attn:	Attn:			
Telephone:	Telephone:			

### 6) TERM AND COMMMENCEMENT OF WORK.

- a) The term of this Agreement shall be from the date first above written until five (5) years following the planting of the replacement vegetation identified on Exhibit "B", unless otherwise extended by mutual agreement of both parties by written amendment to this Agreement.
- b) No work may commence under the M-688 affiliated with this Agreement or this Agreement until PENNDOT issues a notice to proceed following the date first above written.

### 7) TERMINATION AND DEFAULT.

a) PENNDOT may terminate this Agreement for any reason by giving the APPLICANT ninety (90) days written notice. Partial or complete forfeiture of the bond may be required in order for PENNDOT to continue maintaining the affected area for what would have been the remaining duration of this Agreement.

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- b) Neglect or failure of the APPLICANT to comply with any of the terms, conditions, or provisions of this Agreement, including misrepresentation of fact, shall be an event of default, unless such failure or misrepresentation are the result of natural disasters, strikes, lockouts, acts of public enemies, insurrections, riots, epidemics, civil disturbances, explosions, orders of any kind of governments of the United States or Commonwealth of Pennsylvania or any of their departments or political subdivisions, or any other cause not reasonably within the APPLICANT's control. The APPLICANT, however, shall remedy as soon as possible each cause preventing its compliance with this Agreement.
- c) If notified by PENNDOT in writing that it is in violation of any of the terms, conditions, or provisions of this Agreement, and a default has occurred, the APPLICANT shall have thirty (30) days or a time negotiated with PENNDOT from the date of such notification to remedy the causes preventing its compliance and curing the default situation. Expiration of the thirty (30) days or negotiated time and failure by the APPLICANT to remedy the default shall result in termination of this Agreement by PENNDOT.
- d) Upon a termination of this Agreement by PENNDOT, PENNDOT shall conduct an inspection of the work site to determine whether or not the Scope of Work has been completed to a degree acceptable to PENNDOT. If the Scope of Work is not completed to a degree and condition acceptable to PENNDOT, then PENNDOT may take any measures necessary to complete the Scope of Work. The APPLICANT shall be held responsible for full restitution of all expenses incurred in completing the Scope of Work.

#### 8) MAINTENANCE.

- a) Access to the work site is only allowed as designated on the Plans and Specifications; access will only be granted from existing access points along the travelled way of the limited access highway.
- b) The APPLICANT shall not impede traffic on the highway in performing the permitted work. No permit work or staging is allowed within the travelled way of the limited access highway. Staging is allowed within shoulders of the highway. Work requiring personnel or vehicles on the shoulders shall comply with all of the work zone traffic control requirements of the MUTCD and PENNDOT Pub 213, as well as any additional special work zone provisions that may be made applicable. Failure to comply with these requirements will be cause for immediate suspension of contract work until the proper traffic controls have been provided.
- c) APPLICANT agrees to notify PENNDOT forty-eight (48) hours in advance of any maintenance activities under this Agreement.

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- d) The APPLICANT agrees to perform all maintenance activities required by industry practices to maintain work site in an attractive manner. "Maintenance activities" can include, but shall not be limited to: on-going landscape maintenance; repair or replacement of any dead trees or plants; repair, mowing or replacement of ground cover; herbicidal spraying; litter removal; and any other special work required. See Exhibit "B" (delineating the maintenance activities that are required, how often and when they will take place and any other specifics concerning maintenance under this Agreement).
- e) The APPLICANT agrees to make ample financial and other provisions for such maintenance under this Agreement after its completion.
- f) The APPLICANT agrees to submit any additional landscaping plans to PENNDOT for prior approval or to submit changes, additions, or deletions to existing landscaping to PENNDOT for prior approval in a timely manner.

#### 9) GENERAL PROVISIONS.

- a) The signing of the Agreement does not in any way limit the rights of PENNDOT in its jurisdiction over the State highway system.
  b) This Agreement and Permit No. \_\_\_\_\_ constitute the entire Agreement between the parties. All prior discussions and understandings between the parties are superseded by this Agreement.
- c) Neither this Agreement nor any rights, duties or obligations described herein shall be assigned by either party hereto without the prior express written consent of the other party. Any change to the provisions of this Agreement must be made in a written amendment executed by both parties.
- d) This Agreement shall be construed and interpreted and the rights of the parties determined in accordance with the laws of the Commonwealth of Pennsylvania.
- e) The District Maintenance Office shall have full authority to ensure the full compliance of the provisions of this Agreement.
- f) The signing of the Agreement or the doing of any work thereunder shall constitute an agreement by the APPLICANT to comply with all of the conditions and restrictions of this Agreement and the M-688 Permit No. \_\_\_\_\_\_ attached hereto as Exhibit "A."
- g) The APPLICANT shall indemnify and save harmless (and defend if requested) the Commonwealth of Pennsylvania and all of its representatives from all suits, actions or claims of any character brought on account of any injuries or damages sustained by any person or property in consequence of any neglect or on

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account of any wrongful act or omission on the part of the APPLICANT as a result of the construction or maintenance of the PROJECT.

- h) The APPLICANT shall comply with the Contractor Integrity Provisions and the Provisions Concerning the Americans with Disabilities Act, both of which are incorporated by reference as though physically attached to this Agreement.
- i) No remedy herein conferred upon or reserved by PENNDOT is intended to be exclusive of any other available remedy, but each and every such remedy shall be cumulative and shall be in addition to every other remedy given under this Agreement or now or hereafter existing at law or in equity. No delay or omission to exercise any right or option accruing to PENNDOT upon any default by the APPLICANT shall impair any such right or option or shall be construed to be a waiver thereof, but any such right or option may be exercised from time to time and as often as may be deemed expedient by PENNDOT.
- j) In the event that any dispute arises between the APPLICANT and PENNDOT concerning interpretation of or performance pursuant to this Agreement, such dispute shall be resolved in a mutually acceptable manner by PennDOT and the APPLICANT.

#### 10) SIGNATURES.

Any person executing this Agreement in a representative capacity hereby warrants that he/she has been duly authorized by his/her principal to execute this agreement on such principal's behalf.

**IN WITNESS WHEREOF**, the parties have executed this Agreement.

Permittee	Date:
Commonwealth of Pennsylvania Department of Transportation District Executive	Date:
BOMO Roadside Manager	Date:

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<u>Appendix C</u>			November 10, 2
DO NOT WRITE BEL	LOW THIS	LINE FOR COMMON	WEALTH USE ONLY
APPROVED AS TO LEGAI AND FORM BY		RECORDED NO CERTIFIED FUNDS AV ACTIVITY PROGRAM SYMBOL	AILABLE UNDER
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Deputy Attorney General	Date		

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# CHAPTER 14 REIMBURSABLE ACTIVITIES TABLE OF CONTENTS

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#### 14.1 GENERAL PROVISIONS

#### **INTRODUCTION**

The repair of damaged highway facilities is a duty of the department and it is entitled to reimbursement when the damage is the result of negligence.

This chapter establishes policy for seeking reimbursement for damaged department property such as guide rail; median barrier; bridges and signs; equipment damage; and traffic control and accident cleanup resulting from vehicle accidents.

This chapter does not apply to general invoices. General invoices shall be billed through the SAP FB70 invoicing process.

All previous editions of this chapter, memoranda, and strike off letters are hereby rescinded

#### **OBJECTIVE**

The objective of this program is to identify, locate, and quantify accident damaged department property, and to seek reimbursement from the responsible party

#### **DEFINITIONS**

The following words and phrases when used in this chapter shall have, unless the context clearly indicates otherwise, the meaning given to them in this section.

"BOMO" The Bureau of Maintenance and Operations.

"COUNTY" The maintenance district plant.

"DEPARTMENT" The Pennsylvania Depart-ment of Transportation.

"DISTRICT" The engineering district plant.

"DRU" The Damage Recovery Unit of the Bureau of Maintenance and Operations.

"MAY" Indicates that an action is permitted but not required.

"SHALL" Indicates that an action is required or mandatory.

"SHOULD" Indicates that an action is recommended but not required.

"UNIT COST" The fair and reasonable charge for a certain activity based on average prices and performance standards. Unit costs reflect the cost of the item in place and include all necessary labor, equipment, material, tools, and hardware expenditures.

#### **DATA ENTRY**

Refer to the SAP Plant Maintenance End User Procedures for instructions on creating and modifying an RA notification. No invoice shall be generated without an associated police accident report.

#### 14.2 TIMELY BILLINGS

The statute of limitations does not run against the Commonwealth; however, the department will strive to bill within the common statute of limitations (within two years of the accident date). The department may bill beyond two years of the date of the accident if the DRU determines it deems it warranted.

All debtors should be invoiced within 90 calendar days from the date the RA Notification is created in Plant Maintenance.

Police accident reports are available through the CRASH system. The Bureau of Highway Safety and Traffic Engineering grants access to CRASH.

The district or county may visit local state and municipal police stations to obtain a copy of the accident report or the information necessary to prepare a bill.

The district and county shall only release copies of police accident reports authorized representatives of Commonwealth of Pennsylvania.

The county or the district should complete the damage detail tab of the RA notification in SAP Plant Maintenance within 90 calendar days from the date the RA notification was created.

Invoices may be based on the estimated cost of repairing the damage so that an invoice may be generated within 90 calendar days of the creation of the RA notification.

A revision may be due if the estimated repair costs differs from the actual repair cost. The DRU shall determine whether a revision is necessary after reviewing data supplied by the district or county. Generally, a revision may be issued if the actual cost is within 20% of the estimated cost, the invoice has not been paid, and a release has not been signed.

#### 14.3 COMPLETION OF REPAIRS

The repair of accident damage should meet the Standards of Care established by the Bureau of Highway Safety and Traffic Engineering.

Temporary repairs shall be made where warranted. The responsible party shall be billed for all temporary repairs.

The district or county shall review all known damage areas for any safety concerns and schedule repairs accordingly. Strict adherence to the Standards of Care is necessary to limit tort liability exposure.

#### 14.4 DAMAGE CLAIMS

Actual contract costs shall be billed when available. Actual department maintenance force repair costs may be billed when available, or the county may elect to bill using the unit costs contained in Section 5.

The county should document the information necessary to complete the damage detail tab in any manner it deems sufficient.

The county may take photographs, digital or otherwise, of the damage. The DRU may request copies of the photographs to assist in the collection of the invoice.

## RESTITUTIONS, ACCELERATED REHABILITATION DISPOSITION (ARD), AND VANDALISM

Any request for repair costs from a district attorney, district magistrate, or a probation officer or any payment for same shall immediately be forwarded to the Office of Chief Counsel.

#### **14.5 UNIT COSTS**

Contract costs shall be used when repairs are, or will be, completed by contract.

Unit costs may be used whenever repairs are, or will be completed, by department forces. The county may elect to use actual department force costs rather than unit costs.

Each unit cost reflects the cost of the item in place and includes all necessary labor, equipment, material, tools, and hardware plus any incidental work unless otherwise noted. Mobilization of the repair crew is additional to the unit cost item being charged and should be applied to each claim where applicable.

Unit costs provide average unit prices on a wide variety for activities and represent fair and reasonable charges. The DRU shall review and update the unit costs, as it deems necessary.

Unit costs may be used for such routine guide rail and sign repair. Actual or estimated costs for labor, equipment, and material expenditures may be used to calculate the cost of such activities as accident cleanup, traffic control, and minor repairs to bridges or barriers.

The county shall refrain from mixing unit costs and contract costs unless warranted (e.g., it is appropriate to use unit costs for guiderail repairs by department forces and contract costs for the replacement of a light fixture when both damages arise from the same accident).

### **UNIT COSTS**

Item Description	Unit of Measure	Remarks
REPAIR SIGN UNDER 16 SQ FT	EACH	Includes all labor, equipment, and material costs associated with erecting supports and posts, mounting sign, and removing damaged material for various dimension signs. If there are more than one sign blank on the sign structure, multiply the total number of blanks by the unit cost. Mobilization of the sign crew is an additional cost.
REPAIR SIGN OVER 16 SQ FT	EACH	Includes all labor, equipment, and material costs associated with erecting supports and posts, mounting sign, and removing damaged material for various dimension signs. If there are more than one sign blank on the sign structure, multiply the total number of blanks by the unit cost. If the sign blank exceeds 32 square feet, use actual costs for entire repair of the sign structure. Mobilization of the sign crew is an additional cost.
REPAIR SR/SEGMENT MARKER	EACH	Includes all labor, equipment, and material costs associated with erecting or repairing an SR or segment marker and post, and removing damaged material.  Mobilization of the sign crew is an additional cost.
REPAIR MILE MARKER	EACH	Includes all labor, equipment, and material costs associated with erecting or repairing a mile marker and post, and removing damaged material. Mobilization of the sign crew is an additional cost.
REPAIR DELINEATOR/ REFLECTOR	EACH	Includes all labor, equipment, and material costs associated with erecting or repairing a delineator/reflector and post, and removing damaged material. Mobilization of the sign crew is an additional cost.
REPAIR CABLE GUIDE RAIL	FEET	Includes all labor, equipment, and material costs associated with repairing or replacing damaged guide rail cable, posts, cable fittings, and mounting hardware, and removing damaged material. Mobilization of the guide rail crew is an additional cost.
REPAIR GUIDE RAIL PANEL	FEET	Includes all labor, equipment, and material costs associated with repairing or replacing damaged guide rail panel, posts fittings and mounting hardware, and removing damaged material. Mobilization of the guide rail crew is an additional cost.
REPAIR CONCRETE MEDIAN BARRIER	FEET	Includes all labor, equipment, and material costs associated with repairing or replacing damaged concrete median barrier, and removing damaged material. Mobilization of the concrete barrier crew is an additional cost.

#### **UNIT COSTS**

Item Description	Unit of Measure	Remarks
REPAIR CONCRETE GLARE SCREEN	FEET	Includes all labor, equipment, and materials costs associates with repairing damaged glare screen, and removing damaged material. Mobilization of the concrete median barrier crew is an additional cost.
REPAIR RIGHT-OF-WAY FENCE	EACH	Includes all labor, equipment, and material costs associated with repairing or replacing damaged R-O-W fence fabric, posts, cross members, fittings, and mounting hardware, and removing damaged material. Mobilization of the guide rail crew is an additional cost.
MOBILIZE GUIDE RAIL CREW	EACH	Includes travel time to and from the accident site, and erection and removal of work zone traffic control.
MOBILZE SIGN CREW	EACH	Includes travel time to and from the accident site, and erection and removal of work zone traffic control.
NO DAMAGE AT THIS SITE	SITE	Use when there is little or no damage or when damage is insignificant to the point where no repairs are warranted.
NO CHARGE-DE MINIMUS	SITE	Use when county elects not to bill
NO CHARGE-LOGO SIGN	SITE	Use when the sign is owned by the PA Tourism Trust Fund (Logo Signing).
NO CHARGE- HISTORICAL MARKER	SITE	Use when the sign is owned by the PA Historic and Museum Commission.
NOT DEPARTMENT PROPERTY	SITE	Use when the damaged property is owned by a municipality, utility, or another entity other than the Department of Transportation.
TRAFFIC CONTROL/ACCIDENT CLEANUP/OTHER ACTIVITIES NOT LISTED ABOVE	SITE	Use actual labor, material and equipment costs for any activities not covered above, or when extraordinary conditions exist which make the unit costs impracticable. Charging actual Department force costs is at the county's discretion. The current payroll additive should be applied to all labor rates.

#### **NOTES:**

- 1. Unit costs are to be used for department force work only.
- 2. Actual contract costs should be used whenever the repairs are completed by contract.
- 3. Estimated contract costs should be used whenever the repairs are to be completed by contract.
- 4. Actual costs may be used in lieu of unit costs for any activity at the county/district's discretion.
- 5. The current payroll additive shall be applied to all department employees' actual hourly rate.
- 6. Actual costs are legal measures of damage and are preferred over estimated costs.
- 7. Estimated costs may be used in lieu of actual costs in order to bill within 90 days of the creation of the notification.

#### 14.6 SPECIAL DAMAGE CLAIMS

Special damage claims may involve repairs that necessitate the maintenance of detailed records with individual project control. Special damage claims generally include, but are not limited to, repair activities not described in Section 5.

Examples of these activities may be the repair of a damaged pedestrian overpass, replacement of a damaged bridge beam, replacement of an overhead-lighted expressway sign, repair of buildings, repair of tunnel lighting, etc.

Special damage claims may, in certain instances, include items included in unit cost activities.

The person causing the accident, and the insurance carrier, are entitled to a complete explanation of all expenses. The more clearly the claim is presented at the outset, the more likely it will be paid in full without the necessity of time-consuming litigation. In addition, if the claim is well documented from the beginning, it is much less costly for the department to prove its loss in court should litigation be required.

The district shall compile the necessary documentation described in this section.

A clear copy of the police accident report should be obtained. Names, titles, and phone numbers of any department employee who witnessed the accident damage shall be recorded and made part of the file. If the accident is a non-reportable, a written summary by the district or county shall be added since the non-reportable accident report form provides few details.

Photographs shall be included with all claim files. Photographs have a very significant effect in convincing insurance companies to reimburse the department for its damages. The district or county shall take photographs from various angles as soon as possible after the damage occurs and as soon as possible after repairs have been completed. Photographs should also be taken during repairs, if possible.

A digital or 35mm camera should be used because it is much easier to make copies and enlargements for court use. The negatives shall also be made part of the file. A brief explanation of the photographs (including date, location, and the name of the person taking the photos) shall be written on the prints or on a paper accompanying them.

When a special damage claim involves bridge damage, a copy of the preliminary bridge damage report shall be made part of the file. A copy of the most recent bridge inspection report prior to the accident shall also be made part of the file. The bridge inspection report is confidential and shall not be released.

The preliminary bridge damage report shall be completed by the district bridge unit for any bridge that is damaged in accident, and the projected cost to repair the damage is likely to exceed \$50,000.

The district damage claim coordinator shall document of all costs relative to all expenses incurred because of the accident and forward to the DRU in the form of a repair cost report within 90 calendar days of the completion of the work.

## 14.7 UNKNOWNS AND HIT-AND-RUNS

The county shall complete the RA notification for all unknowns and hit-and-run only when an accident report has been filed by the police.

For accidents that are not investigated by the police, the county may document the damage in any manner desired.

#### 14.8 CONTRACTED REPAIRS

Contracts for the repair of accident damage should be developed when it is determined that department maintenance forces cannot perform the repairs.

Estimating quantities in the bid proposal for accident damage contracts should be based on a survey of existing damage and on experience related to contracts for the repair of accident-damaged property.

Updating of highway features to meet current design standards may be included in contracts whose primary purpose is the repair of accident-damaged property. The area being updated should be identified in the contract by state route, segment and offset with precise quantity estimates prepared for these locations.

Historically, most of the item amounts paid on accident damage contracts are for standard construction items. Standard construction items should be used to promote uniformity in bids because these items allow the vendor to be more familiar with the type of work being bid; thereby resulting in more bids that are competitive.

#### 14.9 BILLING PROCEDURES

The BOMO shall review all data entry on the RA notification for general conformance with established procedures, tort exposure, and content that is understandable by a layperson. If the RA notification meets the above criteria, the BOMO shall bill or close the claim as warranted.

The BOMO shall update debtor information and reverse transactions in SAP Accounts Receivable when warranted.

#### 14.10 COLLECTION ACTION

A receivable account is established in SAP Accounts Receivable for all accident damage claim invoices through an interface with SAP Plant Maintenance.

The Office of Chief Counsel or the Office of Attorney General may authorize a payment schedule for a particular invoice if they perceive that it will be unlikely that the department will be able to collect any monies due without such action.

The Office of Chief Counsel or Office of Attorney General may compromise a particular invoice if they perceive that it will be unlikely that the department will be able to collect all monies due.

The DRU may revise or reverse an invoice if, in its judgment, there is a difficulty in substantiating the invoice, likelihood of previous or subsequent accidents, insufficient documentation, lack of negligence, or any other factor it determines applicable.

No allowance shall be made for depreciation or betterment. Pennsylvania law measures damage to public service structures as the cost of reproduction without regard to depreciation or betterment. The cost of reproduction, not a fractional cost based on the age of the structure, is the proper measure of damage.

The DRU may execute releases for full settlement of the Department's claim.

The debtor shall be dunned periodically. The BOMO may request to hold a claim in abeyance if it determines conditions warrant.

#### 14.11 RETENTION OF RECORDS

Records shall be retained in accordance with Publication 527, PennDOT Records Management Program. Records not addressed in Publication 527 may be retained at-will.

#### 14.12 INQUIRIES

The DRU may receive inquiries from the debtor or the debtor's agent or insurance carrier. All inquiries shall be submitted via postal or electronic mail in order to preserve the integrity of the inquiry.

Inquiries regarding the identification, location, or extent of damage billed may be referred for investigation, comment, or action from the DRU to the district, county, or Equipment Division. The DRU may, in its discretion, direct the county, district, or Equipment Division to respond directly to the debtor or the debtor's agent.

The DRU may answer inquiries regarding liability and case law or, in its discretion, refer those inquiries to the Office of Chief Counsel.

# CHAPTER 15 WEIGHT RESTRICTIONS ON HIGHWAYS (Posted Highways)

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#### 15.1 INTRODUCTION

Many of the Commonwealth's older secondary and rural highways were not designed to support the heavy truckloads they presently carry; consequently, many of these highways are being badly damaged. The department requires the heavy haulers, not the general taxpayer, to be financially responsible for excessive maintenance on the highways they use. In this way, the department can maintain its rural highway system for simultaneous use by both passenger vehicles and heavy haulers.

This chapter applies to the posting of weight restrictions on state designated highways based on the condition of the highway as authorized by the Vehicle Code in 75 PaCS §4902(a) and 67 Pa. Code, Chapter 189, Hauling in Excess of Posted Weight Limits.

This chapter does not apply to restrictions based on traffic conditions as authorized under §4902(b) of the Vehicle Code, nor to bridges posted indepen—dently of highways.

This chapter rescinds all previously policy and procedure letters, memoranda, and directives prevously published.

#### **DEFINITIONS**

The following words and phrases when used in this chapter shall have, unless the context clearly indicates otherwise, the meanings given to them in this section:

*Bureau* - The Bureau of Maintenance and Operations of the Department of Transportation.

Commercial Establishment - Black's Law Dictionary, relying on case law, defines commercial establishment as "a place where commodities are exchanged, bought or sold." The term applies to operations offering goods or services and includes, but is not limited to such operations as stores, shopping centers, office buildings, hotels and motels, real estate agencies, service stations and banks. Generally, it does not include activities involving agriculture, industry or extraction and development of natural resources (for example, dairies, canneries, factories, mines, oil and gas fields, sawmills, utility plants and landfills) unless there is retail resale of a product on the site, such as dairy products or lumber.

County - The maintenance district plant.

*Department -* The Pennsylvania Department of Transportation.

District - The engineering district plant.

Emergency Vehicle - A fire department vehicle, police vehicle, ambulance, blood delivery vehicle, armed forces emergency vehicle, one vehicle operated by a coroner or chief county medical examiner and one vehicle operated by a chief deputy coroner or deputy county medical examiner used for answering emergency calls, one private vehicle of a fire or police chief or assistant chief or, when a fire company has three or more fire vehicles, a second assistant chief, or fire police captain and fire police lieutenant or ambulance corps commander or assistant commander of a river rescue commander or a assistant commander or emergency management coordinator or fire marshal used for answering emergency calls or other vehicle designated by the State Police under 75 PaCS §6106 (relating to designation of emergency vehicles by Pennsylvania State Police).

Engineering and Traffic Study - An orderly examination or analysis of physical features and traffic conditions conducted in accordance with 67 Pa. Code, Chapter 212, and conforming to generally accepted engineering standards and practices for the purpose of ascertaining the need or lack of need for a particular action by the department.

Excess Maintenance - Maintenance or restoration or both (but not betterment) of a posted highway in excess of normal maintenance caused by use of overposted weight vehicles. Figures 15.1.1 through 15.1.3 offer charts contrasting normal and excess maintenance.

Preventative Maintenance – Maintenance or restoration or both (including betterment) of a posted highway beyond and above excess maintenance.

*May* - Indicates that an action is permitted but not required.

Normal Maintenance - The usual and typical activities necessary to maintain the roadway, shoulder, and drainage facilities in their current state. Figures 15.1.1 through 15.1.3 offer charts contrasting normal and excess maintenance.

Over-posted-weight-vehicle – A vehicle or combination having a gross weight in excess of a posted weight limit.

Preventative Maintenance – Maintenance or restoration or both (including betterment) of a posted highway beyond and above excess maintenance.

*Shall* - Indicates that an action is required or mandatory.

*Should* - Indicates that an action is recommended but not required.

*Traffic Route* - A highway that has been assigned as an Interstate, United States, or Pennsylvania numbered traffic route.

*User* - A natural person, firm, partnership, association, or corporation who is responsible for the operation of over-posted-weight vehicles on posted highways.

	FIGURE 15.1.1	1
ON	NORMAL MAINTENANCE VS EXCESS MAINTENANCE ON PAVED HIGHWAYS	TENANCE ON PAVED HIGHWAYS
ACTIVITY	NORMAL MAINTENANCE *	EXCESS MAINTENANCE
Pothole patching	No patching required until 3 years after a roadway has been scratched and seal coated; otherwise, when needed but not more than once a year.	Pothole or wheel depressed areas after roadway has been scratched and seal coated within a 3 year period; otherwise, when needed but usually not more than once a year.
Shoulder cutting or grading	3 to 4 year cycle.	Anything more often than 3 to 4 year cycle. Shoulder build-up due to USER's truck running off edge of pavement. Shoulder cutting or grading due to roadway being pushed down.
Inlet and ditch cleaning	As needed due to gradual sediment.	As needed due to run-off from user's approach, shoulder deterioration arising from user's trucks running on shoulders, ditches pushed shut by user's trucks riding on shoulders.
Pipe replacement	When pipe wears out (25-30 years).	Pipe crushed or damaged due to user's heavy hauling activities.
Pipe flushing	As needed due to gradual build-up of debris.	As needed due to run-off from user's approach, shoulder deterioration arising from user's trucks running on shoulders, pipe blocked as result of user's trucks riding on shoulders.
* The Department shall exercis	* The Department shall exercise discretion and evaluate individual circumstances based on overall road uses.	based on overall road uses.

NOR	FIGURE 15.1.2 NORMAL MAINTENANCE VS EXCESS MAINTENANCE ON STABILIZED HIGHWAYS	.1.2 TENANCE ON STABILIZED HIGHWAYS
ACTIVITY	NORMAL MAINTENANCE *	EXCESS MAINTENANCE
Grading and Shaping	Spring and Fall. Material to stabilize.	Grading and shaping beyond normal maintenance.
Dust Palliative	Once a year (in front of house).	Anything more often than once a year.
Inlet and Ditch Cleaning	As needed due to gradual sediment.	As needed due to run-off from user's approach, shoulder deterioration arising from user's trucks running on shoulders, ditches pushed shut by user's trucks riding on shoulders.
Pipe Replacement	When pipe wears out (25-30 years).	Pipe crushed or damaged due to user's heavy hauling activities.
Pipe Flushing	As needed due to gradual build-up of debris.	As needed due to run-off from user's approach, shoulder deterioration arising from user's trucks running on shoulders, pipe blocked as result of user's trucks riding on shoulders.

 $^{*}$  The Department shall exercise discretion and evaluate individual circumstances based on overall road uses.

15.1.3 AINTENANCE ON PAVED HIGHWAYS LIZED HIGHWAYS	EXCESS MAINTENANCE	Dust oil entire length as needed.	As needed.	As needed due to run-off from user's approach, shoulder deterioration arising from user's trucks running on shoulders, ditches pushed shut by user's trucks riding on shoulders.	Pipe crushed or damaged due to user's heavy hauling activities.	As needed due to run-off from user's approach, shoulder deterioration arising from user's trucks running on shoulders, pipe blocked as result of user's trucks riding on shoulders.	ances based on overall road uses.
FIGURE 15.1.3 NORMAL MAINTENANCE VS EXCESS MAINTENANCE ON PAVED HIGHWAYS REVERTED TO STABILIZED HIGHWAYS	NORMAL MAINTENANCE *	Not applicable.	Not applicable.	As needed due to gradual sediment.	When pipe wears out (25-30 years).	As needed due to gradual build-up of debris.	* The Department shall exercise discretion and evaluate individual circumstances based on overall road uses.
ž	ACTIVITY	Dust Palliative	Grading and Shaping	Inlet and Ditch Cleaning	Pipe Replacement	Pipe Flushing	* The Department shall exerc

#### 15.2 POSTING PROCEDURES

#### **ENGINEERING AND TRAFFIC STUDY**

The county or district may recommend the posting of a highway. The district is responsible for approving the posted weight restriction.

No highway shall be posted unless an engineering and traffic study has been conducted. Weight limits should be posted in 5-ton increments for uniformity.

#### CRITERIA FOR RESTRICTION

Traffic may be prohibited or restricted when any of the following exists:

- (1) The highway pavement or shoulders have been weakened due to deterioration, high traffic volumes or climatic condition, and a pavement analysis or engineering judgment indicates that it may be seriously damaged unless certain weight vehicles are prohibited.
- (2) The highway has inadequate turning radii, horizontal width or under clearance at one or more locations.
- (3) An analysis of previous climatic conditions indicated that certain weight vehicles should have been prohibited from the highway.

#### **SEASONAL POSTING**

Seasonal postings should be considered. In cases when permanent postings may cause serious economic hardships which could be relieved by seasonal postings, the district should be receptive to petitions by users requesting a change from permanent postings to seasonal postings; however, the final determination of whether the posting will be seasonal or permanent lies with the district.

#### POSTING OF TRAFFIC ROUTES

The posting of traffic routes is discouraged. When a traffic route is posted, an alternate route should be established in accordance with 67 Pa. Code, Chapter 212.

#### ADVANCED NOTICE OF POSTINGS

The district should publish an advance notice of the posting by press release to target general circulation in the county in which the highway is located. Whenever possible, the notice should be published a minimum of five business days prior to the posting to extend the users an opportunity to choose alternate routes or to begin negotiations with the department. Additionally, the district should contact any known users concerning the possibility of executing an agreement or choosing an alternate route. If active hauling operations are causing deteriorations to the roadway, signing for posting the weight restrictions should be posted immediately. The published notice to the public should then state the road has been posted.

#### NOTIFICATION OF STATE POLICE

In order to enhance State Police involvement, the district shall forward written notification of the items shown below to the troop commander.

- (1) Each new posting
- (2) At periodic intervals (no less than quarterly), a printout listing active agreements and permits.
- (3) Local traffic that has been determined as likely to damage the highway and that is now required to enter into an agreement.

## ENFORCEMENT OF POSTED WEIGHT LIMITS

The district and county shall randomly check the posted highway to determine if any overposted-weight-vehicles are violating the posted weight limit. The district shall report possible violations to the State Police for enforcement.

#### CHECKLIST FOR POSTING

- 1. Anticipate influx of heavy hauling.
- 2. The county or district recommends the posting of a highway.
- 3. Engineering and traffic study conducted and documented on summary sheet.
- 4. District approves posting.
- 5. Consideration given to seasonal posting.
- 6. Known users contacted concerning entering into an agreement or choosing an alternate route.
- 7. Public notice placed in press release.
- 8. State Police notified.
- 9. Signs erected.

## 15.3 EXCESS MAINTENANCE AGREEMENT

#### **COOPERATIVE AGREEMENT**

The district or county representative should propose to the user(s) the possibility of entering into a cooperative agreement for rehabilitation of the structural capacity of the highway to that extent which would negate the need of a weight restriction and, therefore, negate the need for an excess maintenance agreement. There is, however, no guarantee that the highway will not be posted in the future if conditions warrant. If future conditions warrant posting, a cautious approach and guidance from the Office of Chief Counsel are recommended before proceeding.

## STANDARD EXCESS MAINTENANCE AGREEMENTS

The latest version of the excess maintenance agreement can be found in Section 15.8.

## SUPPLEMENTAL EXCESS MAINTENANCE AGREEMENTS

Any revision to an excess maintenance agreement for the purpose of modifying or deleting a roadway requires the preparation and processing of the supplemental agreement located in Section 15.8.

To determine the proper number for the supplemental agreement, a letter is added to the excess maintenance agreement number (i.e. the first supplemental agreement for agreement 999999 would be designated 999999A, the second supplement would be designated 999999B, etc.)

#### **TYPE OF PERMITTEE**

Once it is determined that an excess maintenance agreement is required, the district shall decide whether the agreement is to be for a specific posted highway (Type 1 or Type 2 permittee) or countywide (Type 3 permittee).

#### **MULTIPLE USERS**

The number of users of a posted highway dictates the complexity of the negotiations. In a situation where a single user is involved, the district's side of the negotiations shall be confined

to a statement of the department's policy and a presentation of the excess maintenance agreement.

In those cases where multiple users exist, the district should first suggest to the users that they attempt to reach an understanding among themselves that may require only one of the users to execute an excess maintenance agreement, and the other user(s) involved in the arrangement would cooperate on the executed agreement. This cooperative arrangement would involve the district executing an excess maintenance agreement with only one of the users in question and then billing only that user for the excess maintenance damages accrued on the posted highway under agreement. That user would be responsible for distributing copies of the agreement's hauling permits to the other users involved and obtaining reimbursement from those same users for their arranged share of any invoiced damages.

The district should propose the use of production volumes as a reasonable basis to share costs among users. For example, a user who transports 40% of the total production volume over a posted highway shall be responsible for 40% of the cost to maintain and restore the highway. The district shall allow the users to determine the percentages of responsibilities themselves. This approach may reduce the problems associated with the preparation of agreements. It is advisable not to be present during this phase of negotiations. During the course of negotiations, one or more of the users may propose alternatives to production volumes. If this situation occurs, the district shall clearly state that the department does not oppose workable alternatives and is concerned only with the protection of highway facilities.

In the event that the users cannot reach an understanding on the assignment responsibilities among themselves, the district shall notify the users that each user must enter into a separate excess maintenance agreement. The district shall use production volumes as the basis for sharing costs. The share of total damage costs assessed to each user shall be in direct proportion to their percentage of the total tonnage hauled by the multiple users on the posted highway under agreement. Multiple users should be alerted of the need to keep track of their tonnage hauled and load counts.

Whenever one of the multiple users wishes to terminate his excess maintenance agreement, or an additional user executing an agreement is added to the situation, a roadway inspection must be performed to assess the total excess maintenance damage incurred to that point since the last inspection. Under Option A, all of the users in question are then billed for their appropriate share of the total damage costs; therefore, at that point, all the damage and hauling figures are effectively reset to zero. Under Option B, to properly zero out the documented damage figures, all of the users in question would participate in repairing the excess damages.

#### **ADDITIONAL USERS**

If later, an additional user desires to haul on a posted highway already under agreement, the district should notify all interested users. All excess maintenance damage documented on the new bonded user's preliminary inspection is the responsibility of the existing users.

#### LEVEL OF MAINTENANCE

Once the responsibility for a posted highway is determined, the next step shall be to clearly define the level of maintenance and restoration to which the user shall be held liable. The user may request to either maintain the highway to a level consistent with the existing road type as established at the start of negotiations or maintain the highway to a level lower than the existing road type as established at the start of negotiations and, at the termination of the agreement, restore the highway to a level consistent with the existing road type as established at the start of negotiations. The final determination of the level of maintenance and restoration shall be made by the district. Crosssections for Federal Surface Type Codes depicting the level of maintenance and restoration shall be attached to the excess maintenance agreement as a schedule.

#### MAINTENANCE AND RESTORATION

The next step is to determine the method of maintenance and restoration. Maintenance and restoration may be completed by:

- the department and/or its contractor (Option A) or
- (2) the user and/or its contractor (Option B).

#### **INSURANCE**

In those cases where the user or its contractor performs the work, the user must provide either the department's certificate of insurance or the insurance industry's standard certificate of insurance. The coverage shall provide public liability insurance for bodily injury and property damage in minimum amounts of \$250,000 per person and \$1,000,000 per occurrence. Forty¬-five days advance notice must be provided to the department to cancel the policy before its expiration date. The department shall be named as an additional insured. The certificate of insurance shall be incorporated in the excess maintenance agreement as an exhibit. Self-insurance shall not be an acceptable option for the user. If the user cannot or will not obtain liability insurance coverage, maintenance and restoration shall be completed by the department and/or its contractor.

#### **SECURITY**

The user shall be required to provide security in the form of an irrevocable letter of credit or performance bond in favor of the department in the amount specified in 67 Pa. Code, Chapter 189 to assure compliance with the terms and provisions of the excess maintenance agreement. The security shall be incorporated in the excess maintenance agreement as an exhibit.

#### RELEASE OF SECURITY

All associated invoices must be paid in full by the user and all associated obligations must be satisfactorily completed before the security can be released and returned to the user.

## TERMINATION OF LETTER OF CREDIT SECURITY

To avoid using department funds to repair excess maintenance damages covered by a Letter of Credit security, the district shall take the following action whenever a 60-day termination notice is received:

1. Immediately perform an inspection of the bonded road section to determine the costs for completing excess maintenance repairs. If the road cannot be repaired immediately, a thorough estimate of the repair costs shall be completed.

2. If the USER has not met his obligations, a formal submission shall be made prior to the expiration date of the Letter of Credit. The contents of the formal submission must conform exactly to the requirements of the Letter of Credit. In most cases, this entails giving the bank and the heavy hauler ten days' written notice of the Department's intention to present a claim, in addition to presenting the copy of the Letter of Credit and a certification statement to the bank. The certification statement must be signed by the district executive and state that the hauler has failed to pay for the repairs. This documentation must be submitted along with copies of invoices and work backup or a detailed estimate if the work has not been performed. If the hauler challenges the cost of repairs or if the bank feels that the submission was not made in strict conformance with the Letter of Credit, the department will have an opportunity to correct any problems and retain the right to collect the Letter of Credit after it 3. If the permittee has selected Option B (repair of the road by the hauler), the district shall give the hauler immediate notice that the road must be repaired. If the permittee does not repair the road to the department's satisfaction immediately upon receipt of the district's notice, the department's rights under the excess maintenance agreement shall be exercised, and the district should restore the roadway on its own.

4. The district shall demand additional security and cancel the excess maintenance agreement if none is provided. The department is under no obligation to allow a bankrupt permittee to continue hauling without new security.

#### REPLACEMENT OF SECURITY/SURETY

Periodically, the need may arise for a user to replace the security associated with an excess maintenance agreement. The proposed replacement shall be submitted to the Office of Chief Counsel for review and approval.

#### AGREEMENT NUMBER

The district shall note the six-digit agreement number in the appropriate area of the excess maintenance agreement. The agreement number shall be assigned as follows.

### ASSIGNMENT OF AGREEMENT NUMBER

Agreement number = 8 X X Y Y Y where, the first position is always "8" (identifies the agreement as "excess maintenance") the second and third positions (xx) are reserved for the legislative county code (i.e.,17 for Clearfield County, 32 for Indiana County, 64 for Westmoreland County, 66 for York County, etc.). the fourth through sixth positions (yyy) are reserved for gain the lead over sequential number assigned by the district (i.e., 001 for the first excess maintenance agreement for that particular county, 002 for the second excess maintenance agreement, etc.).

#### ROADWAY INSPECTIONS

The user shall not be liable for any existing damage to the posted highway unless this damage can be thoroughly documented. The district shall conduct an initial on-site inspection of the posted highway and shall incorporate this memorandum of inspection as an exhibit to the agreement for Type 1 and Type 2 only. A documented onsite inspection is initiated for either an excess maintenance agreement or a hauling permit.

#### AGREEMENT RETENTION

The district office shall maintain each original excess maintenance agreement during the time it inactive and for an additional two years after the agreement is terminated. Two years after its termination, the agreement shall be place in the district office's archives an additional seven years

#### **TYPE 3 PERMIT**

Negotiations relating to a Type 3 permittee shall be confined to a presentation by the district of the agreement (Form M¬4902CW) and a statement of the department's policy. The district shall enter into this type of agreement only when it determines this option feasible. Since this agreement is effective for county¬wide travel, there exists the possibility that the Type 3 permittee will travel on a particular posted highway that is currently under agreement by one or more users. In these situations, all users should be informed that an inspection shall be made immediately prior to and after each operation and

that the Type 3permittee shall pay the costs of these inspections. The Type 3 permittee shall be liable for the cost of repairing their portion of any damage to the highway caused by itself during their use of the posted highway.

## ENFORCEMENT OF EXCESS MAINTENANCE AGREEMENTS

The district or county should make a windshield review of the highway under Type 1 or Type 2 agreement at least once each thirty days in order to determine if the highway is showing signs of deterioration and if maintenance or restoration of the highway has been performed. No written inspection reports are required if the highway is not in need of repairs.

If the highway is deteriorating and maintenance or restoration work has not begun in accordance with the excess maintenance agreement, the district shall notify the user in writing of its contractual obligations.

When the user or its contractor does not begin maintenance or restoration within five business days of written notification, the district should revoke the user's permits and notify the State Police of the revocation until the user satisfactorily fulfills his obligations. The district should notify the user in writing that the department shall proceed to repair or restore the highway by department maintenance forces and/or department contractor and bill the user accordingly. The user must reimburse the depart¬ment before the permits are reissued.

If the user is unable to maintain or repair the highway because of the season of the year, the district may request additional security from the user in an amount equal to the extent of damage exceeding 60% of the face value of the existing security. The additional security should be returned to the user when the repairs are satisfactorily completed. Under emergency situations as determined by the district (in its discretion) to be hazardous to the public, the user shall receive telephone notification to effect corrective action immediately. The telephone notification should be properly documented. If the user fails to comply, the district shall affect repairs by department maintenance forces and/or department contractor and bill the user accordingly.

The district or county should conduct onsite inspections of projects being performed by the user or its contractor to insure that materials and work meet department standards.

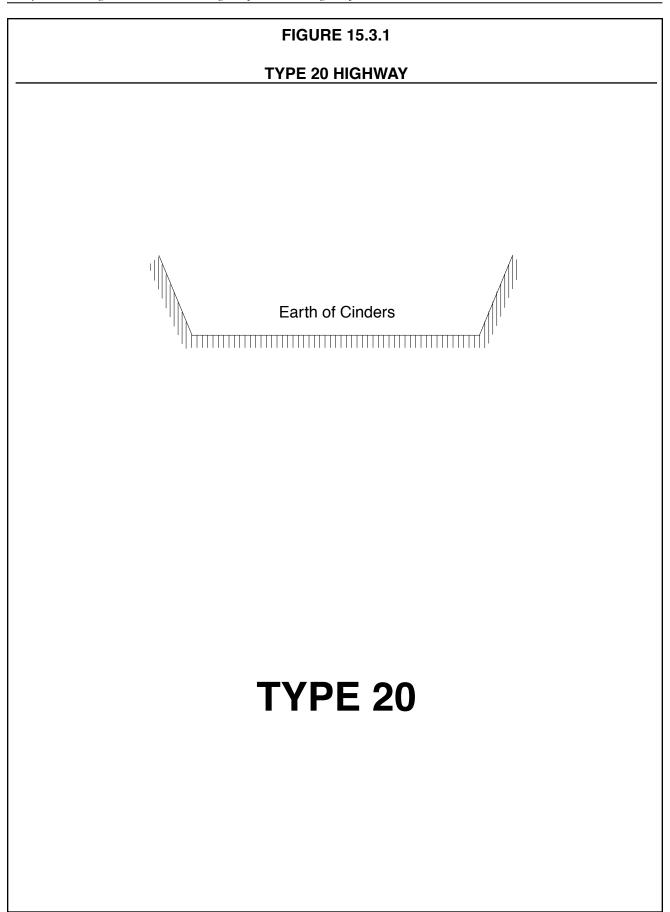
The district should proceed to invalidate any permits where the user has outstanding invoices more than 60 days old.

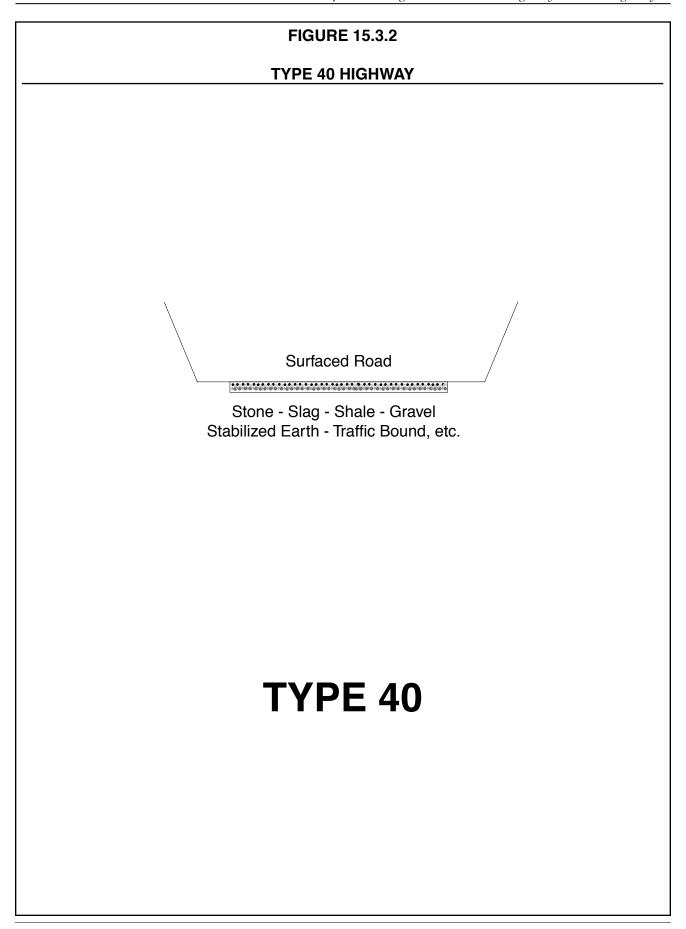
Upon default, the district shall notify the user and its surety in writing that a final inspection shall be made. Both parties may attend this inspection; however, failure of either the user and/or its surety to attend the final inspection shall not discharge either party from its contractual obligations. If the user fails to comply with the provisions set forth in the agreement and has concluded its operations on the particular highway covered by the agreement, the department has the option of rescinding the user's permission to haul over-posted-weight vehicles over and across any posted state highway. The district shall not implement this option without first contacting the Office of Chief Counsel.

## CHECKLIST FOR ENTERING INTO AN AGREEMENT

- 1. District contacts user or user contacts district.
- 2. Obtain following information:
- (a) Company name or corporation name (as it appears on their corporate seal)
- (b) Mailing address
- (c) Federal Identification Number or Social Security Number
- (d) Telephone number and contact person
- 3. Determine type of agreement. (determined generally by the type of heavy hauling operation.)
- 4. Determine who is to do maintenance.
- (a) If user chooses the department (Optional), explain procedure for work and basis of payment for any damages that may be incurred.
- (b) If user chooses to perform maintenance itself (Option B), explain insurance requirements, hold harmless and work specifications.
- 5. Explain any charges (permit and inspection).
- 6. Explain preliminary inspection procedure. (If use of posted highway is required immediately, arrange preliminary in—spection at this time.)
- 7. Determine amount and type of security.
- 8. Complete agreement to extent possible and forward to user to execute and return. User must provide security (in all cases) and certificate of insurance (only if Option B was selected).

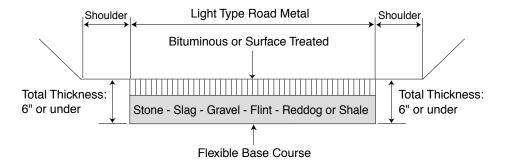
- 9. Review agreement for accuracy. Insure all exhibits and schedules are attached.
- (a) Type and purpose sheet
- (b) Schedule of typical cross sections
- (c) Exhibit A Form of security
- (d) Exhibit B Memorandum of inspection
- (e) Exhibit C Certificate of insurance (only if Option B was selected)
- 10. Assign agreement number. (8xxyyy)
- 11. Issue permit (Form M-4902A number assigned by district).
- 12. Forward original agreement and all exhibits and schedules together with three copies and a type and purpose sheet, and arousing slip to the Office of Chief Counsel.
- 13. Forward a copy of the approved agreement to the user. Maintain the original approved agreement at the district office.



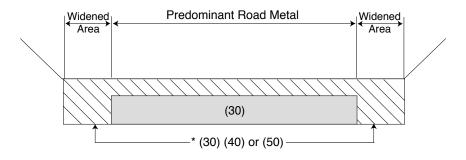


#### **FIGURE 15.3.3**

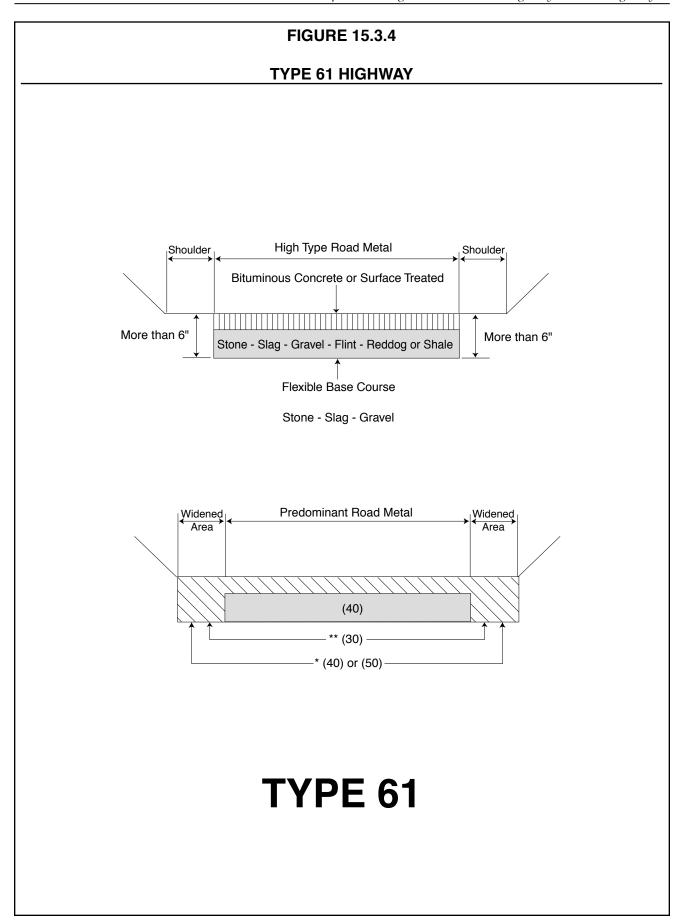
#### **TYPE 52 HIGHWAY**

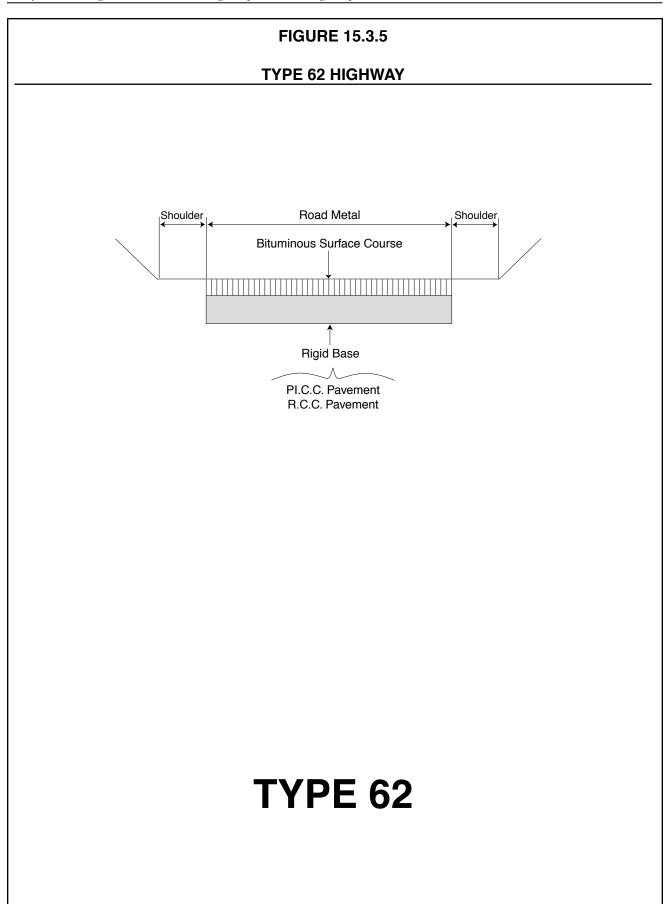


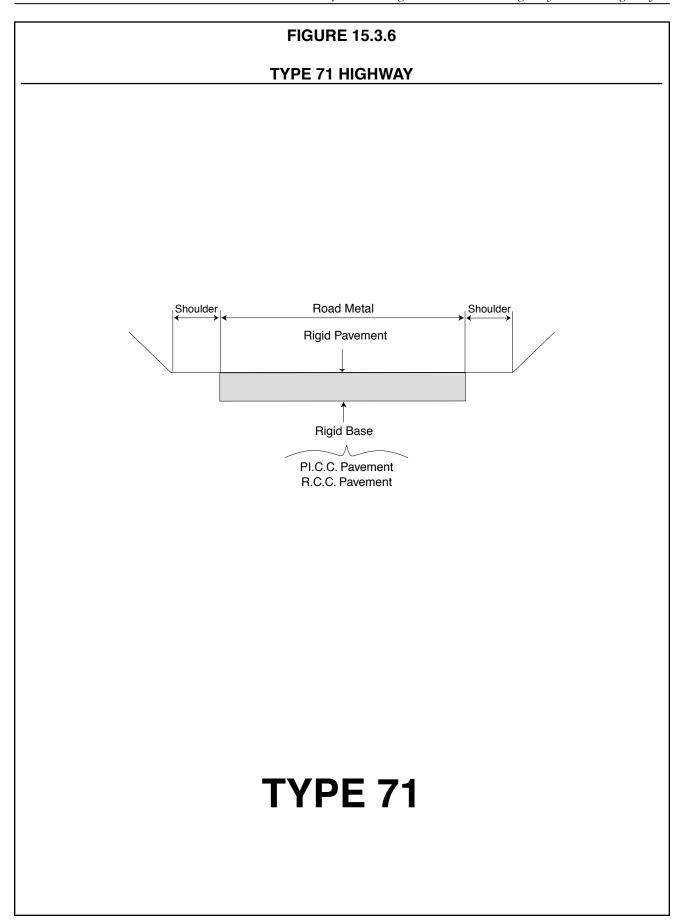
Roads with Flint, Reddog, Shale Base or any run of Bank Material or more than 6" Total Thickness, still remain Type (52)



## **TYPE 52**

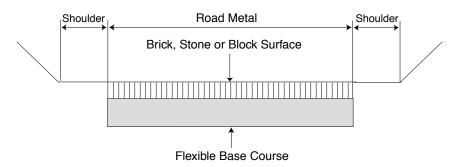




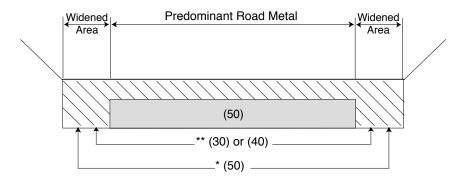


#### **FIGURE 15.3.7**

#### **TYPE 80 HIGHWAY**



Block Surface consists of Wood or Asphalt Blocks



## **TYPE 80**

#### 15.4 USE UNDER PERMIT

#### **AUTHORIZATION**

Immediately after the effective date of the agreement (the date of the initial inspection), the district shall forward a completely executed FormM-4902A, Authorization to Exceed Posted Highway Weight Restrictions, to the user for its signature and distribution. The district shall determine its own permit numbering system.

#### **TEMPORARY PERMITS**

The issuing of a "temporary permit" is an option the district may use; however, it is not mandatory. Before choosing this option, the following precautions shall be taken. The district shall require that an approved form of security be provided before a "temporary permit" is issued. If the approved security cannot immediately be obtained, the district shall require the user to provide a certified check or some other acceptable form of collateral to be returned upon receipt of the approved security before a "temporary permit "can be issued.

The memorandum of on–site field inspection may serve as a temporary permit provided the temporary permit information is included in the memorandum. The "temporary permit" should be valid for ten days from the date of the inspection, thus allowing the user to conduct its business interests immediately while a Form M¬4902A is being prepared.

#### **ISSUANCE OF PERMITS**

All permits shall be issued in accordance with the instructions contained in the Special Hauling Permit Manual and guidelines contained in this section.

#### **ENFORCEMENT**

The user is responsible for controlling its permit and may provide a copy of its permit to whomever it authorizes to use the posted highway; therefore, it is not necessary for the district to validate permit copies (e.g., stamp the copy with red ink, etc.). If complaint is received regarding unauthorized use, counterfeiting or misuse of a permit, the district should refer the matter to the state or local police.

#### **SPECIAL HAULING PERMIT (FORM 936P)**

Special hauling permits do not supersede any

lesser weight limits posted on highways under the authority of Section 4902 of the Vehicle Code.

In those cases where the applicant for a special hauling permit wishes to travel over a posted highway, the district shall determine whether the vehicle should be rerouted around the posted highway. If an alternate route is available, the vehicle should be rerouted. If an alternate route is unavailable, the district shall determine the need for an excess maintenance agreement.

#### 15.5 SELF-BONDING

The department shall not accept self-bonding as a form of security. The preferred sureties are performance bond or irrevocable letter of credit.

#### 15.6 INSPECTION COSTS

#### **RESPONSIBILITY OF USER**

The user shall be responsible for the costs of the initial and final inspections and may be responsible for the costs of reinspections (see the subsection entitled "Reinspection" under this section). In the event of a Type 3 permit, all related inspection costs shall be paid solely by the Type 3 permittee.

## PRELIMINARY AND FINAL INSPECTIONS

The user shall be notified of the inspection and may participate in the inspection. The user shall receive a copy of the inspection report. The user shall be charged the actual cost of the inspection. If more than one user is involved in an inspection of the same section of highway, the inspection costs shall be divided equally among the users.

The District may elect to charge the user for both the preliminary and final inspection costs at the time of the preliminary inspection (Total due = preliminary inspection fee X 2).

If a reasonable alternate route is available, the user shall be given the option of using the alternate or bonding and traveling the length of the posted highway.

#### REINSPECTION

The user shall be billed for the actual cost of any reinspections other than "drive-by" or "windshield" inspections. The district shall

forward a copy of the inspection report to the user together with the invoice.

The District should notify the user (whenever possible) of any non-drive-by or non-windshield reinspections and allow the user the opportunity to participate in the inspection.

#### 15.7 BILLING PROCEDURES

The user shall be billed for excess maintenance and inspections through SAP Accounts Receivable using the FB70 process.

## DETERMINING ESTIMATED REPAIR COSTS

When the season of the year does not permit necessary excess maintenance repairs to be completed, the district may calculate the estimated repair costs and bill the user.

#### **DELINQUENT ACCOUNTS**

The district may revoke the user's permit if the user is fifteen or more days delinquent.

#### **15.8 FORMS**

The following forms have been referenced in previous sections of this chapter and can be foind in this section.

- M-402A "Authorizing to Exceed Posted Highway Weight Restrictions"
- M-4902SU "Excess Maintenance Agreement Single User"
- M-4902CW "Excess Maintenance Agreement - County Wide"
- M4902 "Excess Maintenance Supplemental Agreement"

Application	NAME OF USER			PHONE	
is hereby made by	<b></b>				
Address	STREET		спу	STATE	ZIR-CODE 1
of User	<b>&gt;</b>				
This is a 1	Гуре	permit to exceed	agross	ton posted weight	restriction on t
portion(s)	of State Hig	hway(s) indicated below.			
COUN	ITY	STATE ROUTE	FROM SEGMENT/OFFSET	TO SEGMENT/OFFSET	
MOVE BEG	uns	MOVE ENDS		FEE	
	(DA	гр	(DATE)		
					1
TRUCK LIC	ENSE/ST.	LICENSE NUMBER	STATE (	OF REGISTRATION	
		1			
TRAILER L	ICENSE/ST.	LICENSE NUMBER	STATE (	OF REGISTRATION	
	igned hereby o	ertify that the data submitted is o	orrect to the best of my know	viedge and belief.	
Signature			Date:		19
& Title: X	AUTH	IORIZATION TO EXCEED P	OSTED HIGHWAY WEI	GHT RESTRICTIONS	3
& Title: X		proved subject to Section 4902 o	THE RESERVE OF THE PERSON ASSESSMENT OF THE PERSON WHEN	t forth herein or attache	d hereto. This perm
The about articular, 67 for some such articular articula	Pa. Code-Chapt orize the permit rmit shall be co e enforcing age	er 189) and subject to any special ted vehicle to exceed any legal in arried in the permitted vehicle which they (except Type 2 permits which they (except Type 2 permits which they less being driven to or from	naximum size or weight limit. ile traveling upon the highwa n authorize use of a particular	y specified above and sh	
The abc articular, 67 f does not author This per emand by the umber of over	Pa. Code-Chapt orize the permit rmit shall be on e enforcing age r-posted-weight	tted vehicle to exceed any legal married in the permitted vehicle which concept Type 2 permits which	naximum size or weight limit. ile traveling upon the highwa authorize use of a particular a common destination.)	y specified above and sh r posted highway or porti	
The abo articular, 67 f oes not author This per emand by the umber of over	Pa. Code-Chapi orize the permit rmit shall be con a enforcing age or-posted-weight	tted vehicle to exceed any legal in arried in the permitted vehicle whi incy (except Type 2 permits which t vehicles being driven to or from	naximum size or weight limit. ile traveling upon the highwa n authorize use of a particular a common destination.)  BY  FOR	y specified above and sh r posted highway or porti	on thereof by any

M-4902SU (7-04)
<i>71</i>
PENNDOT

<b>1</b>			
PENNDOT		ALTH OF PENNSYLVANIA OF TRANSPORTATION	
Permit Type			ment Number:
County:	Encerve Bate _	FID/SS Number	·
	EEMENT (SINGLE USER)		. User
	· /		of
DEFINITION			·
USER means that user who signs and	executes this Agreement		
		ne Pennsylvania Department of Transpe	ortation.
<b>Bridge</b> means any structure including track or passageway for carrying traffi supports.	supports, erected over a depression ic or other moving loads and having	an opening measured along the center	laced within this right of way.  ed to, water, highway, or railway and having a  of the roadway of more than 8 feet between  between right-of-way lines, over which the
Department has assumed, or has been		na briages, meraanig me entire widir t	between right-or-way files, over which the
	ance or restoration or both (but not be	etterment) of a posted highway (in exce	ess of normal maintenance) caused by use of
over-posted-weight-vehicles.	al and typical activities pagessary to	maintain the readway shoulders drain	age facilities, and other appurtenances in the
state of repair existing at the date of the		maintain the roadway, shoulders, drain-	age facilities, and other appurtenances in the
		ss weight in excess of a posted weight	limit.
Type 2 Permit - A Type 2 permi	it is valid only when carried in the U it is valid only when conspicuously of it is valid only when carried in the U	lisplayed at the USER'S place of busine	ess.
BACKGROUND The USER in the conduct of its b Department.	ousiness makes use of portions of Sta	te highways which are under the jurisd	diction, maintenance, and control of the
posted gross weight restrictions on po	rtions of these State highways.		, 75 PaCS Section 4902, the Department has
these posted State highways.	, 0	, , ,	th restrictions over and across portions of
excess of the posted gross weight restr	rictions, conditioned upon the execut	ion of an approved form of security by	chicles or combinations, together with loads, in the USER in favor of the Department to conditions, and provisions hereinafter
AGREEMENT For and in consideration of the m their successors and assigns as follows:		the parties hereto, intending to be legal	lly bound hereby, agree for themselves and
			f the posted gross weight restrictions on the 6 P.L. 162, as amended, (75 PaCS) and 67 Pa
The Department has issued the U below.	SER a Type permit to excee	d the posted gross weight restrictions of	on the portions of State Highways identified
COUNTY	STATE ROUTE	FROM SEGMENT / OFFSET	TO SEGMENT / OFFSET

2. If the USER is obtaining a Type 1, Type 2, or Type 3 permit to operate overweight vehicles on posted gross weight restricted highways that are the subject of a Type 1, Type 2, or Type 3 permit held by another firm, the respective users may agree among themselves as to their relative responsibility for the cost of excess maintenance and enter into an agreement with the Department to be billed according to their agreed upon shares. If the Users cannot agree upon on their relative responsibility, the Department will determine the relative shares and will enter into agreements with and accept security from any firm agreeing to such determination. Users that do not agree to said determination will have their permits revoked as described in the Paragraph 11 (below).

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#### **Haulers Without Permits**

3. The USER will promptly notify the Department if it becomes aware of any unpermitted haulers that are exceeding the posted weight limits on the roadways that are the subject of this Agreement.

#### Responsibility of USER

- 4. The portion(s) of State highway(s) and appurtenances shall be maintained to a level consistent with the attached cross-section(s). A copy of the cross-section(s) shall be attached to this Agreement as a Schedule and made a part hereof.
- The USER'S responsibility shall only extend to excess maintenance and restoration. The nonperformance of normal maintenance by the Department shall under no circumstances constitute grounds for an offset or credit against any excess maintenance or restoration responsibilities of the USER.

If the USER selects Paragraph 7, Option B (below), the Department shall determine, in its discretion, whether the excess maintenance and restoration are satisfactory.

#### On-Site-Inspection

5. The USER and the Department agree that, in order to determine the condition of the portion(s) of the State highway(s) and appurtenances, an on-site field inspection shall be made jointly by the Department and the USER. A memorandum shall be prepared describing the condition of State highways(s) and appurtenances together with the nature and extent of any repairs needed to correct any existing damage for which the USER will not be liable. Photographs may also be taken. The memorandum and photographs (if taken) shall be incorporated as an exhibit as part of this Agreement. All costs of this inspection shall be paid by the USER.

#### **Maintenance Not Covered**

6. The USER shall have no obligation for maintenance to remedy damage directly resulting from acts of God or war or for routine removal of snow or ice

#### Performance of Excess Maintenance and Restoration

#### OPTION A

The Pennsylvania Department of Transportation maintenance forces and/or a contractor(s) selected by the Department through its prescribed procedures. The excess maintenance and restoration shall be performed to a level consistent with that agreed to in Paragraph 4 (above). The work shall be in conformance with Department Specifications (Publication 408 and supplements thereto) and shall be supervised and inspected by Department personnel.

The Department may invoice the USER for the estimated cost of repairs using either the latest maintenance contract prices or the county's latest average monthly maintenance unit prices. These estimated costs shall be computed for all damages noted on the on-site inspection form. The USER agrees to reimburse the Department for all estimated costs.

The USER shall submit payment to the Department within 30 days from the date of invoice. If the USER fails to make the payment, the Department may in its discretion:

- 1.) Rescind the USER'S permission to move vehicles or combinations, together with loads, in excess of the posted weight restriction over and across any Department highway(s) until payment is made.
  - 2.) Terminate this Agreement.
  - 3.) Proceed against security provided pursuant to Paragraphs 8 and 14 below.
  - 4.) Any or all of the above.

#### **OPTION I**

The USER and/or its contractor(s). The excess maintenance and restoration shall be performed to a level consistent with that agreed to in Paragraph 4 (above). The work shall be in conformance with Department Specifications (Publication 408 and supplements thereto). If the USER does work he should notify the Department three days in advance of doing the work. Any excess maintenance or restoration associated with bridges shall be specifically developed in a memorandum by the Department and directed to the USER for completion. The Department reserves the right to monitor or direct any excess maintenance or restoration. The USER shall reimburse the Department for any expenses so incurred by the Department.

If performance Option B has been agreed to, the USER shall:

- 1.) Provide proper traffic protection at all times during excess maintenance and restoration. This protection shall comply with the Department's work area traffic control requirements as contained in Specification Publication 408 and supplements thereto and Pennsylvania Department of Transportation Publication 203.
- 2.) Indemnify, save harmless, and defend (if requested) the Department and its officers, agents, and employees, from all suits, actions or claims of any character, name, or description brought for or on account of any injuries, death, or damages received or sustained by any person, persons, or property, during the performance of the work on portion(s) of State highway(s) and appurtenances to be repaired, by or for the USER or its officers, agents, employees, contractors, or representatives, whether the same be due to the use of defective materials, defective workmanship, neglect in safeguarding the work or by or on account of any act, omission, neglect, or misconduct of the USER or its officers, agents, employees, contractors, or representatives, during the performance of the work.
- 3.) Provide evidence to the Department of public liability insurance for bodily injury and property damage in the minimum amounts of \$250,000 each person, \$1,000,000 each occurrence. The insurance policy shall cover any loss that might occur during the performance of any excess maintenance or restoration by the USER, or its officers, agents, employees, contractors, or representatives. The Department shall be named as an additional insured on the certificate of insurance. A copy of the certificate of insurance shall be attached to this Agreement as an Exhibit. This insurance shall neither be changed or cancelled without forty-five (45) days advance written notice of such change or cancellation. This advance written notice of change or cancellation shall be forwarded to the Department's Engineering District Office located at
- 4.) Promptly perform excess maintenance or restoration as needed. If the Department determines that the USER is not maintaining or restoring the portion(s) of the of State highway(s) and appurtenances to the level agreed to in Paragraph 4 (above), the Department will notify the USER, in writing, of this determination and the USER shall promptly perform the required excess maintenance or restoration.

Page 2

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- 5.) If the USER fails to perform the excess maintenance or restoration promptly after receipt of notice, the Department may, in its discretion:
  - a) Rescind the USER'S permission to perform excess maintenance and restoration, and to move vehicles or combinations, together with loads, in excess of the posted weight restriction over and across any State highway(s) until necessary excess maintenance and restoration are satisfactorily performed or costs thereof are paid.
  - b) Maintain or restore the portion(s) of State highway(s) and appurtenances with the USER reimbursing the Department for all costs so incurred.
  - c) Proceed against security provided pursuant to Paragraphs 8 and 14 (below)
  - d) Terminate this Agreement
  - e) Any or all of the above.

#### Security

8. To secure the performance of the USER'S obligations, the USER shall execute and deliver to the Department the following type(s) of security in the amounts as indicated:

A.	Irrevocable Letter of Credit	\$
B.	Certified Check	\$
C.	Cashier's Check	\$
D.	Bank Account	\$
E.	Certificate of Deposit (Cash Value)	\$
F.	Security Agreement	\$
G.	Performance Bond	\$
I	Other	\$

Security option(s) \_\_\_\_\_\_in the total amount of \$\_\_\_\_\_has (have) been agreed to.

This Agreement, together with the type(s) of security provided, may be filed in the appropriate prothonotary's office or other registry in a manner and at such time and frequency as the Department deems proper. The USER shall pay the costs of such filings.

A copy of the security(ies) shall be attached to this Agreement as an Exhibit(s).

#### Liability of USER

9. The USER shall be liable for all costs of excess maintenance and restoration and all other expenses incurred pursuant to this Agreement. The USER understands that the Department is under no obligation to prove that the damage was caused by the USER. The USER'S liability shall not be limited to the total amount of security shown in Paragraph 8 (above).

#### Termination

10. The USER and the Department retain the right to terminate their future obligations under this Agreement at any time by submitting a written notice of intent to terminate. As soon as possible after receipt of such notice, the Department and the USER'S representatives shall inspect the State highway(s) and appurtenances. The State highway(s) and appurtenances if Paragraph 7 Option B was elected, shall be restored to a level consistent with that agreed to in Paragraph 4 (above). Restoration shall be performed by the party(ies) agreed to in Paragraph 7 (above). Thereupon this Agreement shall be terminated and of no further force or effect and all security delivered to the Department by the USER shall be released.

#### Revocation of Permit

11. The Department may revoke the USER'S permit and may pursue whatever legal remedies it deems proper, if it determines, in its discretion, that the USER is not in compliance with any provision of this Agreement. In the event the USER has concluded its operations on any or all portions of highway covered by this Agreement, the Department may, in its discretion, revoke the USER'S permit(s) to operate on any other highway(s) under any other similar Agreement.

#### Closing of State Highways

12. This Agreement shall not prohibit the Department from closing a highway or bridge to any vehicle or combination in excess of a specific weight if such closing is authorized by law and is necessary for safety, or is a temporary closing due to climatic conditions or an act of God or war.

#### **Existing State of Repair**

13. The existing state of repair shall be the condition on the date upon which the on-site inspection memorandum is signed by the USER and the DEPARTMENT. The effective date of this agreement shall be the date when the agreement has been fully executed by both the USER and the COMMONWEALTH and this Agreement shall continue from its effective date until the date of its termination as provided for herein.

#### Additional Security and Termination

14. In addition to the Department's right of termination set forth above, the Department shall have the right to require additional security upon that date the Department determines, in its discretion, that the aggregate amount of damage to the State highway(s) exceeds 75% of the face amount of the security furnished. If additional security is required, it shall be retained by the Department until all excess maintenance and/or restorations have been completed. Failure to provide such additional security as is required shall constitute a breach of this Agreement.

#### CONTRACTOR INTEGRITY PROVISIONS

15. The USER hereby agrees to comply with the Contractor Integrity Provisions and the Provisions Concerning the Americans with Disabilities Act, marked Exhibit CIPADA, which are attached and made part of this agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement the date first above written.

Page 3

ATTEST		CONTRACTOR	
		BY	
Title:	DATE	Title:	DATE
must atlest; if a sole proprietorship, the general partner must sign. If a municipality, Authority or oth	only the owner must s er entity, please attacl	ign and the Secretary, Treasurer, Assistant Secrign; if a partnership, only one partner need sign; haresolution.	etary or Assistant Treasuren if a limited partnership, only
		COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION	
		BY	DATE
APPROVED AS TO LEGALITY AND FORM			
BY		SAP DOCUMENT NO.	
for Chief Counsel	Date	SAP FUNDSAP COST CENTER	
ВУ		GL. ACCOUNTAMOUNT	
Deputy Attorney General	Date	BY	
		Signature	Date
		Comptroller Title	
EXCESS MAINTENANCE			

#### DEFINITION

**USER** means that user who signs and executes this Agreement.

Department means the Commonwealth of Pennsylvania, acting through the Pennsylvania Department of Transportation.

**Appurtenance** means the property lying within the right-of-way of a highway, together with any improvement placed within this right of way. **Bridge** means any structure including supports, erected over a depression or an obstruction, such as, but not limited to, water, highway, or railway and having a track or passageway for carrying traffic or other moving loads and having an opening measured along the center of the roadway of more than 8 feet between supports.

**Highway** means any highway or bridge on the system of State highways and bridges, including the entire width between right-of-way lines, over which the Department has assumed, or has been legislatively given, jurisdiction.

Excess Maintenance means maintenance or restoration or both (but not betterment) of a posted highway (in excess of normal maintenance) caused by use of over-posted-weight-vehicles.

Normal Maintenance means the usual and typical activities necessary to maintain the roadway, shoulders, drainage facilities, and other appurtenances in the state of repair existing at the date of the inspection.

Over-Posted-Weight-Vehicle means a vehicle or combination have a gross weight in excess of a posted weight limit.

Type 1 Permit - A Type 1 permit is valid only when carried in the USER'S over-posted-weight-vehicle.

Type 2 Permit - A Type 2 permit is valid only when conspicuously displayed at the USER'S place of business.

Type 3 Permit - A Type 3 permit is valid only when carried in the USER'S over-posted-weight-vehicle.

#### BACKGROUND

The USER in the conduct of its business makes use of portions of State highways which are under the jurisdiction, maintenance, and control of the Department.

Pursuant to the provisions of Section 4902 of the Vehicle Code, Act of June 17, 1976, P.L. 162, as amended, 75 PaCS Section 4902, the Department has posted gross weight restrictions on portions of these State highways.

The USER wishes to move vehicles or combinations, together with loads, in excess of the posted gross weight restrictions over and across portions of these posted State highways.

The Department, pursuant to 67 Pa. Code, Chapter 189, is willing to permit the movement of the USER'S vehicles or combinations, together with loads, in excess of the posted gross weight restrictions, conditioned upon the execution of an approved form of security by the USER in favor of the Department to cover the cost of excess maintenance and restoration necessitated by the movement in accordance with the terms, conditions, and provisions hereinafter contained in this Agreement.

## AGREEMENT

For and in consideration of the mutual promises hereinafter set forth, the parties hereto, intending to be legally bound hereby, agree for themselves and their successors and assigns as follows:

## Permission to Move Vehicles

1. The Department will permit the USER to move vehicles or combinations, together with loads, in excess of the posted gross weight restrictions on the portion(s) of State highway(s) located in \_\_\_\_\_\_ County, subject to all provisions of the Vehicle Code, Act of June 17, 1976 P.L. 162, as amended, (75 PaCS) and 67 Pa Code, Chapter 189.

Described in Paragraph 1 (above), the USER has been issued a Type 3 permit to exceed the posted weight limit by the Department.

## Joint Use

2. If the USER is obtaining a Type 1, Type 2, or Type 3 permit to operate overweight vehicles on posted gross weight restricted highways that are the subject of a Type 1, Type 2, or Type 3 permit held by another firm, the respective users may agree among themselves as to their relative responsibility for the cost of excess maintenance and enter into an agreement with the Department to be billed according to their agreed upon shares. If the Users cannot agree upon on their relative responsibility, the Department will determine the relative shares and will enter into agreements with and accept security from any firm agreeing to such determination. Users that do not agree to said determination will have their permits revoked as described in the Paragraph 11 (below).

# **Haulers Without Permits**

3. The USER will promptly notify the Department if it becomes aware of any unpermitted haulers that are exceeding the posted weight limits on the roadways that are the subject of this Agreement.

Page 1

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#### Responsibility of USER

4. The portion(s) of State highway(s) and appurtenances shall be maintained to a level consistent with the attached cross-section(s). A copy of the cross-section(s) shall be attached to this Agreement as a Schedule and made a part hereof.

The USER'S responsibility shall only extend to excess maintenance and restoration. The nonperformance of normal maintenance by the Department shall under no circumstances constitute grounds for an offset or credit against any excess maintenance or restoration responsibilities of the USER.

If the USER selects Paragraph 7, Option B (below), the Department shall determine, in its discretion, whether the excess maintenance and restoration are satisfactory.

# On-Site-Inspection

5. The USER and the Department agree that, in order to determine the condition of the portion(s) of the State highway(s) and appurtenances, an on-site field inspection shall be made jointly by the Department and the USER. A memorandum shall be prepared describing the condition of State highways(s) and appurtenances together with the nature and extent of any repairs needed to correct any existing damage for which the USER will not be liable. Photographs may also be taken. The memorandum and photographs (if taken) shall be incorporated as an exhibit as part of this Agreement. All costs of this inspection shall be paid by the USER.

#### Maintenance Not Covered

6. The USER shall have no obligation for maintenance to remedy damage directly resulting from acts of God or war or for routine removal of snow or ice

#### Performance of Excess Maintenance and Restoration

7. Excess maintenance and restoration shall be performed in accordance with option below.

## OPTION A.

The Pennsylvania Department of Transportation maintenance forces and/or a contractor(s) selected by the Department through its prescribed procedures. The excess maintenance and restoration shall be performed to a level consistent with that agreed to in Paragraph 4 (above). The work shall be in conformance with Department Specifications (Publication 408 and supplements thereto) and shall be supervised and inspected by Department personnel.

The Department may invoice the USER for the estimated cost of repairs using either the latest maintenance contract prices or the county's latest average monthly maintenance unit prices. These estimated costs shall be computed for all damages noted on the on-site inspection form. The USER agrees to reimburse the Department for all estimated costs.

The USER shall submit payment to the Department within 30 days from the date of invoice. If the USER fails to make the payment, the Department may in its discretion

- 1.) Rescind the USER'S permission to move vehicles or combinations, together with loads, in excess of the posted weight restriction over and across any Department highway(s) until payment is made.
  - 2.) Terminate this Agreement.
  - 3.) Proceed against security provided pursuant to Paragraphs 8 and 14 below.
  - 4.) Any or all of the above.

## OPTION B.

The USER and/or its contractor(s). The excess maintenance and restoration shall be performed to a level consistent with that agreed to in Paragraph 4 (above). The work shall be in conformance with Department Specifications (Publication 408 and supplements thereto). If the USER does work he should notify the Department three days in advance of doing the work. Any excess maintenance or restoration associated with bridges shall be specifically developed in a memorandum by the Department and directed to the USER for completion. The Department reserves the right to monitor or direct any excess maintenance or restoration. The USER shall reimburse the Department for any expenses so incurred by the Department.

If performance Option B has been agreed to, the USER shall:

- 1.) Provide proper traffic protection at all times during excess maintenance and restoration. This protection shall comply with the Department's work area traffic control requirements as contained in Specification Publication 408 and supplements thereto and Pennsylvania Department of Transportation Publication 203.
- 2.) Indemnify, save harmless, and defend (if requested) the Department and its officers, agents, and employees, from all suits, actions or claims of any character, name, or description brought for or on account of any injuries, death, or damages received or sustained by any person, persons, or property, during the performance of the work on portion(s) of State highway(s) and appurtenances to be repaired, by or for the USER or its officers, agents, employees, contractors, or representatives, whether the same be due to the use of defective materials, defective workmanship, neglect in safeguarding the work or by or on account of any act, omission, neglect, or misconduct of the USER or its officers, agents, employees, contractors, or representatives, during the performance of the work.
- 3.) Provide evidence to the Department of public liability insurance for bodily injury and property damage in the minimum amounts of \$250,000 each person, \$1,000,000 each occurrence. The insurance policy shall cover any loss that might occur during the performance of any excess maintenance or restoration by the USER, or its officers, agents, employes, contractors, or representatives. The Department shall be named as an additional insured on the certificate of insurance. A copy of the certificate of insurance shall be attached to this Agreement as an Exhibit. This insurance shall neither be changed or cancelled without forty-five (45) days advance written notice of such change or cancellation. This advance written notice of change or cancellation shall be forwarded to the Department's Engineering District Office located at

Promptly perform excess maintenance or restoration as needed. If the Department determines that the USER is not maintaining or restoring the portion(s) of the of State highway(s) and appurtenances to the level agreed to in Paragragh 4 (above), the Department will notify the USER, in writing, of this determination and the USER shall promptly perform the required excess maintenance or restoration.

5.) If the USER fails to perform the excess maintenance or restoration promptly after receipt of notice, the Department may, in its discretion:

Page 2

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a) Rescind the USER'S permission to perform excess maintenance and restoration, and to move vehicles or combinations, together with loads, in excess of the posted weight restriction over and across any State highway(s) until necessary excess maintenance and restoration are satisfactorily performed or costs thereof are paid.

- b) Maintain or restore the portion(s) of State highway(s) and appurtenances with the USER reimbursing the Department for all costs so incurred.
- c) Proceed against security provided pursuant to Paragraphs 8 and 14 (below)
- d) Terminate this Agreement.
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#### Security

8. To secure the performance of the USER'S obligations, the USER shall execute and deliver to the Department the following type(s) of security in the amounts as indicated:

A.	Irrevocable Letter of Credit	\$
B.	Certified Check	\$
C.	Cashier's Check	\$
D.	Bank Account	\$
E.	Certificate of Deposit (Cash Value)	\$
F.	Security Agreement	\$
G.	Performance Bond	\$
I.	Other	\$

Security option(s) \_\_\_\_\_\_in the total amount of \$\_\_\_\_\_\_has (have) been agreed to

This Agreement, together with the type(s) of security provided, may be filed in the appropriate prothonotary's office or other registry in a manner and at such time and frequency as the Department deems proper. The USER shall pay the costs of such filings.

A copy of the security(ies) shall be attached to this Agreement as an Exhibit(s).

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9. The USER shall be liable for all costs of excess maintenance and restoration and all other expenses incurred pursuant to this Agreement. The USER understands that the Department is under no obligation to prove that the damage was caused by the USER. The USER'S liability shall not be limited to the total amount of security shown in Paragraph 8 (above).

#### Termination

10. The USER and the Department retain the right to terminate their future obligations under this Agreement at any time by submitting a written notice of intent to terminate. As soon as possible after receipt of such notice, the Department and the USER'S representatives shall inspect the State highway(s) and appurtenances. The State highway(s) and appurtenances if Paragraph 7 Option B was elected, shall be restored to a level consistent with that agreed to in Paragraph 4 (above). Restoration shall be performed by the party(ies) agreed to in Paragraph 7 (above). Thereupon this Agreement shall be terminated and of no further force or effect and all security delivered to the Department by the USER shall be released.

## **Revocation of Permit**

11. The Department may revoke the USER'S permit and may pursue whatever legal remedies it deems proper, if it determines, in its discretion, that the USER is not in compliance with any provision of this Agreement. In the event the USER has concluded its operations on any or all portions of highway covered by this Agreement, the Department may, in its discretion, revoke the USER'S permit(s) to operate on any other highway(s) under any other similar Agreement.

## Closing of State Highways

12. This Agreement shall not prohibit the Department from closing a highway or bridge to any vehicle or combination in excess of a specific weight if such closing is authorized by law and is necessary for safety, or is a temporary closing due to climatic conditions or an act of God or war.

## **Existing State of Repair**

13. The existing state of repair shall be the condition on the date upon which the on-site inspection memorandum is signed by the USER and the DEPARTMENT. The effective date of this agreement shall be the date when the agreement has been fully executed by both the USER and the COMMONWEALTH and this Agreement shall continue from its effective date until the date of its termination as provided for herein.

## **Additional Security and Termination**

14. In addition to the Department's right of termination set forth above, the Department shall have the right to require additional security upon that date the the Department determines, in its discretion, that the aggregate amount of damage to the State highway(s) exceeds 75% of the face amount of the security furnished. If additional security is required, it shall be retained by the Department until all excess maintenance and restorations have been completed. Failure to provide such additional security as is required shall constitute a breach of this Agreement.

# CONTRACTOR INTEGRITY PROVISIONS

15. The USER hereby agrees to comply with the Contractor Integrity Provisions and the Provisions Concerning the Americans with Disabilities Act, marked Exhibit CIPADA, which are attached and made part of this agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement the date first above written.

Page 3

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		ВУ	
Title:	DATE	Title:	DATE
If a Corporation, the President of must attest; if a sole proprietorsh the general partner must sign. If a municipality, Authority or o	ip, only the owner must s	ign and the Secretary, Treasurer, Assistant Secr sign; if a partnership, only one partner need sign; h a resolution.	etary or Assistant Treasure if a limited partnership, onl
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# COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION

# EXCESS MAINTENANCE SUPPLEMENTAL AGREEMENT To Modify or Delete a Section of Highway

County	
State Route	$(\mathbf{s})$
Permit Type	
FID/SS Nur	nber:
	COMMONWEALTH AGREEMENT NO
(Compan	y Name)
by and betw	mental Agreement made and entered into thisday of, 20, een the Commonwealth of Pennsylvania, acting through the Department of Transportation, hereinafter s the "COMMONWEALTH",  And
at	hereinafter referred to as the "USER" with its principle offices located , acting through its proper officials.
	WITNESSETH
numbered certain cond tons posted has requeste and to WI provided the Agreement	HEREAS, the Commonwealth and the USER entered into an Agreement dated and in the Commonwealth's files, whereby the Commonwealth, upon fulfillment of itions, granted permission to the USER to move vehicles in excess of the gross weight limitation of 10 on State Route(s) from Segment/Offset to Segment/Offset and d the Commonwealth to make a (preliminary or final) inspection of this Section(s) of road (increase or reduce) the amount of surety required accordingly and,  HEREAS, the Commonwealth is willing to accede to the USER's request subject to certain conditions, by USER at its cost and expense comply fully with the terms, conditions and provisions, contained in Number between the parties dated as modified by the conditions of this Supplemental Agreement.
NC	DW, THEREFORE, for and in consideration of the foregoing premises and the mutual promises set forth, the parties hereto agree, with the intention of being legally bound hereby, as follows:
1.	The basic Agreement of and numbered between the parties hereto is supplemented, amended, and modified by revising the Segment/Offset of State Route(s) of the said Agreement to read from Segment/Offset to Segment/Offset to Segment/Offset
2.	An inspection was made on of the Segment/Offset(s) of the said route(s) being deleted which indicated that the USER had completed the repairs of any damage for which it was responsible. OR A preliminary inspection was made on of the Segment/Offset (s) of the said route(s) being added, to document route(s) conditions.
3.	The USER has executed and delivered to the Commonwealth a Change Rider for Surety number reducing/increasing the existing surety to, which is attached thereto marked Exhibit "AA" and made a part of hereof.
4.	The Commonwealth will void Permit No issued for hauling on State Route(s) from Segment/Offset to segment/offset and will issue Permit No to the USER for hauling on State Route(s) from Segment/Offset(s) to Segment/Offset(s)
5.	All terms and conditions of Agreement No which are not changed by this amendment remain in full force and effect.

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# CHAPTER 16 BRIDGE MAINTENANCE

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# 16.1 INTRODUCTION

Bridge preventive maintenance is extremely important in extending serviceable life of structures throughout Pennsylvania as well as the nation. Structure condition has been cited as one of the most pressing transportation problems facing the nation and one of the major contributing factors to these problems is insufficient or deferred maintenance.

Structure condition deteriorates for many reasons. Among them are increased truck volume and weight, environmental elements and the lack of preventive maintenance. Preventive maintenance can, and should, be used extensively to arrest or delay deterioration of bridge elements.

This chapter will discuss the bridge inspection procedures, the flow of bridge inspection reports and the required actions and responsibilities. In the belief that most problems can be prevented or minimized by timely preventive maintenance, the problems normally experienced in the various bridge elements will be identified and the preventive maintenance activity that could prevent or minimize the condition will be discussed.

The goal of this chapter is to identify elements or areas of structures that can substantially benefit from preventive maintenance, and to provide policy and guidelines to accomplish this very important activity.

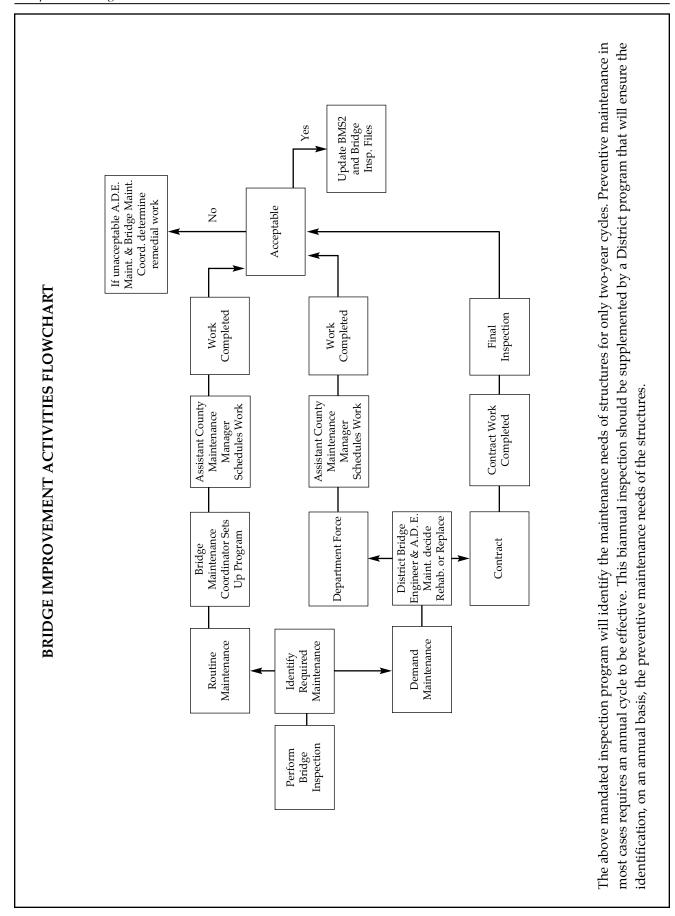
In addition to bridge preventive maintenance, emergency event such as floods require additional resources to monitor scour critical bridges. Refer to section 9.10 of this manual for specific guidance on flood events.

# 16.2 BRIDGE INSPECTION PROGRAM

The Federal Highway Administration requires that all bridges twenty (20) feet or greater in length on public highway systems be inspected at regular intervals, not to exceed two (2) years, by inspectors having necessary qualifications (Certification). The Department follows the National Bridge Inspection Standards, and additionally, has established a policy of inspecting all bridges under its jurisdiction eight (8) feet or greater in length, also on a two (2) year cycle.

Bridge inspections are done by a team of inspectors headed by a team leader. The inspection forms used for the review, with supplemental photographs, generally serve as the bridge inspection report.

The inspection reports should note all observations relative to the need for corrective maintenance as well as preventive maintenance. These reports can, and should, be used to trigger preventive maintenance activities. The flow of this information and the responsibilities are shown as follows:



# 16.3 RESPONSIBILITIES

# **DISTRICT EXCUTIVE**

The District Executive is responsible for the total operating function of the District, which includes design, maintenance, and construction of bridges.

# **DISTRICT BRIDGE ENGINEER**

The District Bridge Engineer is responsible for coordinating the design, construction, and maintenance of the bridges within the District. This includes the coordination of the Bridge Inspection Program and the identification of structure maintenance needs. The Bridge Engineer should convey those needs to the Assistant District Executive for Maintenance, and together should prioritize the needed work.

# ASSISTANT DISTRICT EXECUTIVE - MAINTENANCE

The Assistant District Executive for Maintenance is responsible for the administration of the District Roadway and Bridge Maintenance Program. In this capacity, the Assistant District Executive should be cognizant of the maintenance needs of structures within the District, and in coordination with the Bridge Engineer, should prioritize and schedule the required work to be done by the Department and by contract.

# MAINTENANCE MANAGER

The Maintenance Manager is directly responsible for ensuring the integrity of the roads and the bridges within his jurisdiction. He should be cognizant of the preventive maintenance needs of the structures and provide sufficient preventive maintenance to enhance the life expectancy of the structures.

# 16.4 MAINTENANCE RESPONSIBILTIES OF BRIDGES

The maintenance responsibility of bridges built to carry local, or "off system", roads over or under limited access highways is as follows:

# **OVERPASS**

Where a limited access highway passes over an off system road, the Department will maintain the

entire substructure and superstructure. The local jurisdiction will be expected to assume maintenance responsibility on the road itself.

# **UNDERPASS**

Where a limited access highway passes under an off system road, the Department will maintain portions of the superstructure and the entire substructure. This will avoid the necessity of having maintenance forces from the local jurisdiction enter the limited access facility to maintain the substructure. The local jurisdiction will be expected to assume maintenance responsibility for the roadway areas including: the wearing surface, sidewalks, parapets and railings, lighting, light standards (if any) and snow removal.

The theory underlying this policy is that any maintenance responsibility the local authorities would have had, if the road had remained at grade, remains their responsibility after construction of the bridge.

If the Department had constructed a road in a Township that required a bridge to be placed over the Department's road, then the Township would be responsible for the wearing surface on the bridge. The reason for this is that the wearing surface is part of the Township's road. However, the bridge structure is the responsibility of the Department since the Department's roadway resulted in a need for the bridge. Additionally, if the Township neglected to maintain the wearing surface and this results in damage to the structure, the Department could recover the damage incurred from the Township's neglect.

# 16.5 BRIDGE MAINTENANCE PLANNING

Developing and maintaining a plan for completing bridge maintenance is a vital step to ensuring continued serviceability of bridges. County Maintenance Managers must work with the District Bridge Unit and District Maintenance Unit in developing a strategic plan that prioritizes bridge maintenance activities in the annual county maintenance work plan. The strategic plan should include both Bridge Preventative Maintenance and Bridge Demand Maintenance as follows:

# PREVENTIVE MAINTENANCE

The District and County should schedule and complete the following Preventive Maintenance activities annually:

# I. 711-7431-01 Clean/Flush Deck

- A. Clean 100% of county bridge decks per year as follows;
  - 1. Structures which are not programmed for replacement within the current FY task to be completed annually
  - 2. Districts that have a deck area greater than 10 million SF should clean the listed structures on a two year cycle,
  - 3. Flushing will be left to the District's discretion, where equipment availability and practicability of flushing a structure are viable.
- B. Clean all other structures as required.

# II. 711-7431-01 Clean/Flush Scuppers and Downspouts

- A. Scuppers 100% functional annually, where feasible.
- B. Downspouts 100% functional annually, to the bottom flange of the superstructure or to the first horizontal bend in the system, where feasible. Any problem that exists beyond that point becomes a demand maintenance activity.

# III. 711-7431-02 Clean/Flush Bearings/Bearing Seat and

# 711-7431-02 Clean/Flush Steel Horizontal Surfaces

- A. Clean 20% of all structures annually, Philadelphia & Allegheny Counties subject to 10% requirement except the following eight structure types:
  - 1. Concrete Arches
  - 2. Metal Plate Arches
  - 3. Adjacent Box Beams
  - 4. Concrete Frames
  - 5. Slabs
  - 6. Encased I-beams
  - 7. Box Culverts
  - 8. Concrete Drainage Structures
- B. The eight structure types listed above should be cleaned on an as needed basis.

NOTE: Initial emphasis should be placed on fracture critical bridges. These structures should be reviewed annually for preventive maintenance needs.

Additional emphasis should be placed on bridges that have open joints, sliding plate joints, and finger joints without drainage troughs.

Also, direct special attention to bridges that have been built since 1982, the year of the bridge bill initiative. Although, these structures may appear not to need any preventive maintenance action, the more consideration placed on these structures today will help alleviate future maintenance problems.

# IV. 711-7431-03 Clean/Flush Open Grid Decks and their Supporting Structure

Clean - 100% of county bridges annually.

V. 714-7715-01 Brush & Select Tree Thin, Tree Trim & Removal - Man.

714-7715-02 Brush & Select Tree Thin, Tree Trim & Removal - Mech.

Remove brush behind wingwalls and around structure as required.

All preventive maintenance activities should be performed in accordance with the performance standards listed in the <u>Procedures and Standards for Bridge Maintenance (Publication 55)</u>.

Preventive maintenance is considered to be a primary deterrent to premature deterioration of critical structural elements of bridges, and as such, commands high priority in the realm of work planning, scheduling, and accomplishment.

The Preventive Maintenance activities can be performed by a crew other than the bridge crew. This would be preferable as it affords this crew time to concentrate on more technical bridge maintenance activities.

NOTE: CMMT #18 Measures County performance in this activity.

# **DEMAND MAINTENANCE**

A series of meetings should take place between the District Bridge Unit, the District Maintenance Unit and the County Maintenance Office. The first meeting should be held in November, which should include the Bridge Engineer, Bridge Inspection Engineer, Bridge Maintenance Coordinator and the Maintenance Programs Engineer. In this meeting, a list of major and minor projects to be completed by the county should be prioritized and agreed upon by this group.

A second meeting should take place, before January, among the Bridge Maintenance Coordinator, Bridge Unit Representative, County Maintenance Manager, Assistant County Maintenance Manager and the County Bridge Foreman. The purpose of this meeting is to develop an annual work plan from the prioritized list of bridge projects agreed upon during the initial meeting.

Counties should schedule an annual work plan, consisting of a minimum of eighty percent (80%) of the available bridge crew man-hours in maintenance periods one and three, for bridge maintenance activities. This schedule may include Assembly 711-7325-01 activities (Repair or Replacement of structures under 8' in length). This requirement is not intended for counties that do not have a dedicated bridge crew.

# 16.6 PREVENTIVE MAINTENANCE ACTIVITIES

Preventive maintenance is only required on specific elements of a structure, and it is likely that this chapter will be used by maintenance crews with little or no structural training. The following material will be presented with as little theoretical reference as possible.

# **DECKS**

Proper maintenance of bridge decks is very critical, not only from a structural integrity preservation viewpoint but also from one of public perception. Decks littered with antiskid materials contribute to the chloride contamination of concrete and corrosion of reinforcing steel which, in turn, accelerates the formation of potholes and the ultimate deterioration of highway structures.

Decks normally consume a large part of the maintenance dollar, and all efforts to reduce these sometimes unnecessary expenditures should be encouraged as much as possible by managers at all levels. A quality deck preventive maintenance program will go a long way in minimizing repair costs.

# DEBRIS AND CHEMICAL ACCUMULATION

Cleaning: Winter snow and ice removal activities deposit antiskid materials and chemicals on bridge decks which normally tend to accumulate over the winter within the area of the water table near scuppers and around structural members (panel points of trusses, flange angles, and bottom flanges of plate girders). As soon as practical (when the threat of snow has subsided to a reasonable level), this debris should be removed by sweeping and/or flushing (Assembly 711-7431-01 Flush/Clean Deck) and according to the performance standards listed in Publication 55, Procedures and Standards for Bridge Maintenance.

Care should be exercised when cleaning decks to prevent debris from entering the drainage system (scupper and downspouts) which could compromise the drainage system. Structural members of the superstructure such as end posts, diagonals and vertical web members, panel points of trusses and flange angles, stiffeners, web plates and bottom flanges of plate girders that lie within the wheel splash zone should also be cleaned of debris and salt residue by pressurized flushing, air blasting, scraping, brushing or mechanical devices. Areas that exhibit signs of corrosion should be noted, reported to the Bridge Engineer and scheduled for painting or repair.

# **PROTECTIVE COATINGS**

Protective coatings for reinforced concrete surfaces are available that prevent or minimize scaling or spalling. Apply to exposed concrete roadway surfaces of bridge decks, to curbs, sidewalks, divisors, concrete median barriers, inside and top surfaces of parapets and to abutments, pier caps and end walls. Materials which can be used are boiled linseed oil, petroleum spirits mixture and epoxy-resin. To be effective, these sealants should be applied before opening the roadway to traffic. For application rates and when to apply, refer to Pub. 408, Sections 503 and 1019. Coordinate with the District Bridge Engineer before using.

# **CRACKING**

Concrete Deck cracking is a linear fracture of the deck concrete. It may extend partially or completely through the deck. The cracks are classified as longitudinal, transverse, diagonal, alligator, pattern, map or random. Isolated longitudinal, transverse or diagonal cracks should be sealed using the procedures outlined in Pub 408, Section 1091.

Asphalt deck surface cracking is very similar to roadway pavement cracking and is classified as alligator or map cracking, where the edge cracks have joint cracks, reflection cracks, shrinkage cracks and slippage cracks. Alligator and slippage cracks should be repaired by removing the distressed area to sound material and patch using conventional pothole patching procedures. The remaining types of cracks should be sealed using the procedures outlined in Publication 113 for Assembly 711-7128-01. Early detection and repair of minor cracks is very important to prevent more serious defects. Frequent, close inspections should be made.

# **BRIDGE DECK JOINT SYSTEMS**

Bridge deck joint systems are a very important part of the bridge superstructure and one that is very often overlooked by maintenance forces. Joints allow movements of the superstructure under live loading as well as thermal expansion and contraction. They, also provide protection to the substructure by waterproofing the area under the joint. Joint systems that are not properly designed or maintained allow chemically laden moisture and debris to reach critical structural elements beneath the deck road system. Bridge seats and bearings are very susceptible to corrosion by deicing chemicals and are normally located directly below the joint areas. Deck joints are classified as open or closed joints. Open expansion joints are designed to provide for longitudinal movement of the superstructure and perhaps some means of partially bridging the joint opening to permit traffic to cross smoothly.

Closed expansion joints consist of an arrangement of various materials to completely seal bridge joint openings and also provide for longitudinal movement of the superstructure. Such devices may or may not provide water proofing in their design.

# **OPEN JOINTS**

Open joints chiefly consist of sliding plate, finger joints, normally on larger structures with long spans, and an open joint consisting of formed concrete edges or, in some cases, armored edges.

Many of the latter use a mastic or other type of sealer to prevent the intrusion of debris and to waterproof the area below.

# a) Finger joint

Finger joints are not capable of being sealed but some may provide drainage control by placing a drain trough directly below the finger joint to collect and direct runoff to the bridge drainage system.

The most common problem associated with this type of open joint expansion system is the clogging of the drainage trough with roadway litter, antiskid and other debris; and when a drainage route is not provided, the roadway drainage carries and deposits deicing chemicals and debris onto the support system as well as the flanges of superstructure members. This accumulation will often prevent proper operation of the expansion device by clogging the expansion finger openings which may cause the fingers to raise.

Drain troughs should be cleaned frequently to prevent clogging, and if extreme difficulty is experienced in cleaning, modifications should be made to the system to facilitate cleaning and flushing. If the deck is kept clean, a minimum amount of debris will enter the drainage system and will reduce the need for frequent cleaning.

# b) Sliding plate

The sliding plate, one of the most commonly used, consists of a horizontally positioned flat steel plate anchored into the bridge deck at one edge and permitted to slide across an angle anchored to the opposite edge of the opening (armored edge). The major problems associated with this type of joint is that while the joint design deters the passage of dirt and debris through the joint, it fails to prevent water and dissolved chemicals from reaching the bridge elements underneath. Also, antiskid and road patching material, if permitted to accumulate and compact along the free edge of the sliding plate, will produce increased resistance to expansion and may eventually lead to deformation of the plate or to cracking of the deck.

Little can be done to prevent this type of joint from leaking. If leakage is a problem, one solution to the problem is to install a drain trough beneath the expansion device to collect and drain water passing through the joint away from sensitive areas. Sheet metal deflectors may also be installed as an interim measure to prevent water from draining onto flanges, bearings, bearing seats, etc.

Sliding plate expansion devices (properly designed and installed) are relatively trouble free. Occasional cleaning of the small trough between the fixed and sliding parts of the device prevents the device from binding. Frequent cleaning of the deck, especially after the winter season, will minimize the deterioration of the structure beneath the expansion joint subjected to water and dissolved contaminants.

# c) Other open joint

Other open joints that generally provide a mastic sealant material to prevent the intrusion of debris and to waterproof the areas beneath should be inspected during the structure preventative maintenance and if any signs of sealant failure are present, the joint should be cleaned and resealed. The work should be done as per the procedures outlined in Publication 55, Assembly 711-7433.

# **CLOSED JOINTS**

The following types of closed joints are used in the Commonwealth: premolded filler, compression seal, and elastomeric expansion devices.

# a) Elastometric expansion device

Elastomeric expansion device is general terminology defining a sealed, waterproof joint system utilizing steel plates and angles molded into a neoprene covering. The steel provides for anchorage and load transfer while the neoprene serves as a protective covering for the steel and a waterproof material to prevent water from passing through the joint system.

Little preventive maintenance is required of this expansion device other than frequent cleaning. Cleaning should be done each spring after the threat of snow has subsided.

# b) Premolded filler (filled butt joint-hot poured sealant)

A premolded joint material usually made out of rubber is used to seal butt joints. The joint material is usually attached to one face of the joint or supported from below by an offset in the vertical face of the slab. A sealing compound is poured from the roadway surface to seal the opening. Maintenance requirements include annual cleaning, replacement of the surface seal, replacement of the filler when necessary and repairs to the roadway surface adjacent to the joint. If the seal is not kept watertight, the filler below will deteriorate and make resealing difficult. Non-compressibles that work their way into the seal can cause the joint to jam.

# c) Compression seals

Compression seals consist of various types of extruded neoprene (or similar material) whose design and elastic properties provide for the retention of its original shape. The seal is installed in a preformed joint opening at the span ends. An adhesive provides a bond between the joint face and the sealant to produce a waterproof system.

Preventive maintenance of this type of seal mainly consists of frequent cleaning of the joints to remove antiskid material and other debris from the recess between the top of the joint material and the surface of the deck. The abrasive action from this debris will cause rapid wearing of the top surface of the seal if the debris is permitted to accumulate on top of the seal.

# **DECK DRAINAGE SYSTEMS**

The operation and maintenance of bridge drainage systems is a very important element of bridge preventive maintenance. Deck drainage is required for proper maintenance of bridges since the lack of proper drainage affects many elements of the structure.

Poor drainage is normally due to the accumulation of antiskid material and other debris within the drainage system preventing proper operation. Backed up water might then freeze and rupture the pipe, and may contain corrosive chemicals which, when leaked through the rupture, will attack structural elements of the bridge. Bridge drainage systems consist of: scuppers—drop through and piped, gratings (open steel grid floors), open joints with troughs and all associated piping.

# a) Scuppers

Scuppers are provided in bridge decks to collect the water on the deck and direct the water through short-drop through pipes or into a closed drainage system of relatively small diameter. Each type of downspout pipe presents its own individual problems; these problems--long downspouts, horizontal runs with inadequate slope, sharp directional changes and small diameter discharge pipes--are all conducive to clogging. Short-drop through pipes that drain directly under the bridge may cause corrosion of structural steel and concrete surfaces of piers and abutments and possibly erode abutment earth slopes.

All scuppers should be examined frequently for proper operation and cleaned when necessary. Antiskid or other debris should be removed by water pressure or metal probes. Particular attention should be applied when flushing antiskid from decks to prevent it from entering the drainage systems and compounding the problem.

Protective coating may be applied to piers, structural steel and any other elements exposed to the corrosive liquids from drop through scuppers to prevent or retard corrosion.

# b) Gratings

Open grid decks (open steel grid floors) provide very good drainage of the deck but don't protect the superstructure and substructure elements from the damaging corrosive elements that accumulate on the structural members below the deck.

All debris should be removed from beams, girders, pier caps and bearings. Yearly inspection and cleaning is necessary to prevent this accumulation.

# c) Open joints and throughs

As mentioned under bridge deck joint systems, troughs under open joints are susceptible to debris accumulation with subsequent backup of drainage which contributes to the accelerated deterioration of concrete, corrosion of steel and erosion of earth. These troughs should also be inspected for tears and clogging at frequent intervals and repaired or cleaned as required.

# SUPERSTRUCTURE SYSTEMS

Bridge superstructures in the Commonwealth are made of either steel, concrete or timber. Since the vast majority of the superstructures are made of steel or concrete, this section will concentrate only on those types.

# a) Bearings

Bearings are used to transmit and distribute the superstructure loads to the substructure while permitting the superstructure to undergo necessary movements without developing harmful stresses. The various types of bearings are: roller expansion bearings, fixed steel bearing, rocker expansion bearings, sliding bearings, pot bearings, elastomeric bearings or pin and hanger bearings.

# b) Steel

An effective preventive maintenance measure to control rust and resultant corrosion of steel bridge members is to spot/zone paint exposed members.

It shall be Department policy to include spot and zone painting as an option in the District bridge painting program.

Spot and zone painting should be scheduled on a four (4) or five (5) year cycle unless conditions warrant otherwise. Qualified bridge painting inspectors with training and/or knowledge related to the various paint systems shall be assigned to inspect the work. Reference Pub 55 for permit requirements.

# c) Concrete

Concrete deck structures have a common problem in that the riding surface is an integral part of the structure and any loss of bond between the reinforcement and concrete because of spalling, steel corrosions or wearing will reduce the load capacity of the structure. Unbonding of the reinforcement in the top mat of the slab is normally associated with chloride contamination of the deck and reinforcing steel. A waterproof membrane is normally provided to reduce or prevent this contamination. However, from a purely preventive maintenance approach, little can be done other than a regular program of deck cleaning and possibly the application of a penetrating sealant.

# d) Beam ends

Beam ends, which would include the last five feet of the beam and the back side of the bearing at expansion joints, are most vulnerable to be damaged due to leaky joints. Beam ends should be flushed along with the cleaning of bearings and beam seats. Such cleaning will minimize deterioration and extend bridge life. Regardless of the type, the preventive maintenance procedures are essentially the same. Each maintenance organization should:

- 1. Have a program to clean dirt and debris off caps, seats, beam ends and bearings at regular intervals usually in the spring after the threat of snow and ice has subsided.
- 2. Have a program to properly maintain deck joints that are designed to be sealed but are not functioning properly and are allowing moisture and debris to fall on the bearing areas.

# SUBSTRUCTURE SYSTEMS

The substructure of a bridge is the portion that transmits the load and stresses from the superstructure or load supporting system to the ground. Substructures may be classified as abutments or piers. Footings, piles, columns, walls, pedestals, caps, bridge seats and bearings systems are components of the substructure. While all of the above are important, the discussion in this section will concentrate on the problems associated with bridge caps, seats and bearings systems and how they relate to preventive maintenance.

# a) Caps and bridge seats

This element is the top of the piers, bents and abutments upon which the bearings rest. Any deterioration of this section could result in differential settlement of the superstructure and unanticipated stresses. The most common problem is the general deterioration of the concrete. This can be the result of chemical attack, poor aggregates, poor concrete, freeze/thaw damage, insufficient reinforcing steel coverage or various combinations of these. The damage is usually in the form of scaling, popouts or sloughingoff at the corners. Due to the proximity of leaking joints which tends to deposit chemical-laden dirt and debris in this area, the depth of deterioration is likely to be greater at this location than at other locations.

The most important step in preventing damage to the caps and seats is to reduce the amount of leakage from the joints. Runoff from scuppers and joints should be diverted by pipes or splash plates. The chemical-laden dirt and debris should not be allowed to accumulate on these surfaces. These

surfaces should be flushed annually after the threat of snow and ice has diminished or passed.

In the event the caps and seats are steel, the most common problem is rust and the resultant corrosion. The same preventive maintenance procedures outlined for concrete should be followed for steel and, in addition, proper painting schedules should be developed to prevent corrosion problems.

# 16.7 STANDARDS FOR BRIDGE CLEARANCE, CHANNEL IMPROVEMENT AND BRIDGE REHABILITATION PROJECTS (PENNDOT)

- 1. The following information shall be submitted concurrently to the Department of Environmental Protection (DEP) Regional Office, the Pennsylvania Fish and Boat Commission "Division of Environmental Services", and the Conservation District of the county in which the project is located not less than 30 days in advance of initiating work.
- a. A work schedule which includes: the roadway name/route and segment number, the stream name, Chapter 93 designation, any in stream restrictions due to wild or stocked trout or migratory fish, and the date work is to begin and end.
- b. A location map showing each project location
- c. A written description for each project including: dimensions of each structure, a complete narrative of all of the proposed activities including measurements and quantities of materials to be removed or placed.
- d. A sketch plan for each site which includes/shows: all staging areas, access points/roadways to the work area, all of the areas where work is to be done (including tree and brush removal), the upstream and downstream limits of the proposed activities, a complete listing of the in-stream E&S BMPs to be used and their locations.
- e. A valid PNDI search receipt for each site including clearance letters from the appropriate agencies indicating that the work will not adversely impact any species of concern.

Unless otherwise extended in writing work authorized in accordance with the procedures outlined above must be completed within one year of the date of authorization.

Addresses for County Conservation Districts may be obtained from the Department of Environmental Protection or may be found in local telephone directories.

- 2. The owner or permittee shall notify the appropriate Regional Office of DEP (Exhibit B), the Pennsylvania Fish and Boat Commission's Regional Headquarters (Exhibit A) and the appropriate County Conservation District at least 10 days in advance of starting work at each location identified in the proposed work schedule.
- 3. The work schedule, project narrative and sketch plan shall be on site and in possession of the person in charge whenever work is being performed. The, access points, limits of work and in-stream E&S BMPS that are to be used must be clearly indicated on the sketch plan for each site and all activities must be completely described within the project narrative.
- 4. All in-stream work is prohibited for the following except in emergencies. Emergency work must be approved by the Department of Environmental Protection in consultation with the Pennsylvania Fish and Boat Commission.
- a. migratory fish (MF) during periods of fish migration or spawning
- b. stocked trout streams between March 1 and June 15
- c. wild trout streams between October 1 and December 31
- d. as a part of any avoidance measures required within the PNDI clearance from 1.e.

A listing of stocked and wild trout streams can be found on the Pennsylvania Fish and Boat Commission web page.

5. Where appropriate, instream rock structures may be installed to encourage stream cleaning and prevent annual maintenance. These structures must be identified on the work schedule and sketch plan along with supporting data being submitted under item No. 1 (above) for DEP approval.

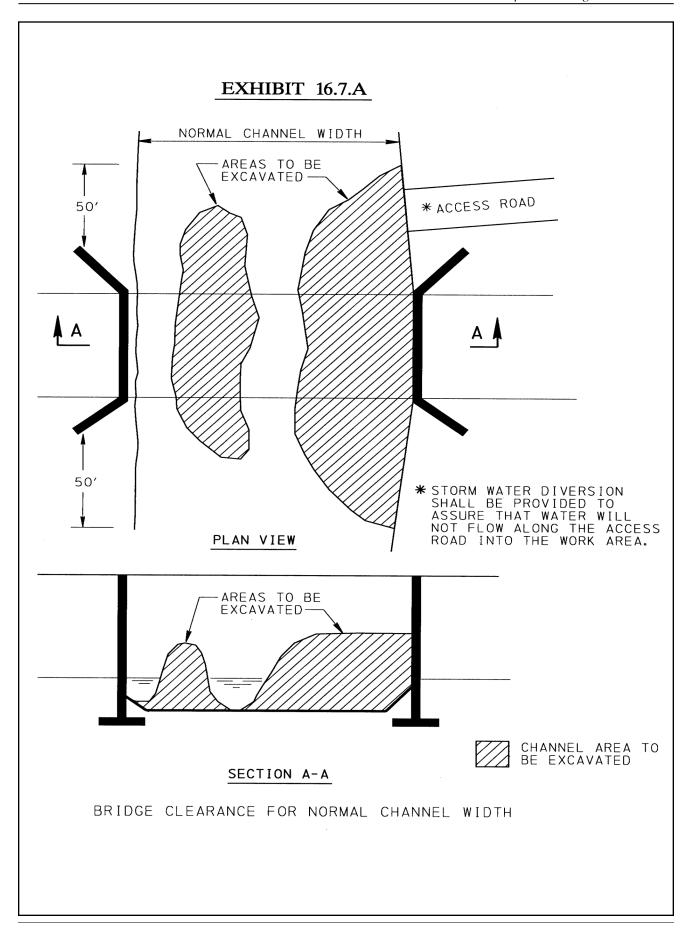
- 6. Authorized work within the stream channel shall be limited to 50 feet upstream and 50 feet downstream from the face of the bridge or culvert. Exceptions to this must be specifically identified in the proposed work schedule and shown on the sketch plan along with supporting data being submitted under item No. 1 (above) for DEP approval. In addition, work should be accomplished by working from the stream banks. In those cases where this is not possible, the operation of equipment in the water is to be minimized.
- 7. When work involves repairs to piers, footers, wing walls, or retaining structures, the construction area should be enclosed wherever possible within a cofferdam of sandbags or other non-erodible, non-polluting material. Dewatering shall be done in such a manner as to prevent sedimentation from re-entering the stream.
- 8. Channels may be excavated to a width no greater than the natural unaffected width of the normal low flow channel immediately upstream and downstream of the influence of the bridge or culvert. The remainder of the channel width shall be maintained as an elevated flood plain and may not be excavated lower than six inches above the water level at the time of work.
- 9. Material removed from the channel shall be disposed of at a location which precludes re entry into the stream. If material removed from the channel is needed for backfill or bank restoration, it should be faced to the ordinary high water level with riprap suitably sized according to the anticipated stream velocity. All disturbed areas above the level of the riprap must be stabilized (vegetative stabilization preferred). Excess excavated material shall not be deposited in any wetland, river, lake, water course, floodway, floodplain or other regulated waters of this Commonwealth without first applying for and receiving the written permit of the Department of Environmental Protection.
- 10. Tree and shrub growth on stream banks shall not be disturbed unless absolutely necessary. Any areas of vegetation to be removed must be described/justified in the project narrative and shown on the sketch plan.
- 11. If an access road is to be constructed, stormwater diversion shall be provided to assure that water will not flow along the access road directly into the stream or the work area. The

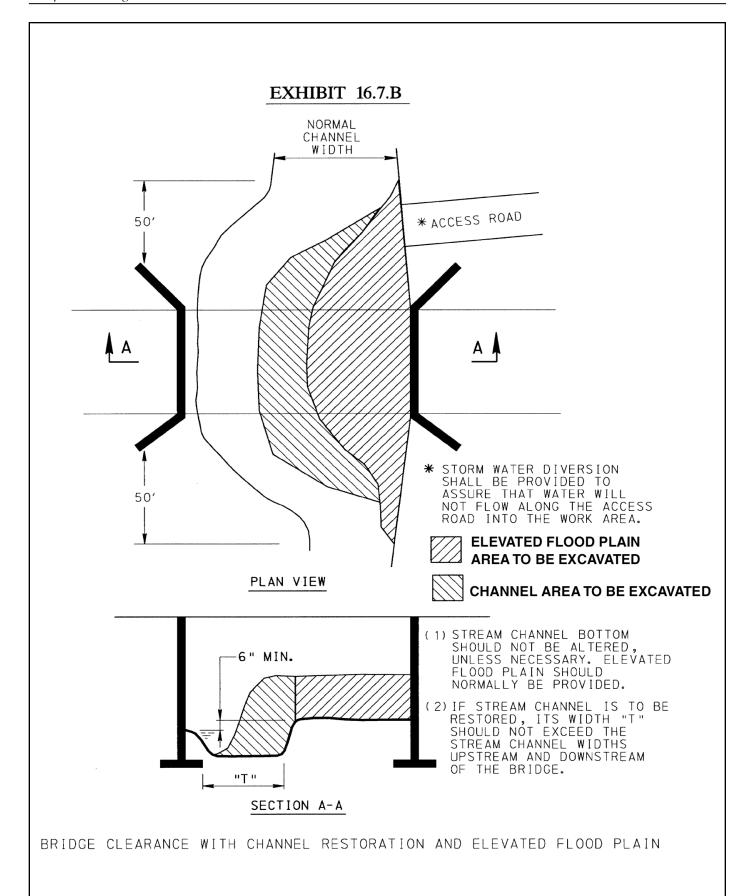
location of the access road must be shown on the sketch plan submitted for approval along with the work schedule as outline in No. 1 above. No wetlands may be impacted without first obtaining a permit from the DEP. Earth disturbance shall be kept to a minimum.

- 12. Erosion and sediment pollution control measures must be properly implemented and closely monitored to minimize erosion and prevent sediment from entering the stream channel. The in-stream BMPs that are to be used must be listed and their location shown on the sketch plan for each site. All BMPs shall be designed in accordance with the latest edition of the DEP's Erosion and Sedimentation Pollution Control Manual or PennDOT's Publication 464 Maintenance Field Reference for Erosion and Sedimentation Control. All disturbed areas shall be permanently stabilized.
- 13. Where it is necessary for construction equipment to cross the stream, a temporary stream crossing shall be provided by the permittee for this purpose unless the stream flow is shallow and the stream bed consists of solid or non-erodible material. The temporary crossing must comply with the conditions of General Permit BDWM GP 8, Temporary Road Crossings. Any fill material provided for temporary crossings shall be clean granular material and the entire fill area shall be kept to an absolute minimum elevation to avoid obstructing flood flows and/or creating a backwater flooding condition. PennDOT is responsible for any damages resulting from the obstruction of flood flows by this temporary stream crossing. Upon completion of the project, the temporary crossing shall be removed in its entirety and the disturbed area shall be restored to the original contours and stabilized with vegetation or other appropriate method as approved. Copies of, and authorization to use, the BDWM GP 8 are available from the Department of Environmental Protection.
- 14. DEP shall have the discretion to require a separate individual permit application to be submitted for any project or portion thereof, which the DEP determines to have a potential significant effect on safety or protection of life, health, property, or the environment.
- 15. Bridge rehabilitation projects, including bridge superstructure replacements, are subject to the following conditions:

- a. No reduction of horizontal or vertical clearance of the structure will occur.
- b. No widening of a substructure for superstructure replacement will occur.
- c. No roadway grade will be altered, other than that required for normal resurfacing.
- 16. Paving metal bottom (pipe and arch) culverts are subject to the following additional conditions:
- a. Work can be authorized by the Exx-9999 permit.
- b. Divert upstream flow with a cofferdam and pump water via a conduit through the culvert. This dewatering scheme must be included as a part of the items requested in item No. 1.
- c. Clean out debris and silt as required.
- d. Construct reinforced paving to a depth of 6" to 8", as needed, and place riprap at the outlet end as needed. Do not finish off concrete; leave the surface rough to allow turbulent flows and depositions. Depth of water through the culvert after restoration of flow will approximate the natural stream conditions. (Refer to attached "Curtain Wall and Apron Detail".)
- e. Allow concrete to harden enough to walk on, flush concrete with stream water, and pump rinse water to an upland discharge location until the pH level of the rinse water falls below 9. pH must be measured with a calibrated meter and not with pH paper. Upland discharge will preclude any reentry of the rinse water into the stream and any erosion.
- f. Remove cofferdam and restore stream flow. Seed and mulch as required in the approved E&S Controls.
- 16. Streambed Paving for Small Structures with an open bottom 20' wide or less are subject to the following additional conditions:
- a. Work must be authorized by either a "Small Projects" permit, a "General Permit No. 11" or a Standard Joint Permit Application as required.
- b. Follow the design criteria for depressed invert and baffle design as indicated on PennDOT BD 632M.
- c. Divert upstream flow with a cofferdam and pump water via a conduit through the culvert. This dewatering scheme must be included as a part of the items requested in item No. 1.

- d. Clean out debris and silt as required.
- e. Allow concrete to harden enough to walk on, flush concrete with stream water, and pump rinse water to an upland discharge location until the pH level of the rinse water falls below 9. pH must be measured with a calibrated meter and not with pH paper. Upland discharge will preclude any reentry of the rinse water into the stream and any erosion.
- f. Remove cofferdam and restore stream flow. Seed and mulch as required in the approved E&S Controls.
- 17. Bridge cleaning should be done in accordance with the "Guidelines for PennDOT's Bridge Cleaning Operations" dated November 22, 1994 (or latest version) and in accordance with Chapter 2 of PennDOT Publication 55 (as updated); whichever provides the more strict environmental control.
- 18. Bridge painting should be in accordance with the "Guidelines for Environmental Pollution Controls for Bridge Painting Contracts", Department of Transportation dated November 17, 1986 including revisions (latest version), and in accordance with Chapter 3 of PennDOT Publication 55 (as updated), whichever provides the more strict environmental control.





ULE	Proposed Work	RockEntry Into * Stream with ectors)Work Beyond 50' Limit Upstream and Downstream of Bridge or CulvertOther Specify)							d to the appropriate agencies.
5.7.C SCHEDULE	PROPOSED WORK SCHEDULE Proposed Work								the proposed work schedule is mailed to the appropriate agencies.
EXHIBIT 16.7.C		Install Ir Rip S Rap Ve							ed work sche
PROPC		Clean Stream Bed							er the propos
	nce	Stream							* Entry Date must be at least thirty (30) days after
	County Maintenance	Offset							at least th
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# FISH AND BOAT COMMISSION'S OFFICES

# **Headquarters Address**

# **County Responsibility**

NORTHWI	EST REGION					
Regional Manager 11528 Highway 98 Meadville, PA 16335-7320 814-3370444	Butler, Clarion, Crawford, Erie, Forest, Lawrence, Mercer, Venango and Warren					
SOUTHWEST REGION						
Regional Manager 236 Lake Road Somerset, PA 15501-1644 814-445-8974	Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington and Westmoreland					
NORTHCEN	TRAL REGION					
Regional Manager P.O. Box 5306 Pleasant Gap, PA 16823 814-359-5250	Cameron, Centre, Clearfield, Clinton, Elk, Jefferson, Lycoming, McKean, Montour, Northumberland, Potter, Snyder, Tioga and Union					
SOUTHCEN	TRAL REGION					
Regional Manager 1704 Pine Road Newville, PA 17241 Lebanon, 717-486-708	Adams, Bedford, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lebanon, Mifflin, Northumberland (Mahatango Creek in Jordan and Lower Mahanoy Townships only) Perry and York					
SOUTHEA	AST REGION					
Regional Manager Box 8 Elm, PA 17521 717-626-0228	Berks, Bucks, Chester, Delaware, Lancaster, Lehigh, Montgomery, Northampton, Philadelphia and Schuylkill					
NORTHEA	AST REGION					
Regional Manager P.O. Box 88 Sweet Valley, PA 18656 570-477-5717	Bradford, Carbon, Columbia,Lackawanna, Luzerne, Monroe,Pike, Sullivan, Susquehanna, Wayne and Wyoming					
450 Robinson Lane, B	DIVISION OF ENVIRONMENTAL SERVICES 450 Robinson Lane, Bellefonte, PA 16823-9620 814-359-5147					

# DEPARTMENT OF ENVIRONMENTAL PROTECTION REGIONAL OFFICES PERMITTING AND TECHNICAL SERVICES SECTION

# **Headquarters Address**

# **County Responsibility**

Southcentral Regional Office 909 Elmerton Avenue, Second Floor Harrisburg, PA 17110 (717) 705-4707	Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry and York
Southeast Regional Office 2 East Main Street Norristown, PA 19401 (484) 250-5970	Bucks, Chester, Delaware, Montgomery and Philadelphia
Southwest Regional Office 400 Waterfront Drive Pittsburgh, PA 15222-4745 (412) 442-4000	Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington and Westmoreland
Northwest Regional Office 230 Chestnut Street Meadville, PA 16335 (814) 332-6984	Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango and Warren
Northeast Regional Office Carbon, 2 Public Square Wilkes-Barre, PA 18711-0790 (570) 826-2511	Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne and Wyoming
Northcentral Regional Office 208 W. Third Street, Suite 101 Williamsport, PA 17701 (570) 327-3574	Bradford, Cameron, Centre, Clearfield, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga and Union

# **CENTRAL OFFICE**

Bureau of Watershed Management
Division of Waterways, Wetlands and Stormwater Management
P.O. Box 8775
Harrisburg, PA 17105-8775
717-787-6827

# 16.8 BRIDGE COMPONENT DEFINITIONS

**Bridge** - A structure including supports erected over a depression or an obstruction such as water, highway or railway and having a track or passageway for carrying traffic or other moving loads and having an opening of more than eight (8) feet between undercopings or abutments or spring lines of arches. The bridge approach slab is considered to be part of the structure.

**Bridge Length** - The greater dimension of a structure measured along the center of the roadway between backs of the abutment backwalls or between ends of the bridge floor.

**Bridge Roadway Width** - The clear width of structure measured at right angles to the center of the roadway between the bottom of curbs or, if curbs are not used, between the innerfaces of the parapet or railing.

# LOADS OF STRUCTURES

**Dead Load** - The weight of the structure itself and the weight of any permanent fixtures which are supported by the structure. It is a fixed load which remains in position during the life of the structure unless removed and can be increased.

The most common cause of an increase in dead weight is the placing of additional wearing courses

**Live Load** - The live load includes all loads or forces due to vehicular or pedestrian traffic which act on the structure.

**Impact Load** - This is an allowance, equal to a calculated percentage of the live load which is added to the live load of the structure to provide for the dynamic and vibratory efforts of traffic loadings.

**Wind Load** - The effect of wind blowing against the structure and the live load.

**Longitudinal Forces** - The effect of the forces created by traffic moving across the bridge. These forces act longitudinally; i.e., parallel to the center of the bridge.

**Thermal Forces** - This is a force applied to the structure due to temperature variation.

## **DECK ELEMENTS**

**Wearing Course** - The wearing course provides the riding surface for traffic and is placed on top of

the structural slab. There are also wearing courses poured integral with the structural slab. When this technique is used it is generally referred to as a monolithic deck.

Wearing courses can be either asphalt concrete or portland cement and are not considered to provide load carrying capacity.

**Structural Deck** - The structural deck or slab provides the load carrying capacity of the deck system.

Typical structural deck systems are:

- Reinforced concrete
- Steel Plates (Orthotropic decks) within thin wearing course overlay
- Steel grid (open or concrete filled)
- Wood Planking
- Prestressed concrete box beams
- Precast concrete planks

**Sidewalks** - Sidewalks are provided on structures where pedestrian traffic counts warrant their use. Otherwise, safety walks are generally recommended.

Typical sidewalks are:

- Reinforced concrete
- Steel plate
- Wood planking
- Filled grid

**Curbs** - Curbs are provided in conjunction with sidewalks and safety walks. Curbs can be constructed of reinforced concrete, pre-cut granite, timber or steel plate.

**Railings** - Railings are placed along the extreme edges of the Deck system and provide protection for traffic and pedestrians. There are a wide variety of railing materials and configurations.

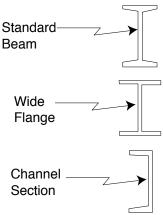
Some of the more common are:

- Metal multiple rail systems
- Box Beam
- W-Beam
- Reinforced concrete
- Timber

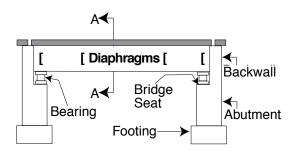
# SUPERSTRUCTURE ELEMENTS

**Rolled Beam**s The rolled beam is used for short spans. The beam comes from the rolling mill as an integral unit composed of two flanges and a web. The flanges resist the bending movement and the web resists shear.

The more common types of rolled beam shapes are:



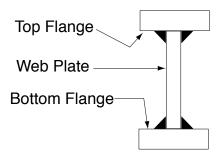
The following illustrates a typical longitudinal section for a rolled beam span:



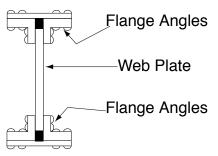
**Plate (built up) Girders** - This type of structural member is used for intermediate span lengths not requiring a truss and yet requiring a member larger than a rolled beam. The basic elements of a plate girder are a web to which flanges are riveted or welded at the top and bottom edges.

The most common forms of cross section are shown below:

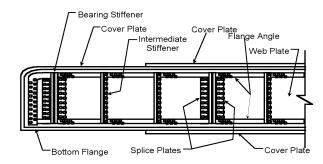
# Welded



# **Riveted with Cover Plate**



The component parts of a typical plate girder are illustrated below:



The portion above the neutral axis of the plate girder will be in compression and the portion below the neutral axis will be in tension for simple span structures.

 FLANGE ANGLES - Flange angles are used for riveted plate girders and carry tensile or compressive forces induced by bending.

- COVER PLATES Cover plates are welded or riveted to the top and/or bottom flanges of the girder to increase the load carrying capacity.
- 3. BEARING STIFFENERS These are either plates or angles placed vertically at the location of the support and attached to the web. Their primary function is to transmit the shearing stresses in the web plate to the bearing device to prevent web crippling and buckling.
- 4. INTERMEDIATE STIFFENERS Intermediate stiffeners are used at points of concentrated loads or for deep girders to prevent web crippling and buckling.

Reinforced Concrete Beams - Concrete beams are reinforced with steel reinforcement which carries the tensile stresses (whether resulting from bending, shear or combinations thereof produced by transverse loadings) are by design carried by the steel reinforcement. The concrete takes compression and shear only. These beams are commonly rectangular or T-shaped with its depth dimension greater than its stem width.

Prestressed Concrete Beams - The two main types of prestressed concrete beams are box beams and I-beams. The box beams are constructed with a rectangular cross section with a single void inside. The top and bottom slabs of the box act as the flanges while the sidewalls act as webs. The most common prestressed concrete I-beams are the AASHTO shapes. The cracking and tensile forces in the prestressed concrete are greatly reduced by compressing it with pretensioned strands, wire, or bars.

**Pin Hanger Connections** - These connections are devices put in bridges to permit expansion movement and rotation. When they are used in suspended span configurations in nonredundant two-girder bridges, they are fracture critical.

**Trusses** - The truss is one form of structural system which, because of its characteristics, can be used to span greater lengths than rolled beams and girders. The truss functions basically in the same manner as a rolled beam or girder in resisting loads--the top and bottom chords act as the flanges of the beam and the diagonal members act as the web.

Typical types of structural systems that are used for highway structures are illustrated as follows:

(These truss types may be used as "Thru Type" or "Deck Type".)

- 1. CHORD In a truss, the upper and lower longitudinal members extending the full length are termed chords. The upper portion is designated the upper or top chord and correspondingly the lower portion is designated the lower or bottom chord. For a simple span, the top chord will always be in compression and the bottom chord will always be in tension and should be considered a main structural member. Failure of either chord will render the truss unsafe.
- DIAGONALS The diagonal web members span between successive top and bottom chords and will either resist tension or compression depending on the truss configuration and the live load position. Most diagonals are also main structural members and their failure would be extremely critical and render the truss unsafe.
- 3. VERTICALS Vertical web members between top and bottom chords which will resist either tension or compression stresses depending on the truss configuration. Most verticals are also main structural members and their failure would usually be critical and render the truss unsafe.
- PANEL POINT The point of intersection of primary web and chord members of a truss.

Items 5 through 11 below can be considered secondary structural members and, although their failure should receive immediate attention, an individual member failure will not render the structure unsafe.

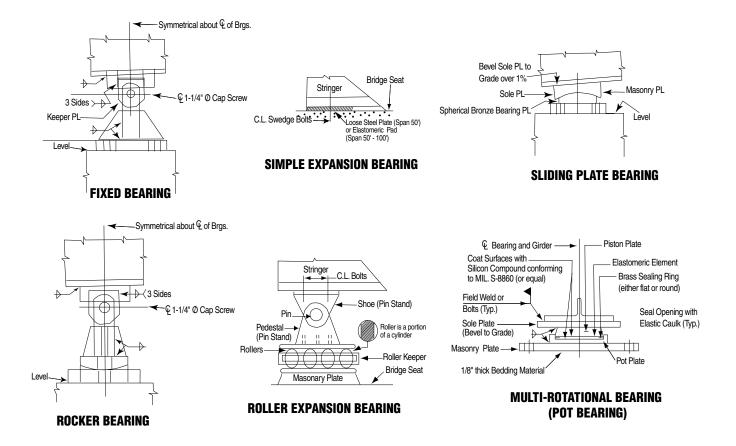
- 5. PORTAL BRACING The portal bracing is found overhead at the ends of a thru truss and provides lateral stability and shear transfer between trusses.
- SWAY BRACING Sway braces are secondary structural members spanning between the trusses at interior panel points and provide lateral stability and shear transfer between trusses.
- 7. TOP LATERAL BRACING The top lateral braces lie in the plane of the top chord and provide lateral stability between the two trusses and resistance to wind stress.

- 8. BOTTOM LATERAL BRACING The bottom lateral braces lie in the plane of the bottom chord and provide lateral stability and resistance to wind stresses.
- 9. FLOOR BEAM The floor beam spans between trusses at the panel points and carry loads from the floor stringers and deck system to the trusses.
- 10. STRINGERS The stringers span between floor beams and provide the primary support for the deck system. The deck loading is transmitted to the stringers and through the stringers to the floor beams and to the truss.

11. GUSSET PLATES - These plates connect the structural members of a truss, on older trusses, pins are used instead of gussets.

**Bearings** - Bearings transmit the superstructure load to the substructure. They are also provided for longitudinal movement due to expansion and contraction and rotational movement due to deflection.

Some typical bridge bearings are shown below:



# SUBSTRUCTURE ELEMENTS

**Abutments** - A substructure unit which supports the end of a single span or extreme end of a multispan superstructure, and usually retains or supports the approach fill.

- 1. STUB ABUTMENT (Perched Abutment, Dwarf Abutment): An abutment set near the top of an embankment or slope and having a relatively small height. While often supported upon piles driven through the embankment or natural ground, stubs may also be founded on gravel fill, the embankment or the natural ground itself.
- 2. FULL-HEIGHT ABUTMENT (Shoulder Abutment): A cantilever abutment extending from the grade line of the road below to that of the road overhead. Usually set just off the shoulder.

These may be on piles or spread footings and of the open or closed design.

**Piers** - Bridge Piers transmit the load of the superstructure to the foundation materials and provide intermediate supports between abutments.

**Piles** - Piles are used to transmit the bridge loads to the foundation material when soil conditions are not suitable for receiving the load in bearing. Typical pile types are:

- 1. Steel H Piles
- 2. Timber
- 3. Concrete piles (both CIP and precast)
- 4. Concrete filled pipe or shell piles

# **MISCELLANEOUS**

**Clearances** - Clearances refer to the minimum distances that are provided by the bridge relative to the passage of traffic.

**Camber** - This is an initial upward curvature, built into a beam, girder or truss to allow for vertical curves or cross slopes in the road section.

**Reinforcement for Concrete** - Concrete cannot resist tensile stresses and therefore is reinforced with steel bars or wire. Two types are generally used for concrete reinforcement.

- 1. Deformed Bars for main reinforcement. These bars may be epoxy coated or galvanized to resist corrosion.
- 2. Wire mesh for low stress areas, for example, temperature stresses.

# Welding

POLICY - Structural welding on all bridges shall be performed by qualified welders who are certified in accordance with AWS standards. All personnel classified as welders shall be qualified and certified.

PROCEDURE - Contact the District Bridge Engineer to obtain welder certification. The District Bridge Engineer will have one of his or her bridge inspectors verify that the welded test specimens are properly fabricated in accordance with ANSI/AASHTO/AWS D1.5-88 of the Bridge Welding Code as well as part C of the welding procedure specifications and welding procedure qualification tests. The fabrication is to take place in the presence of the inspector. Upon completion of the test specimens, the inspector shall properly identify the sample and forward them along with the completed Form D-479 to the Materials and Testing Division of the Bureau of Construction. The Division of Materials and Testing will issue a letter of certification for all positions in which the welder qualifies.

If an inspector or equipment is not available, the test specimens can be prepared at the Materials and Testing Laboratory, 1118 State Street, Harrisburg, Pennsylvania. Arrangements can be made with Materials and Testing Division to schedule the preparation of the specimens.

High Strength Bolts - These bolts develop a strong clamping force when tightened to a very high tension. Within the last 15 years, the A325 high-strength bolt has become the prime field fastener of structural steel. The specifications call for a heavy hexagon structural bolt, a heavy semifinished hexagon nut, and either one or two washers. Bevel washers may be required. Approved methods should be used to assure proper bolt tension.

Fatigue - This term applies to the phenomenon whereby a structural member, subjected to alternating tension and compression stresses due to moving loads on the bridge, has its useful life decreased. A crack, very often minute, will develop and gradually enlarge on the member, thereby decreasing its load carrying capacity to a dangerous point at which a sudden failure is possible.

**Expansion Joints** - These are joints placed in the deck to accommadate for longitudinal movement

expansion and contraction of the superstructure due to changes in temperature, creep, and shrinkage. They prevent cracking in the deck. Temporary expansion joint system for maintenance repairs include asphaltic plug, preformed silicone, and two-part silicone joint.

**Scuppers** - These are located along the curb line and provide drainage from the deck.

**Downspouts** - When it is not desirable to allow water from the scuppers to fall free, it is carried off by pipes (downspouts).

# CHAPTER 17 REIMBURSABLE ACTIVITIES

DISCONTINUED, REFER TO CHAPTER 14

# CHAPTER 18 RENTED EQUIPMENT

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# 18.1 GENERAL PROVISIONS

# INTRODUCTION

The Bureau of Maintenance and Operations (BOMO) is responsible for providing equipment for various maintenance operations, however, it is not economically feasible to maintain a Department owned fleet large enough to meet all maintenance requirements; therefore, when the work load in a County exceeds their capacity to perform, rented equipment and/or municipal agreements (see Chapter 10) may be used. Suitable arrangements must be made by the county through the Assistant District Executive for Maintenance to obtain and control such equipment as herein outlined.

Rented Equipment is procured through the Department of General Services Invitation to Qualify (ITQ) Contract 2210-01, "Rental Of Highway And Other Equipment." A competitive bidding process is used in which vendors submit bids by means of a Request for Quote (RFQ) using BOMO form M680RFQ (Sample A). BOMO's Rented Equipment Database provides the automated means for creating RFQs. Rented Equipment vendors are required to undergo a prequalification process through the Department of General Services (DGS). As part of this process, vendors specify the counties in which they are willing to work and the equipment categories they will provide. Once approved, an outline agreement (Sample B) is created in SAP. Maintenance organizations award to the lowest qualified bidder by means of a SAP purchase order created in R/3. The purchase order, when released by the Office of Comptroller, is printed and presented to the vendor and serves as the vendor's notice of award. The purchase order number serves as the rented equipment agreement number and should also be used by the highway foreman when recording Rented Equipment usage on payrolls.

Rented Equipment is not procured through SRM.

Both the ITQ Contract and the list of equipment categories may be viewed at the DGS website. The location as of the date of this writing is http://www.emarketplace.state.pa.us/GeneralEdit.aspx?sid=221001

To procure equipment not listed on the ITQ contract, maintenance organizations are to follow guidelines in the PENNDOT Purchasing Manual Publication 358.

If the total purchase amount will not exceed \$5000, maintenance organizations may still use the RFQ process, but it is not necessary. The procedure for "Small, No-Bid Procurements – Service" may be used (Publication 358).

In all instances, including emergency purchases, the method of vendor payment is by means of a SAP purchase order created with reference to the ITQ contract. Under no circumstances is Rented Equipment to be procured by means of a purchasing card.

# **PURPOSE**

The purpose of this directive is to set forth areas of responsibility for planning, procurement, authorization, scheduling, use, supervision and control of outside rented equipment in conjunction with normal work plans for summer and winter-operations as well as emergencies.

# **DETERMINATION OF NEED**

Once Department equipment is scheduled and committed, a need shall be established for rented equipment to assist Department equipment in completing the planned construction and maintenance programs within their scheduled time. A quota will be developed from the need list by the Maintenance Manager subject to approval by the Assistant District Executive for Maintenance.

In winter, proper planning and scheduling of Department equipment within the policies and guidelines as outlined in Chapter 4, Section 3, established by the Bureau of Maintenance and Operations will reflect the use of Department equipment and the need for rented equipment.

During the winter months, certain conditions may make it necessary to reassign Department equipment from those areas where rented equipment can be obtained to those areas where rented equipment cannot be obtained. Winter rented equipment quotas as outlined in Chapter 4, Section 3, will be developed by the Maintenance Manager, subject to review and approval by the Assistant District Executive for Maintenance.

# MULTIPLE COUNTY RENTALS

Most equipment is rented for a specific county. It is possible to rent a piece of equipment for multiple counties within the same district, or district-wide, under the following conditions:

- (1) Due to the nature of the vendor prequalification process, only vendors prequalified in all the counties in question may receive RFQs. These vendors can be selected by analyzing the "Rented Equipment Audit Report Form" (Sample D) generated by the Rented Equipment Database. A report must be generated for each county in question. RFQs may be sent only to vendors who appear on all the audit reports. The RFQ must specifically mention all the counties where the vendor may be required to work and that the vendor will be paid at the same rate as quoted on the RFQ and purchase order.
- (2) Audit reports for all counties must be submitted to Comptroller as attachments to the purchase order, with notations indicating which vendors were qualified in all counties and which were not.
- (3) Since the Summary of Bids form (Sample E) created by the Rented Equipment database provides a summary only for each individual county, a standard Summary of Bids Form must be used at the bid opening.

# **EMERGENCIES**

When the Governor's office has declared an emergency, or in the event an emergency arises requiring the use of rental equipment whether for short duration for debris hazard control and cleanup such as may be required by the State Police or any other type of roadway emergency, current Commonwealth emergency procurement procedures must be followed. End user preocedures for emergency procurement can be found in the SAP information center on PennDOT's intranet site. Vendors solicited in emergencies are not required to be prequalified for the ITQ contract.

# WINTER STANDBY EQUIPMENT

Each District should bid contracts for "Standby Equipment" considered essential in the event of unusually heavy winter storms (for instance, Loaders - three cubic yards and over).

The equipment's status as "Standby Equipment" must be fully explained to the owner in the RFQ so that no misunderstandings develop. Dates of the agreements should be from October 15th to April 30th.

# CONTRACT PERIOD AND CALLOUT PERIOD

BOMO form M680RFQ (Sample A) contains lines for "Contract Period" and "Callout Period." A call-out period is the period when the vendor must be available to provide services. The contract period is the entire term of the purchase order. If a Vendor is called to provide services outside of the call-out period, but during the contract period, the Vendor may choose not to perform services at that time, and the Vendor will not be considered in default. If a Vendor fails to provide services during the call-out period, for whatever reason, the Vendor will be in default and the purchase order subject to termination pursuant to Part V, Paragraph 16 of Invitation to Qualify for the Rental of Highway and Other Equipment, Number 221001.

# AGREEMENT LENGTH FOR EQUIPMENT RENTALS

Agreement lengths may be for:

- (1) One year (or less). For such agreements, the callout period and contract period on the first page of the RFQ will coincide. Winter agreements may include a mobilization incentive, fuel adjustment incentive, both or neither (see section 18.4 "Winter Rental Incentives").
- (2) Simple Long Term agreements without renewals for any time period from the current date not to exceed August 31, 2012 (the expiration date of the ITQ contract). This type of agreement runs continuously to the cancel date (with no renewals or rate adjustments). The bid price and all agreed to specifications will remain the same for the entire term of the agreement. For a simple long term agreement, the contract period on the first page of the RFQ should reflect the entire agreement period, not just the first year.
- (3) Term-with-Renewal agreements with the option to renew for subsequent years. Unlike with simple long term agreements, the contract period on the first page of the RFQ is one year from the beginning of the call-out period, even if additional renewal periods are expected. The additional

renewal periods are to be listed only in the specifications section of the RFQ, not on the first page. up to and including August 31, 2012 (the expiration date of the ITQ contract). This type of agreement must be renewed prior to the start of the subsequent year by means of a renewal letter (Sample C). At the discretion of the maintenance organization, an annual rate adjustment may be used, established at the time of the RFQ.

Strike off Letter 462-03-03 dated June 16, 2003 ("Long Term Rented Equipment Agreements") provides detailed examples of specification language for term-with-renewal agreements both with and without rate increases. As of this writing, this Strike Off Letter is located at http://www.emarketplace.state.pa.us/GeneralEdit.aspx?sid=221001

# **SELECTION OF EQUIPMENT VENDOR**

Awards are made when all conditions specified are met. Maintenance organizations will conduct a bid opening in accordance with guidelines in Publication 358 Chapter 4 "Solicitation and Selection Phase." Special attention should be given to the section "Guidelines for Determining Who Has Authority To Sign Contracts (RFQs) That Bind the Contracting Entity" to determine that the RFQ has been signed by an authorized vendor signatory.

It is the responsibility of the County to personally inspect the equipment and certify that it matches the descriptions on the RFQ specification.

Contracts may be executed with municipalities for winter traffic services and other maintenance activities to supplement Department equipment (See Chapter 10).

# 18.2 RESPONSIBILITIES

## CENTRAL OFFICE

The Bureau of Maintenance and Operations establishes policies and procedures for the procurement of Rented Equipment. The Bureau also maintains the Rented Equipment RFQ database, conducts field training in Rented Equipment Policies and Procedures, assists in the processing of agreement termination requests (see section 18.7) and assists with Rented Equipment problems or questions as they arise.

# DEPARTMENT OF GENERAL SERVICES (DGS)

The Department of General Services is the owner of ITQ Contract 2210-01. DGS approves and processes vendor ITQ applications.

All vendor requests for ITQ applications should be addressed to the Department of General Services, Bureau of Procurement, 555 Walnut St. 6th Floor, Harrisburg, PA 17101

Vendors inquiring about prequalification may be directed to the location of the ITQ contract on the DGS website. As of this writing the location is P:\penndot shared\Purchasing Rented Equipment\SOL 462-03 Long Term Rental Agreements.pdf

# **DISTRICT EXECUTIVE**

It shall be the responsibility of the District Executive to direct overall implementation of policies on rented equipment through the District Executive's staff.

# ASSISTANT DISTRICT EXECUTIVE-MAINTENANCE

- (1) Assists and guides the Maintenance Manager in developing work plans, planning and scheduling Department equipment, determining the need for rented equipment and establishing criteria for the use and control of rented equipment. Determines whether the job is being performed and has a systematic method to evaluate performance to stand the test of audits.
- (2) Assures that an annual specialized work crew program is developed and implemented around which all equipment is efficiently scheduled.
- (3) Coordinates movement of district-wide specialized equipment (both Department owned and rented) and assure this equipment is properly used.
- (4) Verifies and approves each county's need for rented equipment as program support, financed and justified by size, type and number required (within the framework and limitations of the District budget).
- (5) Reviews and approves winter equipment rental quotas as established by the Maintenance Manager.

# DISTRICT EQUIPMENT MANAGER

It shall be the responsibility of the District Equipment Manager to provide support to the Assistant District Executive for Maintenance in the following areas:

- 1. Reviews county procedures used in inspection of all rented equipment to assure that all rented equipment is in compliance with specifications, and report in writing any deficiencies to Assistant District Executive for Maintenance.
- 2. Enforces procedures for verifying the validity and accuracy of information on the rental agreement:

# **Examples:**

- a. License numbers
- b. Manufacturer's serial number
- c. Gross Vehicle Weight (G.V.W.)
- d. Capacity
- e. Number of axles
- 3. Coordinates and supervises District-wide and multiple county rentals, using the guidelines in section 18.1. "Multiple County Rentals."

# **MAINTENANCE MANAGER**

- 1. Develops needs and establishes quotas for rented equipment as program support, financed and justified by size, type and number required. Before any equipment is rented, the Maintenance Manager shall discuss with the Assistant District Executive for Maintenance to determine if there is Department equipment available within the Engineering District that can be transferred economically.
- 2. Assures that the hours rented equipment is operated is in accordance with Maintenance Manual Publication 23, Chapter 4, Section 5.
- 3. Assures that the owner of an item of equipment furnishes license and vehicle identification numbers for licensed vehicles. The information should be used to verify that the unit being rented is consistent with proposal specifications. The Maintenance Manager also has the responsibility to inform the vendor of operational needs in order to establish the vendor's responsibility to perform the work to Department of Transportation's specifications.

- 4. Assures that all rented equipment is adequately covered by insurance to save the Department harmless. No equipment shall be rented without adequate insurance coverage (see Section 3).
- 5. Prohibits the use of rented equipment until the agreement/contract is executed.
- Implements a procedure to monitor the supervision, control and use of rented equipment through payroll time sheet forms and foreman's diary under the following provisions.
  - a. The foreman and the contractor's operator each signs a payroll time sheet for each operator for the hours used each day worked. Payment for equipment under agreement is for hours worked and should not include "Call Time" unless this has been specified in the RFQ and purchase The Assistant County Maintenance Manager is responsible for reviewing payrolls pertaining to payment of rental agreements the same as other documents to assure that they are accurate prior to approving for payment.
  - b. Appropriate disciplinary action will betaken including legal actions in those cases where fraudulent billings and payments are established. It is the additional responsibility of the Maintenance Manager to coordinate with the Assistant County Maintenance Manager the following:
- 1. Upon the preparation of appropriate work plans and scheduling of Department owned equipment, determines rented equipment required for support through meetings and make adjustments for reassignment and rescheduling of equipment.
- Assigns responsibility for inspection of all rented equipment to either the County Highway Equipment Manager or Assistant County Maintenance Manager or both prior to using the equipment.
- 3. Assumes direct responsibility for the proper use of all rented equipment required to complete any approved work plan in the county.

# ASSISTANT COUNTY MAINTENANCE MANAGER

- 1. Assists the County Highway Equipment Manager with inspection of rented equipment when directed by the Maintenance Manager and verifies informational data on agreements.
- 2. Verifies that no substitute rented equipment is used in place of that which is under agreement unless it is approved as per instructions under 18.3.1.
- 3. Properly supervises the use of rented equipment and Department equipment through specific detailed assignments to the foreman by means of biweekly or weekly work schedule and through personal inspection of the equipment use, performance and production.
- 4. Assumes direct responsibility for proper documentation of the hours used by rented equipment relating the agreement number, location and the time of use by verifying that the appropriate payroll forms are completed daily following certification by the foreman.
- 5. Makes available to the foreman, a listing of all rental agreements with which the foreman is to work indicating the size, type and rate. Care must be taken when completing the payroll documents to avoid overpayment.

# **COUNTY EQUIPMENT MANAGER**

- 1. Inspects and approves all rented equipment for compliance with the specifications as stipulated in the agreement.
- 2. Certifies the validity and accuracy of pertinent data on the agreement such as, license number, manufacturer's serial number, gross vehicle weight, model, year, type, size of capacity, etc. This is of particular importance for unlicensed equipment or non-titled equipment that has no registration card, such as hilifts, cranes, dozers, etc.
- 3. Assures that the vendor has a P.U.C. Contract Carrier Certification for any rental tractor and trailer combination used to transport Department property, i.e.,

lowboys, hauling hilifts, etc., and any rented vehicle used to transport materials from a source of supply to a stockpile or job site. If the vendor is not certified, it will be necessary for the vendor to obtain Form P.U.C. 189, application for a Contract Carrier Certification. This form can be obtained by contacting the Application Section of the P.U.C. Do not use any equipment under the circumstances stated above until the vendor obtains a P.U.C. Certification.

# **FOREMAN**

- 1. Verifies through the Assistant County Maintenance Manager that the equipment being used is covered by an approved agreement.
- 2. Uses rented equipment judiciously, and allows no substitution of another piece of equipment in place of the one under agreement unless it is of equal or higher class or size (see section 18.3 "Substitution"). Should the unit under agreement become inoperable, the Assistant County Maintenance Manager should be contacted for further direction.
- 3. Completes appropriate payroll forms daily for the actual hours worked by rented equipment.
- 4. Prepares separate payrolls when rented equipment works for more than one (1) foreman in the same day.

# 18.3 EQUIPMENT RENTAL REQUIREMENTS

## **GENERAL**

Agreements shall be advertised by means of an RFQ and awarded to the lowest responsible bidder. Procedures and requirements shall be followed as outlined in this chapter. All agreements must be fully executed before placing into service.

Rented equipment shall not be stored in Department-owned buildings or in the storage yard unless it is the responsibility of the Department to provide such storage under the terms of the agreement.

#### REGISTRATION CARDS

The owner of the equipment is required to furnish license and vehicle identification numbers for licensed vehicles when responding to a callout. This information will be used to verify that the unit being rented is consistent with the RFQ specification.

The rented pieces of equipment must be properly licensed and cannot carry "Dealer" or "Used Car Dealer" registration plates (except wreckers).

Truck rentals cannot bear Special Mobile Equipment Plates (SME) or Farm Truck Plates(FM). SME Plates are permissible for Street Sweeper rentals.

#### **SUBSTITUTION**

Verify that no substitute rented equipment is used in place of that which is under agreement, unless it is approved and recognized that, on occasion, use of a substitute item of equipment will be necessary. Considerable discretion and judgment should be used by Department personnel regarding the substitution of an item of equipment. Approval to use a substitute item of equipment is the responsibility of the County Equipment Manager. A substitute item of equipment must be of the same size and class or higher than the item under agreement. A new agreement does not have to be executed when this condition for a substitute item of equipment is met. The rental rate for the substitute item of equipment will be the same as stated in the original agreement.

If a substitute item of equipment of the same size and class or higher is not available, then the vendor is in default on the original agreement which must be canceled (see "Terminating an Agreement" in section 18.6). A RFQ for a new agreement may then be executed to replace the duration of the canceled agreement. It is not necessary to send an RFQ to the defaulting vendor of the original RFQ. However, the defaulting vendor will in all likelihood appear on the summary of bids for the new agreement. The M-680CB-A "Summary of Bids" form to be included with the replacement agreement must contain a complete explanation of the situation. Notation must be made on the Summary of Bids that the vendor defaulted on the original agreement resulting in a rebid. If the defaulting vendor was the only vendor on the original bid, a second RFQ should still be attempted in the event new qualified vendors have been approved by DGS since the time of the first RFQ. If the defaulting vendor is the only vendor on the second RFQ, the maintenance organization may pursue an off-contract procurement (see "Follow Up to Unsuccessful Requests for Quote in section 18.5).

#### HARD HATS AND SAFETY VESTS

When equipment is rented with an operator, ITQ Contract 2210-01 requires vendors to provide equipment operators with OSHA recommended safety gear, where applicable.

In the absence of applicable federal statute, regulation and/or other standard, the vendor or his operator shall ensure that hard hats are worn whenever the operator is outside of his vehicle at a work site or other designated hard hat areas.

Safety vests are required whenever the vendor or his operator is working outside of his vehicle and within 15 feet of an open lane of traffic. The vendor shall ensure that such hard hats and safety vests shall meet OSHA recommendations of safe design and construction for the work to be performed and the conditions to be encountered and shall provide for proper maintenance and sanitation of the hard hats and safety vests. A breach of this provision shall be considered a breach of the ITQ contract, shall be cause for default and may be cause for termination of the agreement by the Department.

# LEASED EQUIPMENT

The Department can rent equipment under the following conditions; true and legal title to the equipment is in the VENDOR's name or it will be in the VENDOR's name 30 days prior to the effective date of the agreement, or the equipment is under lease purchase or lease to the VENDOR and the VENDOR is not a party to any agreement made for the purpose of concealing the identity of the VENDOR of the equipment.

### P.U.C. CERTIFICATION

A P.U.C. Contract Carrier Certification will be required for any rental tractor and trailer combination used to transport Department property; i.e., low boys hauling hilifts, etc., and any rented vehicle used to transport materials from a source of supply to a stockpile or job site.

If the vendor is not certified it will be necessary to obtain Form P.U.C. 189, application for a Contract Carrier Certification. This form can be obtained by contacting the application section of the P.U.C. Do not use any equipment under the circumstances stated above until the vendor obtains a P.U.C. Certification.

# VENDOR INSURANCE MINIMUM REQUIREMENTS

The Contractor shall procure and maintain, at its expense, the following types of insurance issued by companies acceptable to PennDOT and authorized to conduct such business under the laws of the Commonwealth:

- a. Worker's compensation insurance for all of the contractor's employees and those of any subcontractor, engaged in work at the site of the project in accordance with the Worker's Compensation Act of 1915 and any supplements or amendments thereof.
- b. Public liability and property damage insurance to protect the Department, PennDOT, the contractor, and any and all subcontractors from claims for damages for personal injury (including bodily injury), sickness or disease, accidental death, and damage to property, including loss of use resulting from any property damage, which may arise out of the services performed under this Contract, whether such performance be by the Contractor, by any subcontractor, or anyone directly or indirectly employed by either. The limits of such insurance shall be in an amount not less than two hundred fifty thousand (\$250,000.00) dollars each person and one million (\$1,000,000.00) dollars each occurrence, personal injury and property damage.
- c. Contractor shall maintain fire, theft and vandalism insurance covering equipment when left in PennDOT's custody.
- d. Contractor shall furnish current certificates of insurance naming PennDOT as additional insured upon call out.

This coverage shall be occurrence based.

The policy(ies) shall name the Commonwealth as an additional insured and shall contain a provision that the coverage afforded thereunder shall not be canceled or changed unless at least thirty days' prior written notice has been given to the Commonwealth (District).

Maintenance organizations must assure that the policy will continue to be enforced for the contemplated period of rental and that the coverage indicated on the contract is compatible with the term of the policy. A tickle file in the county shall be established to determine when the insurance policy expires and the vendor shall be responsible for presenting the county a Certificate of Insurance upon execution of the contract. The vendor shall immediately notify the county if the policy expires prematurely while the rental contract is in effect.

# CERTIFICATION OF CONTRACTOR RESPONSIBILITY

The Commonwealth Contractor Responsibility Program requires all agreements exceeding \$10,000 to include certification of contractor responsibility determination.

A copy of an approved OS-528C Form (Commonwealth Contractor Responsibility Program DOT Certification) must be included with all rental purchase orders that list a total estimated cost exceeding \$10,000 or if the low bidder is rejected.

### **SIGNATURES**

A trained and role-mapped purchaser shall sign the Form M680CB-A, Summary of Bids in the space indicated "Department Representative." Any Department employee who was present at the bid opening may sign in the "Witness" space.

For Winter agreements using the mobilization incentive (see section 18.4 "Winter Rental Incentives"), the County Equipment Manager or District Equipment Manager shall sign the "Rental Equipment Inspection/Snow Academy Overview" form (Sample F) in two places, one for inspection and one for Snow Academy.

Vendor's Signature - The vendor is required to sign page 1 of the RFQ in the space designated "Contractor's Signature" indicating the equipment submitted for rental is his or her own or under lease purchase or leased equipment and that he agrees to the terms contained in the agreement. Publication 358, Chapter 4 "Guidelines for Determining Who Has Authority To Sign Contracts (RFQs) That Bind the Contracting Entity" designates authorized vendor signatories.

Rubber stamped vendor signatures are not acceptable.

If a vendor submits a RFQ by fax and subsequently becomes the winning bidder, the maintenance organization is required to obtain the original RFQ with an original signature from the vendor before executing the purchase order.

#### MINIMUM GUARANTEED PAYMENT

Vendors renting trucks and trucks with plow and/or spreader combinations for winter operations may be guaranteed a forty (40) hour annual minimum payment. In this regard, it will be extremely critical that your winter quotas reflect realistic needs in order not to pay for nonproductive hours.

In regard to unavailability, the following guidelines are established:

- 1) Subtract the number of hours the vendor should have worked from the forty (40) hour minimum guarantee for the first two incidents of unavailability (in a given winter season), and upon the third incident the agreement should be canceled.
- 2) The principal factor for determining the number of hours to subtract for unavailability would be the hours spent by another rental unit or Department forces to complete the particular winter service required for that period in the assigned area of the unavailable unit.

The following are conditions under which a vendor would be considered unavailable:

- 1) Unable to contact or does not show within a two hour period from initial call out of rented equipment.
- 2) Unavailable for work for any nonjustifiable reason as determined by the Department.

If a vendor is unavailable for a justifiable reason, that instance will not be considered as an incident of unavailability. However, the forty (40)

hour minimum guarantee will be reduced by the hours the contractor was not available under any condition.

The specification in Sample G should be attached to the RFQ.

On a weekly basis, the District should monitor the current snow removal season use of trucks and truck combinations which have been granted a forty hour guarantee but have been used less than forty (40) hours.

### NONUSAGE OF HOURLY RENTALS

It is the responsibility of the appropriate district or county office to notify the equipment vendor if a particular piece of equipment will not be used by the Department for a period of one week or more. This notification is to be sent to the vendor no later than Friday preceding the week that equipment will not be used and will include the anticipated date the equipment will again be required for use by the Department. This requirement was established in Strike-Off Letter 462-06-02, dated April 20, 2006.

#### **WELDING UNITS**

Specification "WR" (see Sample H) must be included as part of each rented equipment bid package for welding units provided to potential bidders. Specification "WR" lists the hand tools inventory the vendor is required to provide as part of a welding unit rental. The Engineering District is permitted to delete a tool item (or items) from Specification "WR" when it is determined the tools are unnecessary for the activities anticipated for the welding unit. All tool item deletions must be performed prior to releasing the bid packages to the potential bidders.

The following required statement is also included on Specification "WR":

The VENDOR hereby promises and agrees to furnish an operator certified according to the structural welding code, ANSI/AWS D1.1/D1.1M, 15 Jan 2006, Section 4, Qualification and any updates.

Welding rods must be supplied by the VENDOR.

#### TRAFFIC CONTROL DEVICES

Traffic control devices (flashing lights, barricades, barrels, panels, arrow boards, etc.)

are represented on the ITQ contract by material codes 303418 (DEVICES,TRAFFIC CONTROL,MISC,Z54) and 303419 (DEVICES, TRAFFIC CONTROL,MISC,Z54,W OP). For this category of equipment, the distinction between "with operator" and "without operator" is as follows:

- (1) Material code 303418 is to be used if the devices are to be stored for the duration of the agreement on Department property and are to be installed at field locations, and removed by Department forces. The exact number of units must be indicated on the RFQ.
- (2) Material code 303419 is to be used if the devices are to be installed at field locations, maintained and removed by the vendor. This category does allow for temporary "between jobs" storage of the devices on Department property if a need is anticipated in the same vicinity. However, the vendor will not be paid for this storage time.

These two options may not be combined in a single agreement. The unit of measure selected in the REQ database should be "day".

Material codes 303418 and 303419 are the only Rented Equipment material codes which are not "virtual inventory" in SAP Plant Maintenance. For this reason, the SAP purchase order will be a NNB Standard (45XXXXXXXXX) purchase order.

Traffic control devices are the only rented equipment for which the goods receipt is not entered by means of the highway payroll. For traffic control devices, a MIGO goods receipt must be entered. For further information on the procurement of traffic control devices, refer to End User Procedure EUP EQ 4 "Create Purchase Order for Traffic Control Devices."

#### **NON-HOURLY RENTALS**

Although the vendor outline agreements in SAP provide "hour" as the only unit of measure (UOM), it is possible to provide payment to the vendor based on both (1) alternate, non time based units of measure and (2) daily, weekly and monthly payments.

(1) Units of measure not based on units of time, hereafter referred to as "alternate units of measure." These UOMs are UOMs are Square Yard, Square Foot, Foot, Linear Mile, Lane Mile, Ton, and Acre. Although the Rented Equipment Request for Quote (RFQ) database includes these UOMs, they are not included in the vendor Outline Agreements in SAP. Since obtaining certain pieces of equipment, such as milling machines or mowers, can be more cost effective if bid by units such as feet or miles, maintenance organizations may procure equipment using these units according to the following guidelines:

- The County must contact the Bureau of Maintenance and Operations (BOMO), Maintenance Programs Section with justification for approval to bid using the specific unit of measure.
- The District Equipment Manager (DEM) notes approval on a log of POs using alternate units of measure.
- The County conducts the bid using the template cover letter at P:\PennDot Shared\Purchasing Rented Equipment\UOM Cover Letter.doc. The highlighted areas in the template must be supplied by the County. The letter must reference the specific RFQ for audit purposes.
- The County supplies the Purchase Order number to the DEM and BOMO to update the rented equipment approval log.
- District and BOMO monitors use of the alternate  $\mbox{UOMs}.$

For the purpose of clarification to the vendor, the following language must be included in the header text of the SAP Purchase Order:

"This purchase order is created with reference to ITQ 2210-01 and states the unit of measure as "hours" due to the limitations of PENNDOT's computerized procurement system. The unit of measure for this purchase order is "[UOM]" as stated in the Request for Quote (RFQ) [insert RFQ#]. ALL REFERENCES IN THIS PURCHASE ORDER TO "HOURS" AS THE UNIT OF MEASURE SHALL BE REPLACED WITH A REFERENCE TO "[UOM]" AS THE UNIT OF MEASURE. The vendor is expected to perform effectively and efficiently using this alternate unit of measure as specified in the RFQ."

#### **GUARANTEED HOURS**

Time-based (daily/weekly/monthly) – bid as hours with minimum # of hours

(2) Procuring daily, weekly or monthly rentals necessitates bidding as hourly, while specifying in the Request for Quote (RFQ) that the vendor will receive payment equal to a day, week or month. For this purpose, the Department has established the following equivalencies: one month = 176 hours, one week = 40 hours, one day = 8 hours. RFQs for these rentals must contain the following language in the specification for daily rentals:

Vendor please provide your quote as a per hour rate. For the purpose of this bid, you will be paid for 8 hours per day, whether the Department uses the equipment more or less hours in that day. Please bill for 8 hours per day.

## For weekly rentals:

Vendor please provide your quote as a per hour rate. For the purpose of this bid, you will be paid for 40 hours per week, whether the Department uses the equipment more or less hours in that week. Please bill for 40 hours per week.

### For monthly rentals:

Vendor please provide your quote as a per hour rate. For the purpose of this bid, you will be paid for 176 hours per month, whether the Department uses the equipment more or less hours in that month. Please bill for 176 hours per month.

For further assistance in procuring both Nonhourly and guaranteed hour rentals, refer to End User Procedure EUP EQ 7 "Summer Equipment Rentals - Changes After Implementation of Plant Maintenance.

# PAYROLL AND RECORD KEEPING REQUIREMENTS

Payrolls will be prepared using the rental agreement number (the purchase order number). In the case where multiple awards were made to the same vendor, there will be an agreement number for each equipment item.

### **TRANSFERS**

It is permissible to transfer Rented Equipment from one county to another within the same District provided the equipment has been obtained using the guidelines in section 18.1 "Multiple County Rentals." That is, only vendors prequalified in all counties in question have been solicited and the RFQ specifically mentions the counties where the vendor may be required to work.

Before transferring any rented equipment, the vendor must be notified by the Maintenance Manager. The vendor will be paid at the same rate as stipulated in the purchase order.

### **POSTED BRIDGES**

Bridges with weight restrictions posted under authority of Section 4902 of the Vehicle Code cannot be crossed by any over-posted-weight vehicle except as provided under Department Regulation 191. Under Regulation 191, the District Bridge Engineer may issue a permit authorizing an over-posted-weight vehicle to cross a posted state bridge if (for all practical purposes) the vehicle can only reach its destination via the posted bridge, and analysis of the axle weights and other data indicates that the vehicle will not have a detrimental effect on the bridge.

The County Maintenance Manager must ensure that no posted state bridges will be overloaded by equipment which is operated under a rented equipment agreement, so the Maintenance Manager must ensure that the rental vendor files the proper permit application(s) (Form M-4902) with the District Bridge Engineer for subject over posted-weight vehicles (i.e., each piece of over posted-weight rented equipment the Department directs a vendor to cross over a posted state bridge in order to fulfill his contracted obligations to the Department particularly snow and ice control equipment).

All such permits required by a rental vendor (to fulfill his obligations under a rented equipment agreement with the Department) must be issued by the District on a non-fee basis, but the permits must be placed in the over-posted-weight vehicle to be available for inspection by the police.

# 18.4 EQUIPMENT RENTAL BIDDING

The preparation and processing of Requests for Quote using BOMO Form M680RFQ (Sample A) as generated by the Rented Equipment RFQ database shall be the responsibility of the Districts. Once a determination of need for a piece of Rented Equipment has been made (see section 18.1 "Determination of Need"), the Rented Equipment RFQ database is used to generate RFQs for vendors qualified by DGS to provide the particular equipment category needed in the particular county.

The data for this program is stored on a SQL server with a front end program in Microsoft Access. The data source (ODBC) link to the SQL server is not user-based but is created on the hard drive of the computer being used, therefore a one-time set up process to establish the link must be done on every workstation which will use the database.

Once the ODBC link has been established, users should copy the shortcut icon "Shortcut to Rented\_Equipment\_ITQ\_221001.mde" to their desktops. Opening the shortcut will prompt the user for a user ID and password. Theses are the same for all users of the database. The user ID is "RentEquip" and the password is "rentequip" (both case sensitive). Any Department employee may access the database (but may not modify data, forms or reports) using this user ID and password. There is no need to register individual users.

As of this writing, detailed instructions for the ODBC setup process, as well as the location of the shortcut icon, and step-by-step illustrated instructions for creating all bid documents are in the document "NEW REQ Database Instructions 2210-01" located in the folder P:\penndot shared\Purchasing Rented Equipment

### PREPARING THE REQUEST FOR QUOTE

(1) Opening the database will produce the Main Menu illustrated in Sample I. Using the dropdown lists under "category" and "county", the appropriate material code and maintenance organization code must be selected. At this point the audit report should be printed using the "Print List for Audit" button. Choosing the "Develop and

Print RFQ" button will produce the Print Menu illustrated in Sample J.

- (2) RFQ data should be entered as follows:
  - Category: The material code, selected from the drop down list or typed
  - County: The four digit organization code (e.g. 0160 = Warren County)
  - Bid Date: Date of the bid opening
  - Bid Time: Time of the opening as HR:MN AM/PM (e.g. 02:30 PM)
  - Start Date: The callout start date (see "Contract Period And Callout Period" under section 18.1)
  - Termination Date: The callout end date (see "Contract Period And Callout Period" under section 18.1)
  - Contract Start Date The contract start date as distinguished in "Contract Period And Callout Period" under section 18.1
  - Contract End Date The contract end date as distinguished in "Contract Period And Callout Period" under section 18.1
  - Rate per: This should always be "Hour" except in the case of non time-based Alternate Units of Measure (see "Non-Hourly Rentals" under section 18.3). Rentals paid on a daily, weekly or monthly basis should use "Hour" as the unit of measure and follow guidelines in "Non-Hourly Rentals" under section 18.3. For traffic control devices only, the unit of measure should be "day".

At this point, the maintenance organization may print address labels for all prequalified vendors in the category by choosing label button on the right side of the print menu. The database is configured to use Avery 5160 label forms.

Selecting the large rectangular button to the right of the RFQ data ("Fill in the Data to the left...") will print a RFQ for each qualified vendor as well as the summary of bids to be used at the bid opening. RFQs should then be mailed, faxed or hand-delivered to all vendors. There are only

two possible exceptions to the requirement to submit RFQs to all vendors:

- (1) A CRP check produces an entry against this vendor. If the entry is for tax liability the maintenance organization may not submit a RFQ to this vendor. If the CRP entry is for performance, the maintenance organization may solicit the vendor or not, at its discretion. If a vendor is not solicited due to a CRP entry, the CRP data must be submitted to Comptroller with the summary of bids and purchase order.
- (2) The RFQ is a rebid due an agreement being cancelled due to vendor default. The maintenance organization is not required to solicit the defaulting vendor. However, the defaulting vendor will in all likelihood appear on the summary of bids for the new agreement. The M-680CB-A "Summary of Bids" form to be included with the replacement agreement must contain a complete explanation of the situation. Notation must be made on the Summary of Bids that the vendor defaulted on the original agreement resulting in a rebid.

When submitting RFQs to vendors, all exhibits and specifications must be attached. Failure to do so will result in a rebid.

#### **SPECIFICATIONS**

The need for comprehensive specifications cannot be over emphasized. The Department does not have the necessary means to correct poor performing or non-responsive vendors without them. The individuals who are responsible for purchasing rented equipment are also responsible for ensuring the specifications that accompany the RFQs clearly state the deliverables required of the rental equipment contractors. Contractors that are deemed poor performing or non-responsive are to be entered into the Commonwealth's Contractor Responsibility Program file, as outlined in Pub 358, PENNDOT Purchasing Manual.

It is very important that all districts and counties follow all the terms and provisions of the RFQ and Purchase Order. Past inconsistencies between districts and counties in regards to compliance with the contract provisions, particularly in regards to payment for equipment usage, have resulted in vendor protests.

On all agreements for the rental of equipment, it is absolutely necessary to specify whether the "Vendor" or the "Commonwealth" agrees to furnish fuel, oil, operator and any other pertinent information.

#### CONDUCTING BID OPENING

The Summary of Bids form (BOMO Form M680CB-A, January 2007 Revision) is used to record the bids (Sample E). The sole exception is in the case of multiple county bids in which a standard summary of bids must be used (see section 18.1 "Multiple County Retails"). This form is generated by the Rented Equipment Database. Each vendor line should contain either a bid price, an indication of "no bid" if the vendor responded as such, or "no response" if the vendor did not respond to the RFQ at all. The Summary of Bids must be submitted as an attachment to the SAP purchase order. For multiple county bids, a standard summary of bids form must be used.

Only a trained and role-mapped purchaser may sign the Summary of Bids in the space indicated by "Department Representative." Any Department employee who was present at the bid opening may sign in the "Witness" space.

In cases where bids are received after the prescribed time, a notation is to be made on the Summary of Bids indicating receipt and return of each such items received along with the date anytime.

The low bid for each line item will be indicated on the Summary of Bids by a double checkmark. The maintenance organization's award recommendation for each line item will be indicated by circling the bid amount.

In any instance where the recommended award is other than the checked low bid, an explanation is required on the M680CB-A indicating why the low bid was rejected.

Such indication of bid rejection will hold true for any additional bids lower than that for which the award has been recommended. In the case of tie bids, a successful bidder will be determined by lot (coin toss, etc.) at the bid opening. The exact manner in which the tie was broken and any other pertinent information must be listed on the M680CB-A.

### UNRESPONSIVE VENDORS

SITQ Contract 2210-01, Part IV Special Terms and Conditions, paragraph 16 requires vendors to respond to all RFQs, if only with a "no bid". Contractors that fail to respond to five (5) successive RFQs by a single county shall be removed from the Rented Equipment Workbook for supplying any and all equipment to that county. Maintenance Organizations should inform BOMO if a vendor has not responded at all to five consecutive RFQs. Note that a response of "no bid" is considered a response.

# **RIGHT TO REJECT BIDS**

Section 102.13 of the "Publication 408" provides for the rejection of bids as follows:

"In addition to rights under 67 Pa. Code, Chapter 457, the Secretary reserves the right to reject any or all proposals if, in his judgment, the best interests of the State will be promoted thereby."

In addition, bids will be rejected for any of the following reasons:

- 1. Failure to submit the bid on the form furnished by the Department.
- 2. Failure to sign the RFQ, the required affidavits or certificates or any other required documents.
- 3. Failure to include a unit price for each unit item on the RFQ, except in the cases of alternate bidding; in alternate bidding, failure to include a unit price for one of the required alternate unit items.
- 4. The inclusion of conditions or qualification not provided for in the RFQ.

In addition, proposals may be rejected for the following reasons:

- 1. Part of the proposal form is detached, except as otherwise provided in Section 102.02. of Publication 408.
- 2. If the RFQ contains any omission(s), erasure(s) or alteration(s), addition(s) not specified, or deviation(s) of any other kind. except as specified in Section 102.06(c)
- 3. Bid prices are determined to be unbalanced.

### RECORDS RETENTION

Records related to each agreement shall be retained in accordance with the Records Retention and Disposition Schedule maintained by the Office of Enterprise Records Management.

### WINTER RENTAL INCENTIVES

To increase vendor participation in the Department's winter rental program, maintenance organizations may at their discretion, use the optional incentives of mobilization payment or fuel surcharge, alone or in combination, in either sigle year, multiyear with renewals, or straight multiyear agreements. Strike Off Letter (SOL) 462-07-05, dated May 25, 2007 "Long Term Winter Rental Agreements" and as amended in SOL 462-08-06, dated October 24, 2008 "Policy Changes ITQ Contract 2210-01" details the specific language to be used in specifications employing these incentives.

All agreements may contain the forty (40) hour guarantee specification.

All routed rental agreements are required to have language which requires awarded vendors to have their equipment available at all times, 24/7, during winter operations as required by the county maintenance manager.

Districts are also permitted to secure auxiliary (non-routed) rentals up to 10% of the district MECE quota. These units may be assigned in the district where deemed as appropriate by the District Executive. Any identified needs greater than 10% must be pre-approved by the Bureau of Maintenance and Operations Director.

Maintenance organizations should be aware that use of the mobilization and/or fuel incentives will involve a longer processing time. These items are not on vendor outline agreements, therefore the Office of Chief Counsel is involved in the purchase order release strategy. Maintenance organizations using these incentives should plan their bidding well in advance of the start of the winter season.

The following optional incentives may be used in Winter Rentals:

- (1) Mobilization
  - (a) Option 1. An initial mobilization payment, dollar amount established by each individual maintenance

organization, may be included in individual requests for quote (RFQ), with the conditions that the vendor's equipment is calibrated on the requested calibration date and the vendor representative attends an overview of the Maintenance Organization's Snow Academy.

- (b) Option 2. An initial mobilization payment, dollar amount established by each vendor submitting the quote, may be included in the submitting vendor's quote, with the conditions that the vendor's equipment is calibrated on the requested calibration date and the vendor representative attends an overview of the Maintenance Organization's Snow Academy. Measurement and payment for mobilization will be paid as follows:
  - 70% will be paid upon satisfactory completion of the Department's inspection of the vendor's equipment and attendance of the Maintenance's Organization's Snow Academy.
  - ii. 30% will be paid after April 30 contingent on the vendor performance during the previous contract period. Performance factors are as follows: reporting within time allowed in RFQ and satisfactory completion of assigned duties. If either aforementioned performance factors are not met to the satisfaction of the District Rented Equipment Coordinator, the 30% will not be paid.
- (2) Fuel Cost Adjustment The Department's Engineering District and/or Maintenance District will calculate and apply a monthly diesel fuel cost adjustment based on the number of hours the equipment is used during the month under the contract. The fuel adjustment will not be applied if the ratio between fuel price index at the time of performance and the base fuel price index in the bid proposal falls within the range of 0.95 to 1.05. The adjustment will be calculated on a monthly basis with actual reimbursement of the cumulative

calculated adjustments to occur upon submission of the final invoice. The base price of diesel fuel, FB, used in the RFQ will be the price data obtained on the last Wednesday of the preceding month from the Oil Price Information Services (OPIS). This information will be provided by the Bureau of Maintenance and Operations at the beginning of each month. The price index at the time of performance, FP, will be the price data obtained on the last Wednesday of the month prior to the month that the equipment was used. This information which is based on OPIS will be provided by the Department's Bureau of Maintenance and Operations at the beginning of each month during the winter season (October through April).

As of this writing, the location of the fuel cost adjustment calculation spreadsheet is P:\penndot shared\Purchasing Rented Equipment\EUP's 2007\Winter Fuel Cost Adjustment.xls

The calculation of the diesel fuel price adjustment for each truck will be completed by the awarded vendor and verified by the county as follows:

- (1) The Department, using actual cost data from its own operation, has determined that 13% of the equipment's hourly cost is due to diesel fuel usage. This will be the standard percentage that will be used for all agreements.
- (2) To determine the diesel fuel price adjustment for the current month the equipment is used, follow the procedures listed below:
  - (a) No Price Adjustment: When the ratio of FP/FB falls within the range of 0.95 to 1.05, no price adjustment will be made for any diesel fuel consumed during winter operations.
  - (b) Price Rebate (PR): When the ratio of FP/FB is calculated to be less than 0.95, the Department will receive an automatic rebate determined in accordance with the following formula: PR = (.95 FP/FB) x (% of hourly rate due to fuel) x (hourly rate) x (number of hours the

equipment was operated in current month)

- (c) Price Increase (PI): When the ratio of FP/FB is calculated to be greater than 1.05, the Vendor will receive a price increased to be determined in accordance with the following formula: PI = (FP/FB 1.05) x (% of hourly rate due to fuel) x (hourly rate) x (number of hours the equipment was operated in current month)
- (3) Each monthly diesel fuel price adjustment will be cumulated for each contract. The Department will calculate and provide successful bidders their cumulative adjustment by April 30, 2008. This adjustment will be added from the successful bidder's final invoice, which will be solely for the cumulative fuel adjustment.
- (4) The Purchase Order will contain a separate line item for an estimate of this cumulative adjustment.

### **MULTI-YEAR AGREEMENTS**

Term with renewal agreements for Winter rentals may be bid with a variable of fixed price escalation clause. The escalation clause must be included in the original bid specifications. The amount of the renewal increase for a fixed escalation will be a the discretion of the funding maintenance organization. The amount for a variable increase will be based on the Consumer Price Index. The following is a summary of options:

- (1) An increase based on the percentage change of the Consumer Price index
- (2) An increase with rate determined by the maintenance organization
- (3) An increase determined by the vendor and substantiated by the Consumer Price Index

For each of the these options, the following language must be included in the specification language of the RFQ:

(1) Term with renewal option 1 (this example uses a 5 year agreement):

"The contract period will be for one

year with the option to renew for [Insert Number of Years] additional vears, subject to inspection/calibration of the contractor's equipment each year and attendance of the Maintenance Organization's Snow Academy, with the final renewal not to exceed August 31, 2012. The Department may adjust price annually on [Insert Specific Date] of each contract year in an amount equal to the percentage change of the Consumer Price Index (Source: Bureau of Labor Statistics http://www.bls.gov/news. release/cpi.nr0.htm). All specifications will remain the same for the entire term of the Agreement, with the following call-out periods for each year:

# [example dates]:

- 1. October 15, 2007 through April 30, 2008.
- 2. October 15, 2008 through April 30, 2009.
- 3. October 15, 2009 through April 30, 2010
- 4. October 15, 2010 through April 30, 2011
- 5. October 15, 2011 through April 30, 2012.

Under no circumstances shall any RFQ/CPO termination date go beyond August 31, 2012."

(2) Term with renewal, option 2 (this example uses a three year agreement):

"The contract period will be for one year with the option to renew for [Insert Number of Year(s)], subject to re-inspection of the contractor's equipment each year and attendance of Snow Academy, with the final renewal not to exceed [August 31, 2012]. Vendor will be granted an annual price increase equal to [X]% of the contract price on [Insert Date] of each contract year. All specifications will remain the same

for the entire term of the Agreement, with the following call-out periods for each year:

# [example dates]:

- 1. October 15, 2007 through April 30, 2008.
- 2. October 15, 2008 through April 30, 2009.
- 3. October 15, 2009 through April 30, 2010.

Under no circumstances shall any Purchase Order termination date go beyond August 31, 2012."

(3) Term with renewal, option 3 (this example uses a three year agreement):

"The contract period will be for one year with the option to renew for [Insert Number of Year(s)], subject to re-inspection of the contractor's equipment each year and attendance of the Maintenance Organization's Snow Academy, with the final renewal not to exceed [August 31, 2012]. Vendors determine and submit their rates for each season that will be substantiated by the Consumer Price Index (Source: Bureau of Labor Statistics http://www.bl s.gov/news.release/cpi.nr0.htm). All specifications will remain the same for the entire term of the Agreement, with the following call-out periods for each year:

### [example dates]:

- 1. October 15, 2007 through April 30, 2008.
- 2. October 15, 2008 through April 30, 2009.
- 3. October 15, 2009 through April 30, 2010.

Under no circumstances shall any Purchase Order termination date go beyond August 31, 2012."

(4) Simple long term agreement, option 1

(this example uses a two-year agreement)

"The contract period will be for [Insert Number of Years] year(s), with an ending date of [Insert Specific Date], subject to re-inspection/calibration of the contractor's equipment each year and attendance of the Maintenance

Organization's Snow Academy at the start of each season. The Department may adjust price annually on [Insert Renewal Date] of each contract year in an amount equal to the percentage change of the Consumer Price Index (Source: Labor Bureau of Statistics http://www.bls.gov/news.release /cpi.nr0.htm). All specifications will remain the same for the entire term of the Agreement, with the following call-out periods for each year:

## [example dates]:

- 1. October 15, 2007 through April 30, 2008.
- 2. October 15, 2008 through April 30, 2009.

Under no circumstances shall any Purchase Order termination date go beyond August 31, 2012."

(5) Simple long term agreement, option 2 (this example uses a three year agreement)

"The contract period will be for [Insert Number of Years] year(s), with an ending date of [Insert Specific Date], subject to reinspection/calibration of the contractor's equipment each year and attendance of the Maintenance Organization's Snow Academy at the start of each season. Vendor will be granted an annual price increase equal to [X]% of the contract price on [Insert Date] of each contract year. All specifications will remain the same for the entire term of the Agreement, with the following callout periods for each year:

[example dates]:

- 1. October 15, 2007 through April 30, 2008.
- 2. October 15, 2008 through April 30, 2009.
- 3. October 15, 2009 through April 30, 2010.

Under no circumstances shall any Purchase Order termination date go beyond August 31, 2012."

(6) Simple long term agreement, option 3 (this example uses a three year agreement)

"The contract period will be for [Insert Number of Years] year(s), with an ending date of [Insert Specific Date], subject to reinspection/calibration of the contractor's equipment each year and attendance of the Maintenance Organization's Snow Academy at the start of each season. Vendors will determine and submit their rates for each season that will be substantiated by the Consumer Price Index (Source: Bureau of Labor Statistics http://www.bls.gov /news.release/cpi.nr0.htm). All specifications will remain the same for the entire term of the Agreement, with the following call-out periods for each year:

# [example dates]:

- 1. October 15, 2007 through April 30, 2008.
- 2. October 15, 2008 through April 30, 2009.
- 3. October 15, 2009 through April 30, 2010.

Under no circumstances shall any Purchase Order termination date go beyond August 31, 2012."

### WINTER TRUCK MATERIAL CODES

In order to simplify the vendor's bids and for ease in entering payroll using SAP PM, the material numbers and equipment descriptions listed below correspond to the types of trucks which should be used on RFQs for winter snow clearing operations.

303673	Truck, Single Axle Dump, Crew Cab, Conventional
303674	Truck, Single Axle Dump, Crew Cab, Conventional, with Operator
303675	Truck, Single Axle Dump, General Purpose, All Wheel Drive
303676	Truck, Single Axle Dump, General Purpose, All Wheel Drive, with Operator
303717	Truck, Tandem Dump, General Purpose, Tandem
303718	Truck, Tandem Dump, General Purpose, Tandem, With Operator
303789	Truck, Tri Axle Dump, General Purpose, Conventional, With Operator
303790	Truck, Tri Axle Dump, General Purpose, Conventional

When preparing the RFQ and/or SAP PO, the county should not select the plow or spreader material number if a truck is being bid. Only the truck material number should be used on the RFQ/SAP PO. A note on the RFQ must indicate that the vendor is expected to provide a plow or plow and spreader with the truck.

Department plows and spreaders are not to be attached to rented trucks.

# **NON-WINTER RENTALS**

Rentals other than winter trucks used in plowing operations are not to use the mobilization and fuel adjustment incentives outlined under the "Winter Rentals Incentives" heading of section 18.4. All other terms and specifications detailed in this chapter, including term with renewal and simple long term agreements, may be used.

### **VENDOR RESPONSE TIMES**

ITQ Contract 2210-01 establishes no limits for the time it takes a vendor to provide the equipment after being called out by the maintenance organization. The response time requirements for winter trucks and wreckers on the previous ITQ Contract (351A01) have been removed. Maintenance organizations may set their own response time requirements, if desired, in the RFQ specification.

### 18.5 PURCHASE ORDERS

### **CREATION OF SAP PURCHASE ORDER**

Since SAP Plant Maintenance treats Rented Equipment as "virtual inventory", Rented Equipment Purchase Orders are created using document type PNB "PENNDOT Standard PO". The only exception is traffic control devices (material codes 303418 and 303419), which are noninventory and are created as type NNB "Standard PO" (see "Traffic Control Devices" in section 18.3).

Detailed, step-by-step end user procedures (EUPs) for entering Rented Equipment Purchase orders are stored on the Department's local area network. Currently available EUPs for Rented Equipment are:

- EUP EQ 4 "Create Purchase Order Traffic Control Devices" for procurement of traffic control devices (flashing lights, barricades, etc.)
- 2. EUP EQ 5 "Create Purchase Order Rented Equipment Summer" for all rentals other than snow and ice control and traffic control devices
- 3. EUP EQ 6 "Create Purchase Order Rented Equipment Winter" for winter rentals
- 4. EUP EQ 7 "Equipment Rental Reference Chart" a useful summary for all types of rentals' including alternate units of measure and traffic control devices, detailing language to be included in both RFQs and POs whether hourly, daily, weekly, or monthly.

These EUP's canbe found within the SAP information center on PennDOT's Intranet site.

Particular attention should be paid to the following steps in the creation of all purchase orders:

## **Document type:**

PNB (NNB for traffic Control Devices) All POs should have 78XXXXXXXX numbers, with the exception of traffic control devices which should have 45XXXXXXXX numbers.

# **Outline Agreement:**

46XXXXXXXX (To find avendor's outline agreement number, use SAP transaction ME3M (Purchasing Documents for Material). Enter the equipment material codeas the Material Number, "ITQ" as the document type and the Vendor Number. If the vendor has more than one outline agreement, be sure to identify the current ITQ contract which has an expiration date of 8/31/2012).

#### Plant:

The maintenance organization's plant number.

## **Storage Location:**

0001 (for winter rentals, do not enter a storage location for mobilization or fuel incentives)

# Org Data

### **Purchasing Org:**

7800

# **Purchasing Group:**

The maintenance organization's purchasing group

# **Account Assignment:**

Blank for the equipment line (except for Traffic Control Devices (45 type PO), which should be "X". "X" for initial mobilization, final m o b i l i z a t i o n , and fuel adjustment if PO is for a winter rental using these incentives

#### **Short Text:**

For Winter incentives, if used:

"Initial Mobilization Payment"

"Final Mobilization Payment"

"Fuel Cost Adjustment"

# PO Quantity:

The total number of hours required. For daily, weekly or monthly rentals, use the following equivalencies: day = 8 hours, week = 40 hours, month = 176 hours. For instance, if a daily rental is needed for 12 days, the PO quantity would be 96. For Winter rentals with mobilization: enter 1

on both initial mobilization and final mobilization lines. For Winter rentals with fuel adjustment: dollar value entered on the bid document

#### UOM:

Equipment line should default to "H". For Winter mobilization and fuel lines, if used, enter "EA"

# **Delivery Date:**

Equipment Line = Validity Start Date. If Winter mobilization is used, enter validity start date for initial mobilization and validity end date for final mobilization. For Winter fuel adjustment, enter validity start date

### **Net Price:**

The vendor's bid hourly rate. For Winter rentals with mobilization: 70% of the total mobilization payment on the "initial mobilization payment" line. 30% on the "final mobilization payment" line. For Winter rentals with fuel adjustment: enter .01

# Material Group:

Equipment line should default to "Vehicle Rental". For Winter rentals with mobilization: 94131604 for both initial and final payment. For Winter rentals with fuel adjustment: 83101602

# Item Delivery Tab

# Over delivery Tolerance:

20 (Must not exceed 20)

# **Header Text:**

"Call Out Start Date: mm/dd/yy" (from the RFQ)
"Call Out End Date: mm/dd/yy" (from the RFQ)

"This Purchase Order incorporates Terms and Conditions from RFQ#[insert RFQ#]"

For hourly rentals, enter the following:

"NOTE: The quantities shown are strictly an estimate, and this estimate is for internal Department use only. There is no assurance that the Department's actual usage of the equipment will approximate this estimate. Payment by the Department to the contractor will be based on actual usage."

For daily, weekly, or monthly rentals (see "Guaranteed Hours" in section 18.3), enter the following:

## Daily:

"The quantities shown are strictly an estimate and this estimate is for internal department use only. Payment by the department to the vendor is guaranteed 8 hours per day whether the equipment is used more or less.

For the purpose of this bid/purchase order, vendor will be paid for 8 hours per day. Please bill for 8 hours per day. Failure to bill in this manner may delay payment."

# Weekly:

"The quantities shown are strictly an estimate and this estimate is for internal department use only. Payment by the department to the vendor is guaranteed 40 ours per week whether the equipment is more or less.

For purpose of this purchase order, vendor will be paid for 40 hours per week. Please bill for 40 hours per week. Failure to bill in this manner may delay payment. Payment of 40 hours per week will be calculated based on seven consecutive days from the first day in which the equipment is called out."

# Monthly:

"The quantities shown are strictly an estimate and this estimate is for internal department use only. Payment by the department to the vendor is guaranteed 176 hours per month whether the equipment is used more or less.

For the purpose of this purchase order, vendor will be paid for only 176 hours per month. Please bill for 176 hours per month. Failure to bill in this manner may delay payment. Payment of 176 hours per month will be calculated based on 22 consecutive business days from the first day in which the equipment is called out."

For rentals using and alternate unit of measure (see "non-hourly rentals in section 18.3) enter the following:

"The quantities shown are strictly an estimate and this estimate is for internal department use only. Payment by the department to the vendor is based on actual usage.

This purchase order is created with reference to ITQ 2210-01 and states the unit of measure as hours. The unit of measure for this purchase order is [enter the non-standard unit of measure] as stated in the RFQ. All reference in this purchase order to "hours" as the unit of measure shall be replaced with reference to [enter non-standard unit of measure] as the unit of measure. The

vendor is expected to perform effectively and efficiently using this unit of measure as specified in the RFQ."

For all Rented Equipment purchase orders (hourly, daily, weekly, monthly, alternate UOM, traffic control devices, summer, and winter) "the validity start and end dates should agree with the dates that were on the RFQ, unless the validity start date is in the past because the purchase order was not created soon enough. In that case, the validity start date must be entered on the purchase order as a current or future date and will not match the date in the RFQ. The validity start date must match the Delivery Date on the purchase order and the validity end date on the RFQ.

The callout start and end dates should agree with the dates that were on the RFQ, unless the start date is in the past because the purchase order was not created soon enough. In that case, the callout period start date must be entered on the purchase order as a current or future date and will not match the date in the RFQ. The callout end date would match the date in the RFQ. The callout period must be inside the purchase order validity period and cannot extend before or after.

#### **Header Text Encumbrance information:**

Add text for approvers if required

# Additional Data tab

# Validity start date:

mm/dd/yy

# Validity end date:

mm/dd/yy (for Winter rentals this will be 04/30/xx - xx =Calendar year)

For multiyear purchase orders, enter the validity period for each line.

For simple long term agreements (see "Agreement Length for Equipment Rentals" in section 18.1), enter a corresponding equipment line with Storage Location 0001.

No Account Assignment is required for equipment lines since rentals are "virtual inventory" items. However if the purchase order is for a term with renewal or simple long term agreement, the fund must be changed in each line to the appropriate year and an appropriate delivery date must be added for each line item. For multiyear purchase orders begin the short text information with the fiscal year (e.g. 08 Rental, etc).

For Winter Rentals with mobilization or fuel adjustment incentives (see "Winter Rental Incentives" in section 18.4), account assignments are necessary for the initial mobilization payment, final mobilization payment, and fuel cost adjustment. The following coding is to be used:

#### **GL** Account:

6351540 (Mobilization only)

#### **Internal Order:**

87525 (Mobilization) 87526 (Fuel adjustment)

#### **WBS Element:**

T-06666609000-xxxx-712-2 (xxx = Org Code)

#### Fund:

10582xx712 (xx = Fiscal Year)

# SUBMITTING PURCHASE ORDER TO COMPTROLLER

When submitting the SAP purchase order to Comptroller, attachments must include:

- The awarded RFQ signed by vendor. The awarded RFQ must include the vendor's insurance information in the spaces provided under "Insurance Coverage" on the first page of the RFQ.
- CRP record for the awarded vendor if the total purchase order amount is greater than \$5,000
- Audit report generated by the Rented Equipment RFQ database
- Completed, signed and witnessed Summary of bids (Department signatory must be a role mapped purchaser)

If these attachments are not submitted electronically, hardcopies must be forwarded to Comptroller.

To assure that a rental unit is available when needed, purchase orders should be submitted at least 45 days prior to the agreement's start date, if possible.

An agreement is to be considered fully executed after it has been released by Comptroller. NO RENTAL AGREEMENT IS TO BE USED UNTIL IT IS FULLY EXECUTED.

# RENEWING TERM WITH RENEWAL AGREEMENTS

Term with renewal agreements must be renewed prior to their use in each subsequent year(s), following the guidelines in the Purchasing Manual. A letter of Renewal by Mutual Consent (Sample C) must be used. The renewal letter should be issued at least five months prior to the original purchase order termination date to allow for rebidding in the event the contractor does not wish to renew. Any alteration in the specifications, delivery point, rate of delivery, period of performance, price or other provision of any agreement requires submitting a change to the purchase order.

As of this writing, an electronic template of the Renewal by Mutual Consent letter is located at P:\penndot shared\Purchasing\Forms\Contract and Purchase Order Renewal by Manual Consent.doc

The new callout period start and end dates must be included in the letter, as indicated in red on the template.

# FOLLOW UP TO UNSUCCESSFUL REQUESTS FOR QUOTE

If the maintenance organization fails to receive acceptable bids after one RFQ, it may revert to an off-contract procurement by following the guidelines in PENNDOT Purchasing Manual, "Service Purchasing." The purchase order for this off contract rental should contain a notation which clearly states the original RFQ date and that no acceptable bids were received using ITQ contract 2210-01.

# DEMONSTRATION AND EXPERIMENTAL USE

These agreements will have a limit of 12 months. The RFQ accompanying these agreements must clearly and concisely state the Department's need as well as indicate the equipment is for demonstration and/or is experimental. After termination of the agreement, the Engineering District must provide a written performance evaluation to the Director of the Bureau of Maintenance and Operations on demonstrational or experimental equipment rentals. If the equipment has no representative category on ITQ 2210-01, the equipment must be rented by following guidelines in PENNDOT Purchasing Manual Publication 358, "Service Purchasing."

# 18.6 VENDOR QUALIFICATION

# **VENDOR QUALIFICATION PROCESS**

Vendor prequalification for ITQ Contract 2210-01 is managed by the Department of General Services, Bureau of Procurement. Enrollment is open continuously until February 15, 2012. Interested vendors should contact the Bureau of Procurement:

Department of General Services Bureau of Procurement 6th Floor, Forum Place 555 Walnut Street Harrisburg, PA 17101-1914 Phone: (717) 783-6941

Fax: 717-214-9505

Prior to submitting the ITQ application, prospective vendors must first register as a commonwealth vendor through the Pennsylvania Supplier Portal and obtain a SAP vendor number. Information on registering with the PA Supplier Portal is contained in the ITQ application.

When submitting the ITQ application to DGS, vendors must provide a W-9 which includes the SAP vendor number. DGS will not process applications until the vendor has registered with the Commonwealth Supplier Portal and all vendor information matches on the contract application, W-9, and in SAP. DGS will work to resolve any discrepancies between these three sources.

### **CHANGES TO VENDOR INFORMATION**

If a prequalified Vendor needs to change information such as address or phone number, or a change in equipment categories or counties of interest, the request must be made in writing on company letterhead and mailed or faxed to DGS, Bureau of Procurement.

A change of information involving a name or address will also require notification to the Vendor Data Management Unit.

A change of information involving a new Federal Identification Number will require an Assignment and registration of the new business entity with the Vendor Data Management Unit, as well as notification in writing to DGS.

# 18.7 TERMINATING AN AGREEMENT

#### **CAUSES OF TERMINATION**

Termination of a Rented Equipment agreement is normally due to vendor default (Termination for Cause). Other reasons include non-appropriation and termination for convenience.

### **Termination for Convenience:**

The Commonwealth shall have the right to terminate the Contract or a purchase order for its convenience if the Commonwealth determines termination to be in its best interest. The Contractor shall be paid for work satisfactorily completed prior to the effective date of the termination, but in no event shall the Contractor be entitled to recover loss of profits.

# Non-Appropriation:

The Commonwealth's obligation to make payments during any Commonwealth fiscal year succeeding the current fiscal year shall be subject to availability and appropriation of funds. When funds (state and/or federal) are not appropriated or otherwise made available to support continuation of performance in a subsequent fiscal year period, the Commonwealth shall have the right to terminate the Contract or purchase order. The Contractor shall be reimbursed for the reasonable value of any non recurring costs incurred but not amortized in the price of the supplies or services delivered under the contract or purchase order. Such reimbursement shall not include loss of profit, loss of use of money, or administrative or overhead costs. reimbursement amount may be paid from any appropriations available for that purpose.

# **Termination for Cause:**

The Commonwealth shall have the right to terminate the Contract for Contractor default upon written notice to the Contractor. If it is later determined that the Commonwealth erred in terminating the Contract or a contract purchase order for cause, then, at the Commonwealth's discretion, the Contract shall be deemed to have been terminated for convenience.

#### Instances of vendor default include:

- 1) Failure to begin work within the time specified in the Contract or contract purchase order or as otherwise specified;
- 2) Failure to perform the work with sufficient labor, equipment, or material to insure the completion of the specified work in accordance with the Contract or contract purchase order terms;

- 3) Unsatisfactory performance of the work;
- 4) Failure or refusal to remove material, or remove and replace any work rejected as defective or unsatisfactory;
- 5) Discontinuance of work without approval;
- 6) Failure to resume work, which has been discontinued, within a reasonable time after notice to do so;
- 7) Insolvency or bankruptcy;
- 8) Assignment made for the benefit of creditors;
- 9) Failure to protect, to repair, or to make good any damage or injury to property; or
- 10) Breach of any provision of this ITQ Contract 2210-01.

#### STEPS IN THE TERMINATION PROCESS

The maintenance organization, after determining need for termination shall discuss the situation with the Bureau of Maintenance and Operations and prepare a request for termination.

- 1) If terminating for vendor default, the maintenance organization shall provide documentation in support of the request, detailing what actions were taken to resolve the issue ( all communications must be documented).
- 2) BOMO will review the request to terminate for appropriateness and request additional information if needed. If termination is warranted, BOMO will provide the maintenance organization with either the Termination for Convenience Letter template (Sample K) or Termination for Cause Template (Sample L), and forward to the Office of Chief Counsel (OCC) for approval.
- 3) OCC will review the termination letter, request additional information if needed either from BOMO or from the maintenance organization, and approve or deny the request. OCC will inform BOMO of the decision. If the request is denied, OCC will provide instructions for action to be taken.
- 4) If OCC approves the termination, the maintenance organization issues the letter of termination to the vendor, and completes a CRP entry if necessary, and closes the purchase order. If the termination is denied, the maintenance organization follows instructions provided by Office of Chief Counsel.
- 5) The maintenance organization maintains a copy of all documentation related to the termination in its rented equipment files.

# **FORCE MAJEURE**

Neither the Department nor the Contractor will incur any liability to the other if its performance of any obligation under ITQ Contract 2210-01 is prevented or delayed by causes beyond its control and without the fault or negligence of either party. Causes beyond a party's control may include, but are not limited to, acts of God or war, changes in controlling law, regulations, orders or the requirements of any governmental entity, severe weather conditions, civil disorders, natural disasters, fire, epidemics and quarantines, general strikes throughout the trade, and freight embargoes.

The Contractor shall notify the Commonwealth orally within five (5) days and in writing within ten (10) days of the date on which the Contractor becomes aware, or should have reasonably become aware, that such cause would prevent or delay its performance. Such notification shall (i) describe fully such cause(s) and its effect on performance, (ii) state whether performance under the contract is prevented or delayed and (iii) if performance is delayed, state a reasonable estimate of the duration of the delay. The Contractor shall have the burden of proving that such cause(s) delayed or prevented its performance despite its diligent efforts to perform and shall produce such supporting documentation as the Commonwealth may reasonably request. After receipt of such notification, the Commonwealth may elect either to cancel the agreement or to extend the time for performance as reasonably necessary to compensate for the Contractor's delay.

In the event of a declared emergency by competent governmental authorities, the Commonwealth by notice to the Contractor, may suspend all or a portion of the agreement.

# **SAMPLE A**

Bid must be received at the below listed	Agreement #
address no later than:	Contractor ID: 221001-
	Contractor Vendor #:
eturn bid to: Pennsylvania Department of Trar	psportation
	ATTN:
	Phone:
	Fax:
ontractor Address:	
	Phone
	Fax:
	_
he initial call out period will commence	and end on
he purchase order validity period will be from	
	<i>OW:</i>
escription	
escription	er
escription	NCE COVERAGE
escription	NCE COVERAGE pplied at time of equipment inspection or at first call-
ontractor bid rate \$	NCE COVERAGE
escription	NCE COVERAGE pplied at time of equipment inspection or at first call-
INSURAN  A current Certificate of Insurance is to be sure out. Contractor is responsible for providing	NCE COVERAGE pplied at time of equipment inspection or at first call-
INSURAN  A current Certificate of Insurance is to be su out. Contractor is responsible for providing	NCE COVERAGE pplied at time of equipment inspection or at first calling a current certificate at time of insurance renewal
INSURAN  A current Certificate of Insurance is to be su out. Contractor is responsible for providing	NCE COVERAGE pplied at time of equipment inspection or at first calling a current certificate at time of insurance renewal
INSURAN A current Certificate of Insurance is to be surout. Contractor is responsible for providing Contractor's Signature Eignatory must be authorized as defined by ITQ 2210-01, Part II, part This form, when complete, is not a Notice to It.	NCE COVERAGE pplied at time of equipment inspection or at first calling a current certificate at time of insurance renewal
INSURAN A current Certificate of Insurance is to be surout. Contractor is responsible for providing Contractor's Signature Signatory must be authorized as defined by ITQ 2210-01, Part II, part This form, when complete, is not a Notice to It.	NCE COVERAGE pplied at time of equipment inspection or at first calling a current certificate at time of insurance renewal  ragraph 2 (Title) (Date)
Ontractor bid rate \$	NCE COVERAGE pplied at time of equipment inspection or at first calling a current certificate at time of insurance renewal  ragraph 2 (Title) (Date)

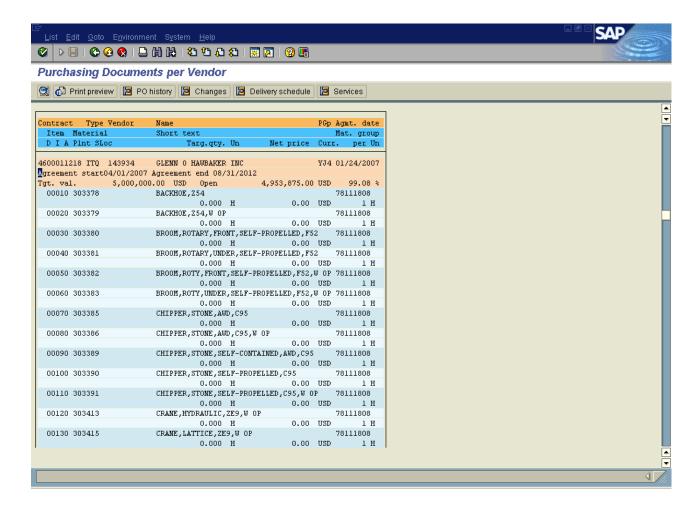
# **SAMPLE A**

 For Bid of:		
roi biu oi.		 

A call-out period is the period when the Vendor must be available to provide services. The contract period is the entire term of the Purchase Order (PO). If a Vendor is called to provide services outside of the call-out period, but during the contract period, the Vendor may choose not to perform services at that time, and the Vendor will not be considered in default. If a Vendor fails to provide services during the call-out period, for whatever reason, the Vendor will be in default and the CPO subject to termination pursuant to Part V, Paragraph 16 of Invitation to Qualify for the Rental of Highway and Other Equipment, Number 221001.

The Equipment to be supplied under this agreement will maintain the following minimum specifications:

# **SAMPLE B**



# **SAMPLE C**

SAMPLE LETTER A FOR RENEWAL BY MUTUAL CONSENT

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION



Date

COMPANY NAME ATTN: Contact Address City, State Zip

Re: Renewal Notification

(Contract or Purchase Order Number)

Dear (Mr./Ms. Name):

Per the terms of the subject (contract or purchase order), the Department is interested in exercising the Option to Renew clause contained (reference the location in the document). The renewal period will be effective (Date) and terminate (Date). For Rented Equipment Renewals also insert "The Call Out period will commence (Date) and end on (Date)." This is the (first, second, etc.) renewal.

We are requesting your concurrence as to the renewal of the above referenced (contract or purchase order). If you agree to the renewal, please indicate below by checking "Yes," and signing and dating where indicated. Your response is required no later than (Date). Please mail your response to the following address:

PENNDOT Attn: (Your Name) (Your Organization) (You Address)

I agree to the renewal of the above referenced docum remain the same as in the current (contract or purch	tent for the stated term of renewal. All terms and conditions shall tase order). Yes No
*Signature	Date
Indicate Title (check one):	
Chairman	President
Vice President	Senior Vice President
Executive Vice President	Assistant Vice President
Chief Executive Officer	Chief Operating Officer
Owner	General Partner
Other Title:	
(Signature Resolution Required)	
*Only a person authorized to sign on behalf of the ve	endor may sign.
Please keep a copy of this renewal letter for your file	S.
Sincerely,	
Name, Title Organization	

# SAMPLE D

				PA 16803		Contract Fully Executed			PA 16801		Contract Fully Executed			PA 15071		Contract Fully Executed
inty		Fed ID				19	Fed ID				7	Fed ID				340
or: Mifflin Cou	95,W OP				(814) 237-5348	Contractor ID				(814) 238-0131	Contractor ID				(412) 788-4650	Contractor ID
Audit Report fo	LF-PROPELLED,C				FAX Number					FAX Number		SICA) INC.			FAX Number	
Rented Equipment Audit Report for: Mifflin County	1 CHIPPER,STONE,SELF-PROPELLED,C95,W OP	GLENN O. HAWBAKER, INC.	1952 WADDLE RD.	STATE COLLEGE	(814) 237-1444	ALAN HAWBAKER	HRI INC.	1750 WEST COLLEGE AVE.	STATE COLLEGE	(814) 278-6910	DEBRA KEIRN	UNITED RENTALS (NORTH AMERICA) INC.	2901 MONTOUR CHURCH RD.	OAKDALE	(412) 788-4720	ED HEINZ
	303391	Vendor Name	Address 1	City	Phone Number (8	Contact Person A	Vendor Name F	Address 1	City	Phone Number (8	Contact Person D	Vendor Name	Address 2	City	Phone Number (4	Contact Person E

Dogo Lof 1

Contractor List as of: Friday, September 28, 2007

# SAMPLE E

	Summary of Bids for use with Kented Equipment - 11Q Contract 221001	1117 Contract 221001	
	Rented Equipment Letting of: Tuesday, August 14, 2007	1, 2007 10:00 AM	CANDO
	Listing of all eligible contractors and bids fo Mifflin County	ounty	
	For Equipment Category: 303391 CHIPPER	CHIPPER,STONE,SELF-PROPELLED,C95,W OP	JP
Contractor ID	Contractor ID#: Contractor Name	Contractor Bid Price	d Price
19	GLENN O. HAWBAKER, INC.	8	per
7	HRI INC.	8	per
340	UNITED RENTALS (NORTH AMERICA) INC.	€5	per
	Department Representative	Witness	
I certify the	I certify that I have personally recorded on this Summary of Bids all bids placed on deposit for the letting described above.	I certify that this Summary of Bids represents a complete identification of all bids placed on deposit for the letting described above.	complete identification of all above.
By:	Date/Time_	By:	Date/Time
Title:		Title:	
	BOMO Form M680CB-A (January 2007 Revision)		Page 1 of 1
	DOME TO THE PROPERTY AND ADDRESS OF THE PARTY ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY ADDRESS OF THE PARTY ADDRESS OF T		i all a silla a

# **SAMPLE F**

# RENTAL EQUIPMENT INSPECTION SNOW ACADEMY OVERIEW

Date:		Agreement #:	
Contractor Name:			
Proof of Ownership: YES / NO	P	roof of Insurance: YES / NO	
Equipment Description:			
I certify THAT I personally inspected the	equipment bid require	described above and it is in complianments	ice with
Department Representative		Date	
I certify that a contractor representative	e has attend Academ	led an overview of the Department's	Snow

# **SAMPLE G**

(ONLY APPLIES TO AGREEMENTS FOR WINTER TRUCKS AND TRUCK COMBINATIONS)

#### GUARANTEED MINIMUM PAYMENT

THE COMMONWEALTH WILL GUARANTEE AND COMPUTE AN ANNUAL MINIMUM PAYMENT EQUAL TO FORTY TIMES THE HOURLY RATE BID PER RENTED UNIT. THE COMMONWEALTH WILL THEN COMPARE THE LESSORS TOTAL ACTUAL PAYMENTS FOR THE PERIOD OF NOVEMBER 1<sup>ST</sup> THROUGH APRIL 30TH TO THE ANNUAL MINIMUM PAYMENT PER UNIT OF EQUIPMENT. THE MINIMUM FORTY HOUR GUARANTEED PAYMENT WILL BE REDUCED BY THE NUMBER OF HOURS OF UNAVAILABILITY BY THE LESSOR. REDUCTION WILL REPRESENT THE HOURS SPENT BY ANOTHER RENTAL UNIT OR DEPARTMENT FORCES TO COMPLETE THE PARTICULAR WINTER SERVICE REQUIRED FOR THAT PERIOD IN THE ASSIGNED AREA OF THE UNAVAILABLE UNIT. CANCELLATION AND FORFEITURE OF THE MONETARY GUARANTEE WILL BE DETERMINED BY THE DEPARTMENT BASED UPON NON-JUSTIFIABLE REASONS. THE LESSOR WILL NOT BE ELIGIBLE TO RECEIVE THE GUARANTEED MINIMUM PAYMENT IF THE CONTRACT IS CANCELLED PRIOR TO THE EXPIRATION DATE. IF THE ANNUAL MINIMUM PAYMENT PER UNIT OF EQUIPMENT IS LARGER THAN THE TOTAL ACTUAL PAYMENTS FOR THE PERIOD OF NOVEMBER 1ST THROUGH APRIL 30TH, THE COMMONWEALTH WILL PROVIDE A PAYMENT IN THE AMOUNT OF THE DIFFERENCE. THIS PAYMENT WILL OCCUR AS SOON AFTER APRIL 30TH AS POSSIBLE.

### **SAMPLE H**

..... ... ...

# SPECIFICATION "WR"

The LESSOR agrees that each welding unit will include (but is not limited to) the following: 1 each welding cutting set (which meets the Bid Item - Equipment Description) and accessories

1 each 7" to 9" electric grinder

1 each 4.5" to 5" electric grinder

1 each 3/8" electric drill

1 each 1/2" electric drill

1 each 1/8" to 1" drill bit set

1 each screw driver set

1 each 6", 8" and 10" - "C" clamp set

1 each vise grip set

1 each open end wrench set to 1-1/4" capacity

1 each 14" pipe wrench

1 each 10", 15" and 18" adjustable wrench

1 each drill hammer

1 each 8 to 10 lb. sledge hammer

1 each 3', 5' and 10' pry bar

1 each 12" to 18" level

1 each 3/4" drive socket set to include 1-1/16", 1-1/8", 1-1/4" and 1-5/16" sockets

1 each center punch

1 each drift pin punch set - up to 3/8" capacity

1 each chisel set

1 each 50' extension cord

1 each 25' trouble light

1 each Allen (hex) wrench set - up to 3/8" capacity

1 each 3/8" drive socket set

1 each hack saw

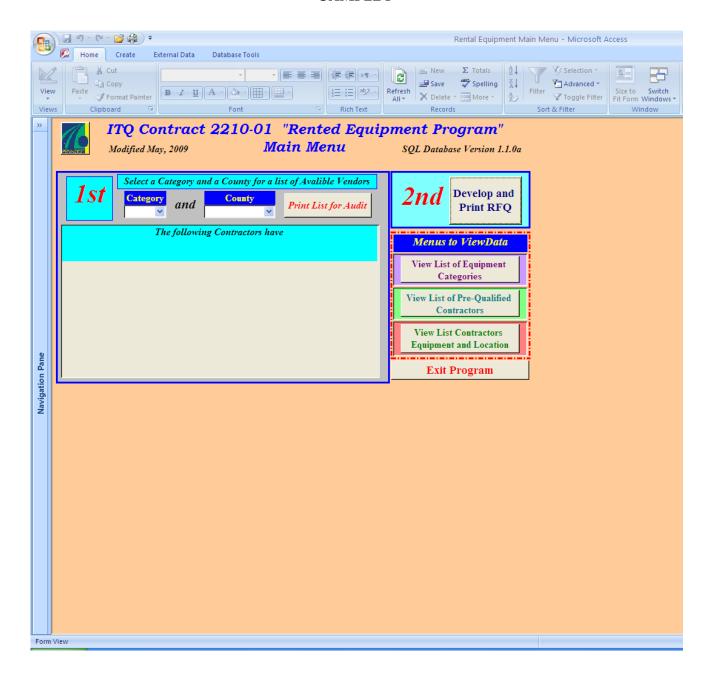
1 each 1/2" or 3/4" air impact wrench

1 each gear puller set up to 8" capacity

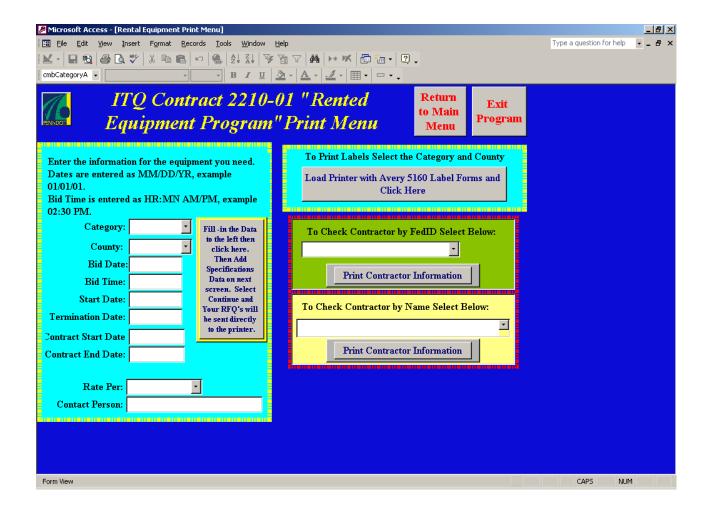
necessary safety glasses, helmet, and protective clothing

The LESSOR hereby promises and agrees to furnish an operator certified according to the structural welding code - AWS D1.1, Rev. 2-74, Section 5, Qualification.

# **SAMPLE I**



# **SAMPLE J**



# **SAMPLE K**

# COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION www.dot.state.pa.us

[Date] [Vendor Name] [Address] [City, State, Zip]



RE: Contract Purchase Order Number 0000000000

Rental of Highway and other Equipment Contract 2210-01

Dear [Name]:

This letter is to inform you that, effective [Date], the Commonwealth of Pennsylvania, Department of Transportation is terminating Contract Purchase order Number 0000000000 for convenience pursuant to Invitation to Qualify for Rental of Highway and other Equipment, Number 2210-01, Part V, Standard Contract Terms and Conditions, Paragraph 20.

The Commonwealth of Pennsylvania, Department of Transportation (PENNDOT) has determined that [equipment type], which PennDOT's Maintenance District [organization code] rented pursuant to Purchase Order #0000000000, will not be needed as of [Date].

If there are any outstanding invoices not yet forwarded to PennDOT for work already performed by your company, please submit them as soon as possible.

Sincerely,

cc:

### **SAMPLE L**

## COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION www.dot.state.pa.us

[Date]



[Name]
[Address]
[City, State, Zip]

RE: Purchase Order Number [PO#]

This letter is to inform you that, <u>effective [Date]</u>, the Commonwealth of Pennsylvania, Department of Transportation (PENNDOT), is terminating Contract Purchase Order Number 063537 (CPO) for cause pursuant to Invitation to Qualify for Rental of Highway and Other Equipment (ITQ), Number 351A01-472, Part V, *Standard Contract Terms and Conditions*, Paragraph 20(c).

Paragraph 20(c) reads as follows:

Termination for Cause: The Commonwealth shall have the right to terminate the Contract for Contractor default under Paragraph 18, Default, upon written notice to the Contractor. The Commonwealth shall also have the right, upon written notice to the Contractor, to terminate the Contract or a purchase order for other cause as specified in this Contract or by law. If it is later determined that the Commonwealth erred in terminating the Contract or a contract purchase order for cause, then, at the Commonwealth's discretion, the Contract shall be deemed to have been terminated for convenience under the Subparagraph 20.a.

[Provide documentation of incidences of vendor default]

If there are any other outstanding invoices not yet forwarded to PENNDOT for work already performed by your company, please submit them as soon as possible.

Sincerely,

PUB 23 (7-10) Chapter 19: Radios

# CHAPTER 19 RADIOS

# TABLE OF CONTENTS

19.1	Motorola Radio Systems and Assignments
19.2	Motorola Radio Codes
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PUB 23 (7-10) Chapter 19: Radios

# 19.1 RADIO SYSTEMS AND ASSIGNMENTS

#### MOBILE TWO WAY RADIOS

Pennsylvania Department of Transportation (PennDOT)'s radio equipment is Department owned and the system maintenance is accomplished through a contract.

The Director of the Bureau of Maintenance and Operations is responsible for the Department's two-way mobile radio system.

# **USE**

The Department radio system is primarily used to direct field operations within the individual Engineering and Maintenance Districts. Most of the communications occur between the Maintenance District vehicles and their base stations. It is essential that each radio operator study the operation of the radio equipment as outlined in this Chapter.

# CRITERIA FOR TWO-WAY RADIO ASSIGNMENT

The following positions type of equipment can be considered for two-way mobile radio installation. Exceptions can be requested and all installations will be at the discretion of the Secretary of Transportation, Bureau Director, District Executive or Maintenance Manager.

# **CENTRAL OFFICE**

Secretary of Transportation
Deputy Secretary for Highway Administration
Deputy Secretary for Administration
Chief Highway Engineer
Director, Bureau of Maintenance and Operations
Quality Assurance Field Evaluators - East
Quality Assurance Field Evaluators - West
Chief, Equipment Division
Equipment Division, Equipment Manger
Regional Equipment Manager - East
Regional Equipment Manager - West
Chief, Core Driller - Statewide
Bridge Inspection Cranes - Statewide
Automotive Section, Equipment Division
Mobile Radio Unit, Central Office

### **District Office**

District Executive

Assistant District Executive - Maintenance

Assistant District Executive - Construction

Assistant District Executive - Design

District Maintenance Manager

District Equipment Manager

Assistant District Equipment Manager

Line Painting Train

Station Wagons

Other Equipment Assignment to District Office

# **County Maintenance Office**

Maintenance Manger

Assistant Maintenance Manger

County Equipment Manager

Highway Foreman

Snow Fighting Dump Trucks

Fuel Trucks

**Tractor Trailer Unit** 

Shop Truck

Lube Truck

Other Equipment as Deemed Necessary

Vehicles are radio equipped for better coordination, operations and productivity between Central Office, District Offices and County maintenance personnel to accomplish the Department's programs.

### **RADIO PROCEDURES**

### Requirements

When a person is communicating by radio, it is desirable to speak slowly, clearly and use their natural tone.

The general radio procedure to be followed during a snow emergency is discussed in Chapter 4 of this Maintenance Manual. Efficient operation of a radio is based on brevity and courtesy.

#### **Brevity**

The lack of effort to keep messages brief is one of the most serious problems in attaining efficient radio communication. Before an operator starts to transmit any radio message, they are expected to know in advance what they are going to say. When they are required to transmit involved instruction, they must write the message before

Chapter 19: Radios PUB 23 (7-10)

attempting to transmit it. This will give the operator a chance to review it for clarity and brevity.

As an aid to brevity, a code system has been developed which should be used to cover many common communications. A copy of the various codes and their meaning follows in Section 2.

Each operator is required to keep the list of radio call numbers of all units readily available.

#### 19.2 RADIO CODES

# PENNSYLVANIA DEPARTMENT OF TRANSPORTATION - CODE SYSTEM

Prefix all numerals by the word "Code" Example: Code-4, Message received and understood.

#### GENERAL MAINTENANCE

Code 4 Acknowledgment of message (OK)

Code 10 I will be out of radio contact at

Code 20 (base) What is your location (mobile) I am code 20 at

# **FORMATTING HIGH PRIORITY - EMERGENCY CODES**

Code 30 Emergency-(Hold all radio traffic except Emergency Communications.)

## 19.3 RADIO COURTESY

# **COURTESY**

Observance of a few simple rules of common courtesy will contribute to the effectiveness of our radio communication system. When you are operating a radio, you must remember to follow these rules:

- (1) Always monitor the airways a few seconds before transmitting. The microphone is equipped with a monitor button. The monitor will only open the F4 receiver, used by District bases 1, 3 and 6 and monitor mobiles sharing the base frequency. Otherwise the use of a scanner is required to monitor base units within a District.
- (2) Do not interrupt when someone else is transmitting.
- (3) Do not interrupt when a series of trans- missions are in progress.

(4) Use your radio only for necessary com- munication directly concerned with your work.

- (5) Do not use the radio for planning or scheduling activities that involve lengthy discussion.
- (6) Do not use your radio to reprimand a subordinate, (many units are monitoring your transmission).
- (7) Do not use the radio system in the same manner as a CB, it is to conduct only department business.
- (8) Do not use obscene, abusive or profane language in a transmission. An operator using obscene or profane language when transmitting is in violation of FCC regulations and is subject to fines and other penalties.
- (9) Mobile units should not be used for traffic control, use low power portables instead.
- (10) Emergency communications have priority over all other transmissions. Discontinue transmission immediately when you are requested to do so by another operator under emergency situations.

Abiding at all times by these rules of courtesy will mitigate confusion and unnecessary delay in transmitting and receiving communications.

### **PRECAUTIONS**

When a radio transmitter is in operation, it creates a field of electrical energy surrounding the antenna. In order to obtain optimum results and safe operations, the following precautions must be taken:

- (1) The antenna must be vertical when the radio is being operated. If bent over for low clearance reasons, never leave the antenna strapped and grounded to the gutter mount while transmitting.
- (2) While transmitting, care must be exercised to prevent anyone from coming in contact with the antenna. Such contact could result in severe burns.
- (3) While transmitting when the car is standing still, the operator should run the engine just above an idle to prevent an excessive electrical drain on the battery;

- this is especially important during winter operations.
- (4) For crew cabs and vehicles wired hot, the mobile radio should be turned off during non business hours.
- (5) It has been found that under exceptional circumstances, electric blasting caps may pick up enough electrical energy from the antenna to cause them to explode. For this reason, operators of mobile units must shut off their transmitters when they are within 50 feet of electrical blasting operations.
- (6) When washing out vehicle cabs, do not spray the control head with water as they are not water proof and contain circuit boards which are easily damaged; protect them by wrapping plastic around the unit.

### **RADIO CALL NUMBERS**

In order to provide uniformity of identification, a Call Assignment Plan has been developed for Central Office, Engineering and Maintenance District for use throughout the Commonwealth.

The Central Office, District and County radio call assignments are as follows:

CENTRAL OFFICE MOBILE RADIO CALL

ASSIGNMENT PLAN
Secretary of Transportation Keystone 1
Deputy Secretary for
Highway Administration Keystone 2
Chief Engineer Keystone 3
Deputy Secretary for
Administration Keystone 4
Director, Bureau of
Maintenance & Operations Central 1
Quality Assurance Field Evaluators Central 2
Quality Assurance Field Evaluators Central 3
Quality Assurance Field Evaluators Central 4
Quality Assurance Field Evaluators Central 5
Quality Assurance Field Evaluators Central 6
Equipment Division,
Equipment Manager Central 30
Regional Equipment
Manager - West Central 31
Regional Equipment
Manager - East Central 34

Statewide Bridge Crane (1)	Central	36
Statewide Bridge Crane (3)	Central	37
Statewide Bridge Crane (4)	Central	38
Mobile Radio Unit Administ	rator Central	90
Equipment Division E	quipment Division	10
Equipment Division E	quipment Division	20
Equipment Division E	quipment Division	30
Equipment Division E	quipment Division	40
DISTRICT MOBILE RADIO PLAN	CALL ASSIGNME	NΊ
District Executive	(District #)	_ 1
Assistant District Executive -		
Maintenance	(District #)	_ 3
Assistant District Executive -	-	
Construction	(District #)	_ 4
Assistant District Executive -		
Design	(District #)	_ 5
District Bridge Engineer	(District #)	_ 6
District Soils Unit	(District #)	_ 7
Chief of Surveys		
District Roadside Unit	(District #)	_ 9
District Traffic Unit (I	District #)	10
District		
Maintenance Manager (I	District #)	20
	through	24
Tunnel Manager (I	District #)	29
District Equipment Manager	(District #)	30
Assistant District		
Equipment Manager (I	District #)	31
Assistant District		
Equipment Manager (I	District #)	32
Surveying Units (I	District #)	40
	through	49
District Line Painting Truck	(District #)	50
District Line Painting Truck	(District #)	51
District Line Painting Truck	(District #)	52
District Line Painting Truck	(District #)	53
Surveying Units (I	District #)	<b>4</b> 0
	through	49
District Line Painting Truck		
District Line Painting Truck	(District #)	51

District Line Painting Truck (District #) 52
District Line Painting Truck (District #) 53
COUNTY MOBILE RADIO CALL ASSIGNMENT PLAN
Maintenance Manager (County) - 1
County Equipment Manager (County) - 2
Specialized Crew
Foreman (County) - 4 through 19
Assistant County
Maintenance Manager (County) - 20, 30, 40, etc.
Foreman under Asst. Co.
Maintenance Manager (County) - 21 through 29
31 through 39 41 through 49, etc.
Additional Foreman 91 through 99
Shop Pickups (County) - 110 through 114
Fuel Trucks (County) - 115 through 119
Sign Trucks (County) - 121 through 124
Low Boy Trucks (County) - 125 through 129
Special Equipment (County) - 130 through 139
Dump Trucks (County)-Use vehicle
ID number

### 19.4 RADIO - FCC CALL SIGNS

# FEDERAL COMMUNICATION COMMISSION RADIO LICENSES AND CALL SIGNS

The Department is licensed under FCC Rules Volume V, Part 90 in the Highway Maintenance portion of the Public Safety Radio Service, Section 90.437 of the rules read as follows. Posting of station licenses:

- (a) The current original authorization for each station shall be retained as a permanent part of the records. Mobile Radio Units need not be posted in the vehicle.
- (b) A clearly legible photocopy of the authorization for each base or fixed station shall be posted at every control point of the station, including the transmitter location.

To comply with the regulation, copies of all new or renewed licenses will be sent to the county using that station. It is the responsibility of the County and District Equipment Managers to ensure that current base and fixed radio station licenses are posted as required at each control point. Mobile license need not be posted but should be retained with your station records. Should an FCC Inspector ask to see them, they must be made readily available to them.

### RADIO CALL SIGNS AS ASSIGNED BY THE FEDERAL COMMUNICATIONS COMMISSION

District	County	<u>City</u>	<u>Call Sign</u>
1-1	Crawford	Kerrtown	KGA-503
	Crawford	Centerville	KNDE-719
1-2	Erie	Erie	KGA-505
	Erie	Albion	KNDE-718
	Erie	Union City	KNDE-717
	Erie	I-90 Roadside Rest - Truck Weight Signs	KD-53808
1-3	Forest	Tionesta	KGB-443
1-4	Mercer	Mercer	KGA-504
	Mercer	I-79 Roadside Rest - Truck Weight Signs	KD-26754
1-5	Venango	Franklin	KGA-295
1-6	•	Warren (PSP)	
	Warren	Warren - (450 Link)	KGA-502
2-1	Centre	Near Pleasant Gap	KGB-850
2-2		6 mi. N. of Shawville	
	Clearfield	6 mi. N. of Shawville (450 Link)	KD-34781
2-3	Clinton	Near Lock Haven (PSP)	KGB-852
	Clinton	Near Lock Haven (450 Link)	KGB-852
2-4	Cameron	Near Emporium (PSP)	KSQ-795
2-5	McKean	Near Alton	KGB-854
	McKean	Mt. Jewett PSP (450 Link)	WNPU-817
2-6	Potter	Near Coudersport	KGB855
		1 mi. S.E. of Ulysses	
	Potter	Near Coudersport (450 Link)	KD-34785
2-7	Mifflin	Lewistown	KGB-655
2-8	Elk	Near St. Marys	KGB-851
2-9	Juniata	Mifflintown Garage	KGB-581
3-1	Columbia	Near Catawissa (PSP)	KGB-668
	Columbia	Near Catawissa (450 Link)	KDB-6052
3-2	Lycoming	Near Williamsport (PSP)	KGB-566
3-3	Montour	Danville	KGB-678
3-4	Northumberland	Near Trevorton (PSP)	KGB-565
3-5	Snyder	Sand Mt. Fire Tower (Near Lewisburg)	KGB-565
3-6		Laporte	
3-7		Near Wellsboro (Dutch Hill)	
3-8	O	Sand Mt. Fire Tower (Near Lewisburg)	
		Sand Mt. Fire Tower	

3-9	Bradford		KCR-573
4-2			
4-3		Near Wilkes-Barre	
4-3			
4-5			
4-6	•		
4-7	•	Tunkhannock	
5-1		Port Clinton Hamburg (PSP)	
3-1			
		Strausstown	
		Ridgewood (Reading Bone)	
5-2			
3-2			
5-3			
5-3 5-4	O	Fox Gap near Stroudsburg (PSP)	
5- <del>4</del> 5-5		Newburg	
5-6 5-6	•	Newburg	
3-0	•		
6-0	•		
6-1			
0-1		Near Danboro	
		Ludwigs Corner (PSP)	
6-3	Delaware	Media	KGB-5766
6-4	Montgomery	Near Eagleville	KGB-675
6-5	Philadelphia	Philadelphia	KGB-577
8-1	Adams	Near Gettysburg (Big Flat)	KGB-665
8-2	Cumberland	6 Mi. N. W. of Carlisle (Waggoners Gap)	KGB-670
	Cumberland	Carlisle (Waggoners Gap 450 Link)	KGB-670
8-3	Franklin		KGB-666
8-4	York	3 Mi. N. of Dallastown	KGB-669
8-5	Dauphin	Near Dauphin (Game Comm)	KGB-562
	Dauphin	Elizabethville	KXD-213
8-7	Lancaster	Near Cornwall (PSP)	KGB-572
	Lancaster	Near Cornwall (450 Link)	KGB-572
8-8	Lebanon	Near Indiantown Gap (County)	KGB-579
	Lebanon	Near Indiantown Gap (450 Link)	KGB-579
8-9	Perry	Near New Bloomfield	KGB-667
9-1	Bedford	Blue Knob State Park (PSP)	KTH-649
	Bedford	Near Bedford (450 Link)	KD37260
9-2	Blair	Wopsononoch Mt.(PSP)	KGB-658
1			

9-3	Cambria	Ebensburg	KGA-506
9-4	Fulton	Near McConnellsburg (PSP)	KGB-654
9-5	Huntingdon	Loop Fire Tower (Game Comm.)	KGB-657
9-7	Somerset	Mount Davis (PSP)	KGB-691
10-1	Armstrong	Near Kittanning	KGB-719
10-2	Butler	Near Butler	KGB-785
10-3	Clarion	Clarion Garage	KGB-608
10-4	Indiana	Clymer Fire Tower (PSP)	KGB-72
10-5	Jefferson	Panic	KGB-784
	Jefferson	Near Reynoldsville I-80 (Roadside Rest)	WGI-706
11-1	Allegheny	Penn Hills Township	KGB-716
	Allegheny	Elizabeth (Lovedale)	KGB-716
	Allegheny	NR Oakdale	KGB-716
	Allegheny	Bridgeville	KGB-716
	Allegheny	NR Bradford Woods (Pine Creek)	KGB-716
11-2	Beaver	Beaver Falls (PSP)	KGB-718
11-3	Allegheny (Tunnels)	Pittsburgh (Fort Pitt, Fort Pitt Garage	
	Squirrel Hill, Liberty)		KGB-716
	Allegheny (Tunnels)	Pittsburgh (Fort Pitt, Liberty,	
	Squirrel Hill (450 System	n)	WNML-834
11-4	Lawrence	New Castle (PSP)	KGB-442
12-1	Fayette	Near Uniontown (Row Skyline Drive)	KGB-689
12-2	Greene	Nettle Hill Stockpile	KGB-688
12-4	Washington	Near Washington (Mt. Wheeler)	
		(PSP and Game Comm.)	KGB-690
12-5	Westmoreland	Near Greensburg (Charter Oaks - PSP)	KGB-717
	Westmoreland	Kiski (PSP)	KGB-717
STAT	EWIDE LICENSES		
Mobile	2		KA-2163
Land N	Mobile		KM-8424
			KL-6207
PENN	SYLVANIA EMERGENC	Y MANAGEMENT AGENCY (PEMA)	
3-5	Snyder	Selinsgrove State Hospital	KDL-943
5-1	•	Hamburg State School and Hospital	
8-5		Harrisburg	
10-4	=	Indiana State University	

### 19.5 RADIO OPERATIONS

### DETAIL OPERATION AND CONFIGURATION OF RADIO SYSTEM

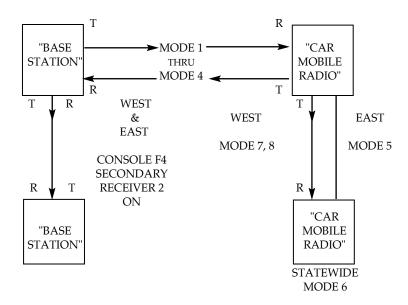
### PART I. GENERAL DESCRIPTION OF THE SYSTEM

The Radio System is used to fulfill three (3) functions:

- (1) For base stations to talk to cars in the field and conversely for cars to talk to their base stations.
- (2) For cars to talk to other cars.
- (3) For base stations to talk to other base stations.

T = Transmit Frequency R = Receive Frequency

### **BLOCK DIAGRAM OF THE SYSTEM**



- 1. The Base Stations transmit to cars Statewide on Modes 1 through 4 and F1 on the remote control console.
- 2. Cars transmit to Base Stations Statewide on Modes 1 through 4.
- 3. Cars in the West (Districts 1-2-9-10-11-12) talk to cars on 47.14 MHz (Modes 7 and 8).
- 4. Cars in the East (Districts 3-4-5-6-8) talk to cars on 47.28 MHz (Mode 5).
- 5. Base Stations talk to other Base Stations on 47.30 MHz (F4 on the remote control console). (Secondary receiver must be on).
- 6. Bases in the East can transmit to mobiles on 47.28 MHz (F2 and F3 on the remote control console).
- 7. Bases in the West can transmit to mobiles on 47.14 MHz (F2 and F3 on the remote control console).

The consequences of this arrangement are as follows:

- 1. Standard cars can talk to Base Stations anywhere in the State and can talk car to car ONLY in their respective areas of the State
- 2. The Eastern frequencies (Mode 5) are blocked out in Western cars and the Western frequencies (Modes 7 and 8) are blocked out in Eastern cars, thus eliminating the possibility of getting on the wrong channel and interfering with New Jersey and/or West Virginia.
- 3. Special modifications to Central Office and certain District vehicles will give Statewide car to car capabilities (Mode 5 through 8).
- 4. The base to base communications are the same frequency as base to mobile communications in Districts 1, 3 and 6, however they will not be heard in the cars when the Private Line (PL) switch, on the hang up box, is down and the microphone is hung up. In the use of the base to base channel, it cannot be too strongly emphasized that all persons exercise courtesy by waiting until the channel is free before placing calls. This can be readily accomplished because all users hear other users that are within range. Unless this is done, additional calls and confusion will result. PLEASE BE PATIENT AND REFRAIN FROM C A U S I N G INTERFERENCE TO OTHER USERS.

5. The Car/Car communications will not be heard at the Base Stations unless F2 or F3 is depressed on the remote control consoles. In this case incoming calls on F1 will not be heard, so return to F1 as soon as possible.

#### PART II. BASE STATION OPERATION

- A. "Frequency 1" (F1) is your Base/Car, Car/Base Channel and is your normal mode of operation when talking to cars.
- B. "Frequency 2" (F2) (Mode 5, 7 and 8) and "Frequency 3" (F3) (Mode 6) are your mobile to mobile channels. These modes can be used to talk to cars, but while in this mode you will not hear calls on F1.

#### **EXAMPLES**

### 1) TO CALL A CAR BY VOICE:

- a) Depress the "FREQ. 1" (F1) Button on the Remote Control Unit.
- b) Depress the monitor side on the microphone and listening for other traffic so as not to cause interference, or listen to your scanner.
- c) Depress the "Transmit side" and place your call.
- d) After completing your call, SIGNOFF using your "County Call Sign". (i.e., "Adams Clear", etc.)

#### 2) TO CALL ANOTHER BASE STATION

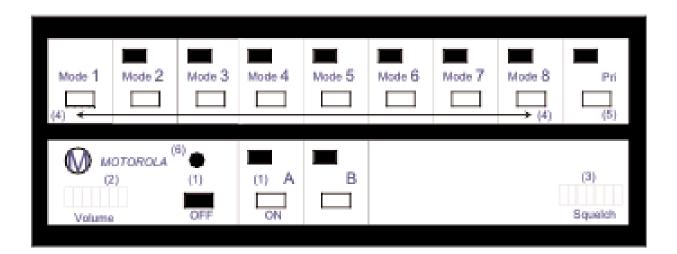
- a) Be sure Receiver 2 button on the bottom left side of the remote control is in the on position.
- b) Depress the FREQ. 4 (F4) Button on the Remote Control Unit.
- c) Depress the transmit side of the microphone and place your call.
- d) After completing your call, SIGN OFF using your "County Call Sign". (i.e., "Adams Clear", etc.)
- e) Return to your base to car channel by depressing (F1) button on the remote control console.

### 3) TO ANSWER A CALL FROM ANOTHER BASE STATION

a) The Receiver 2 button switch must be in the on position to receive a call.

b) Depress the FREQUENCY 4 (F4) on the Remote Control Console. All bases in the state that are monitoring F4 will hear you.

- c) Depress the TRANSMIT SIDE on the microphone and answer the "Calling Station".
- d) After the completion of the call, SIGN OFF using your "County Call Sign" and Return to your base to CAR CHANNEL by depressing the (F1) BUTTON on the Remote Control console.



### PART III. MOBILE RADIO UNIT OPERATION

#### A. GENERAL OPERATION:

- 1. To transmit a message, slide the microphone out of the hang-up-box and listen for a few seconds to be sure no other stations are transmitting. Then depress the push-to-talk button to transmit.
- 2. Check to make sure that the red transmit indicator located above the "off" switch is lit. This indicates your message is being transmitted over the mode you manually selected.
- 3. Keep in mind that noise levels vary widely in different types of working vehicles, so hold the microphone an inch or two from your mouth and speak clearly.
- 4. Keep messages short and to the point, the radio is programmed to allow only one minute of airtime with each press of the push-to-talk switch.

If you exceed this one-minute period you'll hear a tone and your mobile radio will stop transmitting. To reset the radio, release the push-to-talk switch.

- 5. When you have finished transmitting release the push-to-talk button and listen for a response.
- 6. Make sure the microphone is kept in the hang-up-box when not being used to transmit a message. This practice protects the microphone and helps to reduce interference from other stations.
- 7. When talking to a base station, it is not necessary for the mobile to give its "Call Sign" when signing off. When talking to another mobile, the last mobile transmitting must signoff with the mobile call sign. (i.e., "Adams 213 Clear," etc.)

### **EXAMPLES OF VOICE CALLS**

(Base To Mobile)

(Base Station) Base: "Dauphin to Dauphin One"(Mobile) Dauphin One: "This is Dauphin

One, Come In!"

(Base Station) Base: [Give Message]

(Mobile) Dauphin One: [Acknowledges

message] "Dauphin One, Clear!"

(Base Station) Base: "This is Dauphin, Clear!"

#### B. DESCRIPTION OF CONTROLS

All mobile radio control heads and microphones are installed either on the dashboard or console of the vehicle. These controls are numbered on the following Figure 1 and are identified as follows:

- 1. **ON-OFF SWITCH** To turn the mobile radio unit "on" depress push button A located in the bottom row of controls. To turn the radio unit off depress the red button next to the Mode A Button.
- 2. **VOLUME CONTROL** Adjust this control to a comfortable listening level.
- 3. **SQUELCH CONTROL** Turn the volume control all the way to the left... Do the same with the squelch control... Slide the switch on the microphone hang-up-box to the up position... Turn the volume control to the right until noise is heard from the speaker at the moderate level...

  Turn the squelch control slowly to the right until the noise disappears... Slide the switch on the microphone hang-up-box to the down position... Readjust volume if necessary.
- 4. MICROPHONE SLIDE SWITCH The switch on the microphone hang-up box is normally in the down position in order to activate the PL guard tone protection. Sliding it to the up position puts the radio into monitor mode, which is also done automatically whenever the microphone is removed from the hang-up box.

#### STANDARD RADIOS

### B. DESCRIPTION OF CONTROLS

All mobile radio control heads and microphones are installed either on the dashboard or console of the vehicle. These controls are numbered on the following Figure 1 and are identified as follows:

- 1. **ON-OFF SWITCH** To turn the mobile radio unit "on" depress push button A located in the bottom row of controls. To turn the radio unit off depress the red button next to the Mode A Button.
- 2. **VOLUME CONTROL** Adjust this control to a comfortable listening level.

3. **SQUELCH CONTROL** - Turn the volume control all the way to the left. . .Do the same with the squelch control. . Slide the switch on the microphone hang-up-box to the up position. . .Turn the volume control to the right until noise is heard from the speaker at the moderate level. . .Turn the squelch control slowly to the right until the noise disappears. . .Slide the switch on the microphone hang-up-box to the down position. . .Readjust volume if necessary.

4. MICROPHONE SLIDE SWITCH – The switch on the microphone hang-up box is normally in the down position in order to activate the PL guard tone protection. Sliding it to the up position puts the radio into monitor mode, which is also done automatically whenever the microphone is removed from the hang-up box.

### STANDARD RADIOS

4. MODE SELECTION BUTTONS - Depress one of the mode buttons between one and four for base to mobile communications. They are as follows:

Mode 1 - Districts 1-0, 3-0 and 6-0.

Mode 2 - Districts 11-0.

Mode 3 - Districts 2-0 and 12-0.

Mode 4 - Districts 4-0 and 8-0.

Depress one of the Mode buttons between 5 and 8 for mobile to mobile communication. They are as follows:

Modes 6 - Statewide Vehicles.

Modes 5 - Mobiles in Eastern portion of the Commonwealth (Districts 3-4-5-6-8).

Modes 7 and 8 will be blocked in Eastern mobiles to prevent interference with adjoining states. Do not attempt to depress these blocked buttons or damage to the control head may result.

Modes 7 and 8 - Mobiles in Western portion of the Commonwealth (Districts 1- 2-9-10-11-12).

Modes 5 will be blocked in Western mobiles to prevent interference with adjoining states. Do not attempt to depress these blocked buttons or damage to the control head may result.

#### 5. CHANNEL SCAN

The channel scan feature allows the operator to monitor radio traffic on modes other than the main operating mode. Depress the red push-button to the right of the Mode 8 push-button.

The radio will begin to scan the modes that have been pre-programmed into the scan list. The eight modes will have two priority modes and several non-priority modes. The mode that is manually selected is always the priority one mode. The priority two mode is fixed and depends upon the Maintenance District to which the vehicle is assigned.

District 2-0 Centre and Clinton

District 12-0 Greene

#### **ENCODER MDC-600**

It operates along with the remote control console to do four main things:

- 1. It checks the entire radio link to and from any mobile having a decoder.
- 2. It automatically identifies a decoder equipped mobile when it transmits a message.
- 3. It can individually call any decoder equipped mobile and activate up to three types of alerting devices including the vehicle horn and auxiliary alert beacon.
- 4. It can call all the decoder-equipped vehicles in an entire Maintenance District and trigger alerting devices in each one.

### **DECODER MDC-600**

Radios with Decoders - The radio will be equipped with an auxiliary control head (see Figure 2) which houses a mobile decoder signaling system. When a vehicle with a decoder receives a call on the decoder the following will happen:

- a. The "call" lamp will light, a short tone will be heard through the speaker and the transmit light will come on for a moment as the mobile unit sends an acknowledgment. If you are out of your vehicle and notice that the call light is on when you return, always call your maintenance office.
- b. If the button labeled "horn" is depressed an incoming message will cause the horn to sound

for fifteen seconds.

c. If the button labeled "light" is depressed the radio call light mounted outside the vehicle will turn on for one hour.

d. To reset the decoder the operator must push the red "reset" button, remove the microphone from the hang-up box or transmit a response.

To transmit a message on a decoder radio when the microphone button is pressed a short tone will be heard through the speaker. The operator should not begin voice transmission until the tone disappears.

The operation of the standard unit (see Figure 2) is the same as the operation listed under the standard radio (Figure 1).

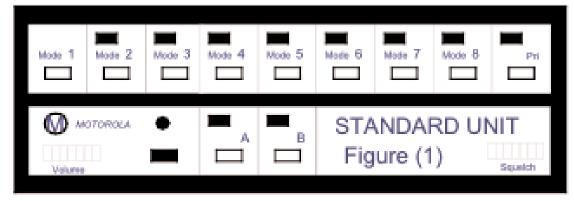
### 19.6 RADIO MAINTENANCE STANDARDS

### MAINTENANCE STANDARDS AND REQUIREMENTS

Each District office and County organization will be required to maintain a radio log indicating the time the service contractor was notified of required service, the time of arrival on location and the time the repair was completed. When the service contractor is in default of the service contract, make a note of the default on the contractor's service form.

Maintenance shall include all labor and parts for all mobile equipment and appurtenances listed under "Equipment and Location Lists". (In the bid document) Service technicians shall be trained and experienced





and have a current FCC required license when applicable. The vendor or his duly authorized subcontractor shall, after receipt of notification, physically depart for service as follows:

A. All Base Stations, Remote Controls and Appurtenances:

Within 2 hours and restore service within 8 hours after arrival at any location within a given District. (Monday through Friday)

B. Mobile radios: Within 2 working hours and the radio shall be restored to service within 8 working hours.

For all equipment above the service period will include holidays, weekends and weekdays during business and non-business hours through department's snow and ice season from November 15th to April 15th.

Maximum service response time at any location within 45 miles of a service center will be no more than two hours. For locations more than 45 miles from a service center the response time shall be no more than two hours plus normal driving time for the miles in excess of 45 calculated at 45 MPH.

In the event a vendor fails to respond within the above time the amount of \$50.00 shall be assessed against the vendor as liquidated damages.

In the event that the vendor has not restored to service, a base and associated equipment after a period of eight hours or a mobile unit after a period of eight working hours, the Department of Transportation will assess fifty (\$50.00) per basefor each eight hour period and twenty-five (\$25.00) per mobile for each eight working hour period that the equipment is not in service. Such charges shall continue at above rates and time frames until equipment is back in service. Any amount assessed against vendor under this section may be deducted from any amounts due vendor.

Please include the following information in your documentation: date call placed, time of day call placed, name of individual who placed call, name of person at vendors location that they spoke to, date service rep. arrives, time of day service rep. arrives, name of service rep., amount of time equipment was out of service (in hours).

The foregoing shall not apply in the event of acts of God, such as a storm, lightning and where weather situations make it impossible for a vendor to perform his service. In this event, the vendor

shall immediately notify PennDOT by telephone and then make a complete written report on why the equipment was not restored to service as stated above. This report is to be made within 5 working days of the event.

Each base station and associated equipment shall receive preventive maintenance by the vendors or his subcontractor once every 12 months. Any equipment not meeting the electrical or mechanical specification at the time shall be adjusted to meet factory specifications and recommendations of the manufacturer. The preventive maintenance shall include a test to make sure all standby power is ready for any emergency. A copy of each preventive maintenance report shall be made available to PennDOT. The preventive maintenance shall include the checking of transmitter frequency, deviation, power output and antenna VSWR and adjusted to original specifications. Receivers shall be tested for sensitivity, audio output and frequency and adjusted to original specifications. All tone equipment shall be checked for sensitivity and all levels adjusted for optimum original performance.

The remote control consoles shall be tested to include output levels and all adjustments necessary shall be made available to PennDOT within 10 working days from completion of the preventive maintenance.

Each mobile unit serviced or transferred shall receive preventive maintenance service. The transmitter frequency, deviation, power output and receiver sensitivity, frequency and audio output shall be checked and all equipment adjusted to original standards. All of the cables, control head, circuit breaker or fuse assemblies, antenna, microphone and associated cord shall be inspected and corrected for any defects.

A call for service will be made directly from the Engineering/Maintenance District to the vendor or his subcontractor. Calls for service may occur at any time. The vendor or his subcontractor shall embark on the service call within specified hours and render the equipment operable.

The forms to be completed by the vendor or his subcontractor in the servicing of equipment shall be provided by the vendor with approval of the PennDOT Contract Administration Unit. These forms will be submitted for all services. A copy of the service report will be given to the Engineering/Maintenance District and a copy

forwarded to Contract Administration Unit, Harrisburg, PA.

All work being performed on the PennDOT radio system will be performed by the vendor or his subcontractor. Any modifications or installations to the PennDOT radio system must have prior approval from the Contract Administration Unit.

Service on mobile equipment shall be performed at locations designated by PennDOT, which may be anywhere in the assigned Maintenance District. This includes transfers, removals and reinstalls.

Remote control for the remote base stations from the dispatch points is in three methods:

- A. Land-Line control (leased telephone lines).
- B. Radio-Control (radio links where leased lines are not used).
- C. Micro-Wave (Pennsylvania State Police).

In the case of land line control failure, the vendor shall isolate the problem to the telephone company or PennDOT equipment and report telephone company problems to both PennDOT and the telephone company. PennDOT equipment problems shall be repaired per schedule for base station and appurtenances.

PennDOT, Contract Administration Unit in Harrisburg will be given one telephone number for additional service and system problems.

Contractors maintenance obligations under this section shall include all parts and labor required to repair or replace the equipment which has become defective through normal use to include; defects in equipment (acknowledged unacknowledged by the manufacturer) and repairs not caused through the fault or negligence of the Commonwealth; its employees or its agents; accidents to include, fire, extreme temperature, water or liquid damage or other acts of God; abuse intentional or unintentional damage caused by blows, dropping, bumping or forcing of switches beyond their stop point; any other physical damage caused by improper, careless or rough treatment of the unit. Contractor maintenance obligations do not include the replacement of parts lost, stolen or damaged by causes arising out of other than the ordinary use of the equipment.

### 19.7 RADIO M-882

### INSTRUCTIONS FOR USING RADIO WORK ORDER FORM M-882

Radio Work Order Form M-882(1-88) will be completed jointly by both Department personnel and the Radio Service Contractor and signed by both representatives.

All invoices for Radio Maintenance Service, transfers, removals and parts for the radio statewide system will be processed by the Bureau of Maintenance and Operations in Harrisburg in accordance with the radio contract. The exception to this are radio control circuits provided by telephone companies, electric power by utility companies and certain lease rentals for land, buildings, tower space, etc., which are paid out of Maintenance Office funds.

The County Maintenance Office will initiate Form M-882 for repairs, removals, reinstallations, relocations and radio transfers between summer and winter equipment. All new mobiles purchased off statewide contract should include the installation cost on the Field Purchase Order

### USE AND DISPOSITION OF FORM M-882 AND RADIO CONTRACTORS SERVICE FORM

When you require maintenance service, the Work Order Form M-882 is to be completed whenever the service call will cost the Department an additional expenditure over the basic monthly maintenance. Examples of chargeable items include: broken antennas, microphones, physical damage to the mobile unit, stolen equipment, etc. On routine service repair calls that are not billable, the contractor's service form is all that is required. This form will be completed and signed by the service contractor representative and signed by a Maintenance Office representative.

Radio Work Order, Form M-882 will be prepared for mobile unit transfers, removals, reinstalls and relocation of any type of communication equipment.

Prior approval for these work items must be obtained from the Contract Administration Unit who will notify the Radio Service Contractor to perform the necessary service. The service contractor will not perform any services without this authorization.

The transfer of mobile radios from one vehicle to another requires each organization to phone the Work Order Number M-882, old and new equipment number and radio serial number to the Contract Administration Unit.

The radio contractor's service form must be completed for all types of radio service and signed by both organizations.

**Distribution** - The Form 882 will be distributed as follows:

- 1. The original (first copy) is retained by the originating organization.
- 2. The second and third copies given to the service contractor.
- 3. The fourth or hard copy is to be forwarded to Contract Administration Unit, Bureau of Maintenance and Operations, Harrisburg by the originating organization IMMEDIATELY AFTER completion of service by the service contractor.

### COMPLETION OF RADIO WORK ORDER FORM 882 BY THE DEPARTMENT

The authorized Department employee will be required to fill out the following portions on this radio Work Order Form 882 either typed or written legibly:

- 1. **District No. 8-0:** (Example showing Dauphin County Maintenance Office).
- 2. **County:** 8-5 (Example Dauphin County).
- 3. **To:** New Equipment No.: Record in this block, the equipment number of the vehicle in which a radio is being installed or serviced (Example 169-2064).
- 4. **From:** Old Equipment No.: Record in this block, the equipment number of the vehicle from which a Mobile Radio Unit and/or accessories was removed. (Example 293- 8071).
- 5. **Equipment Model:** (Example Mobile SYNTOR X).
- 6. **Equipment Serial No.:** (Example 483 HWE 012).
- 7. **Date Service Requested:** Enter date service contractor is called to service unit (Example April 2, 1990).
- 8. **Date Service Call Answered:** Enter date service contractor answered call.

9. **Date Radio In Service:** Enter date unit placed back in service.

- 10. **Remarks:** In this section, explanation must be shown for reason and type of service performed.
- 11. **Department Signature:** The Maintenance Office designated representative must sign the Form 882 as shown on sample copy.
- 12. **Service Contractor Signature:** Contractors representative completing the work.

The service contractor is responsible for completing all other information listed on the Radio Work Order M-882. We repeat, THE SERVICE CONTRACTOR WILL PERFORM NO SERVICE WITHOUT A PROPERLY EXECUTED WORK ORDER FORM M-882.

### **CODE IDENTIFICATION**

MO - Mobile Unit Complete

DE - Decoder

AX - Weather Proof Housing

ACC - Accessory Kit-Less T/R Decoder

OS - Outside Speaker

LT - Call Light (Mobile)

LBFM - 100 Watt Floor Mounted LO-BAND

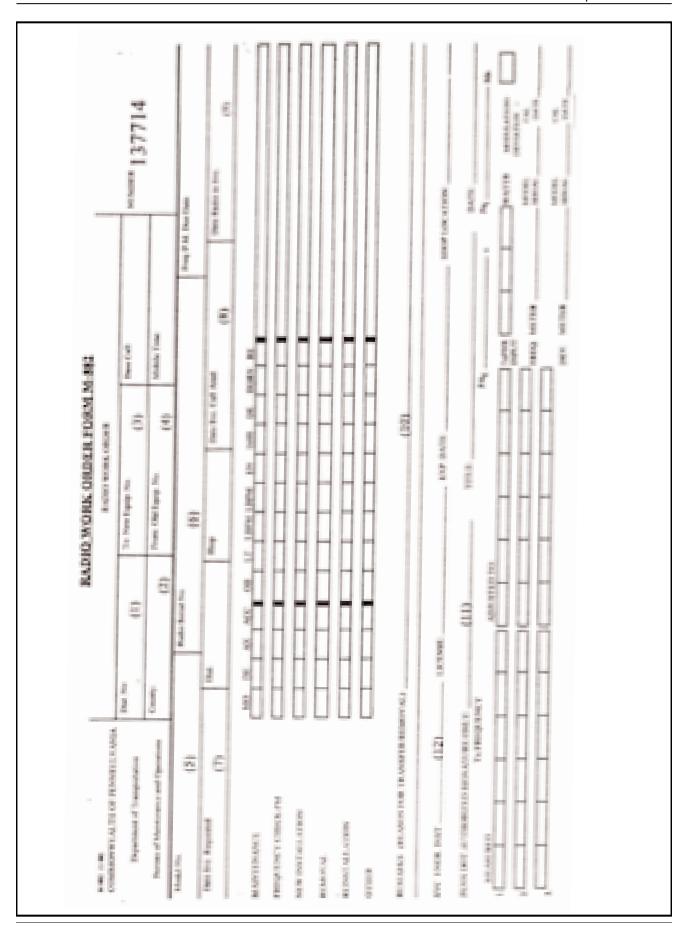
LBPM - 100 Watt Pole Mounted LO-BAND

EN - Encoded

1600 - Remote Control Unit

RE - Remote

When a vehicle equipped with a radio is transferred within a District, the transfer must be called into the Contract Administration Unit, Bureau of Maintenance and Operations, and an M-882, Radio Work Order prepared and forwarded to same. (This M-882 Radio Work Order does not have to be signed by the service contractor's representative).



Distribution - Service Contractor's Service Form will be distributed as follows:

- The original (first copy) is retained by the County Maintenance Office. Do Not forward this copy to the Contract Adminis- tration Unit.
- 2. Second, third and fourth copies will be retained by service contractor.

### DAMAGE TO, THEFT, FIRE OR LOSS OR STOLEN RADIO EQUIPMENT

All damage to or the theft or loss of radio equipment is the responsibility of the Department of Transportation. To document such losses we require the following to be furnished depending on the nature of the loss:

- 1) Preliminary Accident Report
- 2) Theft or Vandalism Report
- 3) MORIS Screen Printout
- 4) Letter Explaining Cause of Damage or Loss
- 5) Form M-882

At the time, the damage, theft or loss is detected, the following steps must be taken:

The Contract Administration Unit is notified, a Radio Work Order (M-882) is initiated by the designated Department employee. (Theft, vandalism accident damage must be investigated by the Pennsylvania State Police). The service contractor is notified by the District or Maintenance Office Personnel to list all damaged or missing equipment and to replace same. The cost of replacement will be charged to the County Maintenance Office.

A copy of both the Radio Work Order (Hard Copy) along with the form(s) or letter of explanation will be forwarded to the Contract Administration Unit upon completion of the services.

### 19.8 RETURN OF MOTOROLA RADIOS AND ACCESSORIES

In an effort to consolidate and prepare to surplus the Legacy (Motorola) radio equipment and accessories, the Bureau of Maintenance, Equipment Division, Radio Unit is requesting the return of the items listed below. Due to the lack of resources at the Equipment Division, we are requesting each applicable Engineering District to repackage the equipment and accessories according to the radio item. Items are to be separated and repackaged into the following categories:

- 1) Radios Most Motorola radios that are to be returned are model type, "Snytor X":
- a) Black metal casing
- b) Approximate size of 12" x 2 ½" x 16"
- c) Approximate weight of 25 pounds

All these radios shall have the mounting bracket removed. After doing a physical count, the total number of these radios shall be recorded on a piece of paper and placed in a weather protected envelope. The envelope shall be placed and secured on the outside of each radio container. Please note that other types of radios may be included in your inventory. These types are the "Maratrac," "Maxtrac Radius," and "Vertex" (models VX3000, VX4000, and VX5500). These types of radios and any/all accessories, if still attached, shall be boxed separately from the "Snytor X's", counted and labeled.

- 2) **Wiring Harnesses** All wiring harnesses, except for the other types mentioned under the "Radios" category, shall be placed into their own container.
- 3) Control Heads, Tone Remotes, Microphones, and plastic brackets All of these items, except for the other types mentioned under the "Radios" category, shall be placed into their own container.
- 4) Metal Mounting Brackets, Metal Antennas and any other Metal Pieces All of these items, except for the other types mentioned under the "Radios" category, shall be placed into their own container.

**NOTE:** The metal cabinets that enclose the Base Station and the Link (if appropriate) will not be returned at this time. These items shall be collected at a later date.

Once the district and/or county has properly repackaged the Motorola radio items into the proper categories and has provided a physical count of radios, the district and/or county shall notify the Radio Unit via e-mail. The e-mail shall contain compliance of procedure by district and/or county; and the number of shrink wrapped

skids/containers to be returned. The Radio Unit shall coordinate with the Equipment Division's stockroom personnel on the schedules return of these shrink wrapped skids/containers via pony truck. Upon an agreed upon return date between all parties involved, a date shall be provided to the district and/or county for return of the Motorola radio items. The pony truck driver shall assist in removing of these skids/containers from their truck and properly placing these skids/containers in a designated location. This action requires the operation of a forklift.

### 19.9 WARRANTY AND REPAIR PROCEDURES FOR 800 MHZ RADIOS

All districts and counties are responsible for the return of malfunctioning equipment in accordance with the "Return-to-Factory Warranty" contract. The following steps describe the procedure for extended warranty repair service. This procedure applies only if the subscriber device has been shown to be defective AND it is covered under the Commonwealth's contract.

### **Items Covered:**

All M-803 Mobile Radios and Control Heads

All P-800 & P-801 Portable Radios

All V-TAC Units and Control Heads

### **Items Not Covered:**

CS-803 Control Stations SP-103 Devices

Tone Remotes Portable Batteries

Charger (desk or vehicle) Holsters

Antennas Installation Kits or Components

Miscellaneous Accessories

### **Troubleshooting-Mobile Radio:**

- 1) If your district or county is having trouble with 800 MHz Mobile Radio, troubleshoot and eliminate the obvious items (i.e. broken/loose antenna, connections of microphone to microphone cord, power to radio was not turned off and on volume button, etc.)
- 2) If all obvious items check well, you must place a call to the customer service center at 1-800-806-0949 to have the radio checked by an

Authorized Service Center (ASC).

- 3) When calling the customer service phone number, the representative of M/A-COM will establish a trouble ticket (TTxxxxxxx)
- 4) The ASC will be able to look at the mobile radio and determine if they can fix it in the field or if it must be returned to M/A-COM in Harrisburg.
- 5) If the radio must be returned to Harrisburg, do not let the ASC take the radio. Ask the ASC technician to provide you with the mobile radio's serial number, USER ID, and IP Address.

### **Troubleshooting-Portable Radio:**

- 1) If it is determined that a portable radio is malfunctioning, it can be sent to M/A-COM. Thus, your district/county will save the cost of a service call.
- 2) Remember that portable radios are stand alone items (no wires or other obvious items are attached). Therefore, if a portable radio does not work, there is nothing attached that can create the problem.

Packaging-Mobile Radio: Package the Mobile Radio; do not send the mic, mic cord, or any other attachments. Please include your return address and the Return Material Authorization (RMA) number(s) on the outside of the package(s).

Packaging-Portable Radio: Package the Portable Radio; do not sent the battery, antenna or any other attachments. Please include your return address and the Return Material Authorization (RMA) number(s) on the outside of the package(s).

### Calling for a RMA:

- 1) Call the Tyco Electronics Help Desk at 1-800-806-1949 and request a Return Merchandise Authorization (RMA) number. Be prepared to provide the following information:
  - 1) Your Name
  - 2) Your E-mail Address
    - c. Your Telephone Number
    - d. The Agency, District, County,

- Company, or Organization you represent
- e. The Return Address for the replacement or returned parts
- f. The Type of radio submitted for repair
- g. The Radio's Serial Number
- h. The problem with the radio
- i. The message appearing on the radio's display (if any)
- j. The Vehicle's ID Number or location
- k. The User ID
- 1. The IP Address

**NOTE:** M/A-COM programs all units returned from the Repair Center with the original information from the unit delivered (User ID, IP Address and Configuration Options) unless instructed otherwise.

After the Help Desk processes your information, a M/A-COM Customer Service representative will provide an RMA number and shipping instructions. M/A-COM receives material at the Repair Center by delivery or by mail.

a. Return radios by mail (using UPS FedEx or other land delivery carriers) to:

M/A-COM, Inc. Repair Center, Mail Stop 161-064 100 AMP Drive Harrisburg, PA 17112 Phone: 717-565-1287

b. US POSTAL SERVICE SHIP TO:

M/A-COM, Inc. P.O. Box 3608 Harrisburg, PA 17105-3608

during the hours of 1:00-4:00 p.m. on business days. To arrange a delivery time outside these hours, call 717-565-1287 at least 24 hours in advance. If the aforementioned schedule does not meet your operational needs, please call M/A-COM requesting an adjustment to the delivery schedule.

- 3) Your receipt is an e-mail notice from M/A-COM with the subject line, "Log Call Ticket Printout" which includes the date and time that M/A-COM received the radio
- 4) The unit is repaired in accordance with the maintenance agreement. If the unit cannot be repaired within the time specified, M/A-COM will provide a replacement unit to be added to your plant maintenance inventory.
- 5) Upon completion of repairs the unit is shipped back to the address provided in item 1.e.

# 19.10 DEACTIVATION OF THE EMERGENCY BUTTON FOR 800 MHZ RADIOS

The 800 MHz emergency button has been deactivated on all Department of Transportation's personalities and profiles across the Commonwealth.

- a) The emergency button is orange in color.
- b) This button is located near the display screen on M-803 mobile radios and SP-103 desktop radios.
- c) Located near the press-to-talk button on the P800/P801 portable radios

In some cases, a phantom emergency shall occur or a radio will not be deactivated. In these cases, each District and County has up to 3 personal authorized to call the Network Operations Center (NOC) in Harrisburg, to have this emergency deactivated. Else, you can notify the Radio Unit for this deactivation.

# 19.11 STANDARDIZE INSTALLATION PLACEMENT FOR 800 MHZ MOBILE RADIOS IN DUMP TRUCKS

The Department of Transportation is standardizing the installation placement of 800 MHz dash and/or trunk mount mobile radios in dump trucks. The standardization is a result of

various installation locations that may pose an inconvenience to the operator and/or create confusion to the service installers or repair person. Moreover, the standardization should eliminate the water intrusion problems that have occurred across the Commonwealth.

The trunk mount radios can be reconstructed to resemble the dash mount radios.

- The primary location for installation of the mobile radio shall be on the front access panel/door of the GL400 control cabinet. This cabinet is located under the movable arm for the controller joysticks.
  - a) Installers and/or service technicians shall remove this access panel/door prior to attaching the mobile radio
  - b) Installers and/or service technicians shall ensure that the present wiring of the GL400 will not be nicked, cut, torn or damaged in any way.
  - c) They must also ensure that the GL400 wires will not be damaged or worn due to contact through vibration.
  - d) A reasonable amount of wiring for the 800 MHz radio shall be stored inside the cabinet to allow the access panel/door to be removed to allow the technician/mechanic access to the GL400 electrical components and wires
- 2) The alternate location for installation of the mobile radio shall be on the dash of the dump truck (typical Mack model year in the 1990's).
  - a) Installers and/or service technicians shall ensure that the mobile radio is completely secured to the metal structure underneath the protective padding.

### 19.12 CLOSE PROXIMITY OF 800 MHZ RADIOS

The Department of Transportation is recommending the following procedures for communicating with other units that are in close proximity. These locations may be plow trains for snow removal and small work zones. These 800

MHz radios are designed and have the capability of transmitting and receiving "On" and "Off" the radio network.

- 1) "On" network describes the actual use of the 800 MHz network. Secure communications are transmitted and received through high profile towers and microcell sites. Standardized voice groups are defined and should be utilized for proper communication channels.
- 2) "Off" network describes the basic use of low band radio waves for communicating.
  - a) The "Off" network is from one radio antenna to another radio antenna
  - b) The typical range is your line of sight up to a maximum of two miles.
  - c) A limiting factor is the geography of the land.
- Communication links between "On" and "Off" network do not exist.
  - a) Thus, only personnel transmitting/receiving "On" the network shall communicate with others that are "On" the network.
  - b) Those personnel transmitting/receiving "Off" the network shall communicate with others that are "Off" the network.
  - c) As a suggestion, managers and/or supervisors should be notified when personnel have the need to talk "Off" network.

### Procedures for programming mobile radios "Off" network:

- Notify manager/supervisor of the need to leave the "On" network, identify the "Off" network frequency to be used and coordinate the move with other members of your work group.
- 2) Press the "C" button on the 800 MHz display screen.
- 3) Once "Off" network, press the right or left arrow buttons to scroll to the designated channel.

### Procedures for programming mobile radios "On" network:

1) Notify others of leaving the "Off" network channel.

- 2) Press the "C" button on the 800 MHz display screen.
- 3) Once "On" network, press the preprogrammed "A" or "B" buttons or use the right or left arrow buttons to scroll to the designated voice group.
- 4) Notify manager/supervisor that you are back "On" network.

### Procedures for programming portables (hand held) radios "Off" network:

- Notify manager/supervisor of the need to leave the "On" network, identify the "Off" network frequency to be used and coordinate the move with other members of your work group.
- 2) Press the "A" or "B" button on the top of the portable near the display screen until you see "SELMODE" (select mode) on the display screen.
- 3) Quickly press the "Up" or "Down" button on the side near the "Press-to-Talk" button, keep pressing either button until you see "OCF" (OpenSky Conventional FM) on the display screen.
- 4) Once at the "OCF" screen, press the "A" button (Go To) at the top of the portable.
- 5) Once "Off" network, turn the channel selector (numbered 1 16) to scroll to the designated channel.

### Procedures for programming portables (hand held) radios "On" network:

- 1) Notify other of leaving the "Off" network channel.
- 2) Press the "A" or "B" button on the top of the portable near the display screen until you see "SELMODE" (select mode) on the display screen.
- 3) Quickly press the "Up" or "Down" button on the side near the "Press-to-Talk" button, keep pressing either button until you see "OTPMODE" (OpenSky Trunking Protocal Mode) on the display screen.
- 4) Once at the "OTPMODE" screen, press the "A" button (Go To) at the top of the portable.
- 5) Once "On" network, turn the channel selector (numbered 1 16) to scroll to the designated voice group.

6) Notify manager/supervisor that you are back "On" network.

### **Suggested Scenario for Plow Trains:**

All plow trucks within the plow train should have the radios "Off" network to talk within the work group. The manager/supervisor that is in control of the plow train should have his/her portable "Off" network to communicate with plow train and have his/her mobile "On" network to listen for any pertinent network communications.

### Suggested Scenario for small Work Zones:

All vehicles entering the work zone, vehicles within the work zone, and flaggers should have the radios "Off" network to enable the truck to truck and truck to ground communications. Vehicles leaving the work zone should return to "On" network operations. manager/supervisor that is within the work zone should have his/her portable "Off" network to communicate with other within the work zone and have his/her mobile "On" network to listen for any pertinent network communications, vehicles leaving or returning from a plant, stockpile, authorized dump site, etc. and still a distance away.

### Suggested Scenario for larger Work Zones (Reference typical range of Portables):

This is a field manager's/supervisor's decision based upon the work zone set-up, amount of intersecting traffic, geography, known network coverage, etc. Due to the typical range of portables that the flaggers would be utilizing, a

decision needs to be made as for flaggers remaining "On" network or to be "Off" network and relaying information with intermediate flaggers. Naturally, vehicles within the work zone would have to reaming "Off" network due to their close proximity.

### 19.13 COUNTY NAME CHANGES ON THE 800 MHZ RADIO DISPLAY SCREEN

The county name changes are necessary and required to aide in identifying our agency (Transportation) to end users from our agency, as well as, any other Commonwealth agencies that utilize the 800 MHZ radio system. As County EOC migrate into the 800 MHz radio network, Districts and Counties shall be provided 80 MHz radio navigation instructions and current or

update policy in regards to contacting or receiving the call from the respective EOC. All PENNDOT talk groups with county names shall change from the existing county name or abbreviated county name to a "T\_" county name/abbreviated county name. The "T\_" shall represent "Transportation" and assist in identifying PENNDOT. An example of this change is as follows: Example1: Existing talk group name is "Adams" and new name will be "T\_Adams." Example2: Existing talk group name is "Butler" and the new change shall reflect "T\_Butlr". The abbreviation is due to only seven characters are available on the 800MHz display screen.

### 19.14 INVENTORY OF 800 MHZ RADIOS

Each District and County is responsible to ensure their plant maintenance radio database is kept accurate and current. The Radio Unit shall make the appropriate modifications to your 800MHz radio inventory upon the District or County's notification to the Radio Unit. The following items shall be placed into the plant maintenance radio inventory database:

- a) Control Stations (CS-803; to include spares at the District level)
- b) Desktop Radios (SP103; to include spares at the District level)
- c) Mobile Radios (M-803; to include spares at the County level)
- d) Portables (P-800/801; to include spares at the District/County level)

### 19.13 INSPECTION OF 800MHZ RADIOS

Each piece of equipment that requires an M-614 to be annotated upon utilization shall also require a short inspection of the 800MHz radio. The following items shall be checked and documented on the M-614.

### PASSENGER COMPARTMENT:

- Does radio turn on upon ignition or manually upon pressing the power button?
- Microphone cords, heads and hangers in good repair?

	Microphone connection at radio tight (hand tight only)?
	Any loose wiring noted?
	All related mounting hardware tight?
<u>OUT</u>	<u>rside:</u>
	Antenna base cracked?
	Is the antenna whip missing?
	Is the antenna whip straight?
requir preven more i The fo	litionally, each piece of equipment that es an M-824 to be annotated upon a tive maintenance inspection shall require a n-depth inspection of the 800MHz radio. ollowing items shall be checked and ented on the M-824.
<u>UNI</u>	DER THE HOOD:
	A+ power lug terminals tight and corrosion free?
	Fuse holder covers in place? Fuses (to include in-line fuses) good?
	Battery terminals clean?
	Grounds tight and clean?
	Related wiring dressed and secured?
	Hamsar relay operational? Also may be located under interior dash.
<u>PAS</u>	SENGER COMPARTMENT:
	Does radio turn on upon ignition or manually upon pressing the power button?
	Microphone cords, heads and hangers in good repair?
	Microphone connection at radio tight (hand tight only)?
	Any radio connections on back of radio or control head (if trunk mount) disconnected or loose (reconnect and hand tight only if disconnected or loose)?
	Is the center pin wire flush (not recessed or bent) with cap screw on the radio antenna and GPS wire at connection to the radio?
	Wiring under dash tight and clean?

···· J		
	Is speaker wire properly connected at the speaker (not disconnected/loose)?	
	All related mounting hardware tight? Any hardware missing?	
	Ensure equipment number, radio serial number, userid, and IP address is correct and in accordance with the plant maintenance radio database. Write radio IP address on M-824.	
ROC	OF OR TRUNK LID:	
	Antenna base tight?	
	Antenna base cracked?	
	Whip tight in its base and set screw present?	
	Is the antenna whip missing?	
	Is the antenna whip straight?	
IN TRUNK (if radio is present):		
	Any radio connections on back of radio or control head (if trunk mount) disconnected or loose (reconnect and hand tight only if disconnected or loose)?	

☐ Wiring in trunk tight and clean?

☐ All related mounting hardware tight?

Is the center pin wire flush (not recessed

or bent) with cap screw on the radio

antenna and GPS wire at connection to the

☐ Any hardware missing?

### **FUNCTIONAL TEST:**

radio?

Radio can be registered on system and air test (transmission/receiving) is good? Please note that this test cannot be done within the confines of the garage or under any shelter. Must be done in open air space.

### 19.16 AUTOMATIC VEHICLE LOCATOR (AVL)

### **BACKGROUND AND DESCRIPTION**

Past weather emergencies have highlighted the need for a system to locate, track and monitor Pennsylvania Department of Transportation (PennDOT) maintenance vehicles. There is a critical need for an effective and intuitive, geospatially enabled information management tool to assist local, state, and federal government agencies in managing and protecting America's transportation infrastructure and effectively identifying and responding to emergencies. Responding to the need for a short term solution to track and direct/redirect Departmental resources, the Bureau of Maintenance and Operations (BOMO) implemented an Automated Vehicle Locator (AVL) system in the fall of 2009. AVL relies on three key components: 800 MHz radios with GPS capability present in the maintenance vehicles that can be polled for position and movement, PA STARNET (statewide 800 MHz radio network) and a web based application that geographically displays vehicle locations on a map called Geospatial Analysis of Threats and Incident Reports (GATIR).

The GATIR application resides on a server located within the Office of Administration, Enterprise Server Farm. All AVL data captured shall remain live for a record retention period of 90 days. Any and all AVL data shall be purged from the live, back-up, and archived databases. Further details regarding AVL data can be found within the AVL Memorandum of Understanding (MOU) between the Office of Administration and the Department.

The solution described herein is intended to and will provide the initial prototype for research and evaluation purposes for deeper studies regarding the goals, objectives and requirements so a longer term solution can be identified. The long term solution will take this smaller project and try to integrate it with larger ITS projects (i.e. ATMS). This prototype will be made available to the PennDOT Traffic Management Centers (TMC) to monitor service patrol vehicles and traffic flows.

#### **AVL ACCESS**

The secure website address for the Department's AVLsystem https://www.oagatir.state.pa.us/GATIR Although the AVL system is located on the Office of Administration's server, the Department reserves the right and authority to administer access to view the mapping display and associated AVL data. Only Departmental personnel and authorized non-Departmental individuals, with a need to track and/or monitor vehicle locations, shall be granted access. The Bureau of Maintenance and Operations, Equipment Division, New Equipment and Specification Section, Radio Unit shall be the primary point of contact for individuals requiring a user id and password to

access the AVL system, change viewing privileges, and delete access. Also, each Engineering District has two selected employees (a primary and a backup) that have the same authority and access as the Radio Unit. Please note that the BOMO, Equipment Division, Radio Unit are the only authorized personnel to change pertinent 800 MHz radio information regarding each vehicle within the AVL database.

### **AVL TRAINING**

Two live Webex training sessions were provided to select Department personnel at the inception of the statewide deployment of the AVL system. A recorded training session is available for initial or refresher training on the PennDOT Shared Drive. Once in the PennDOT Shared Drive, find and open the file folder named "AVL.GATIR.Training". Click on the file name "AVL\_TRAINING\_20091203.wmv" to view. Please note this AVL training session is approximately 1 hour and 15 minutes in length. Other AVL training documents are also available on the PennDOT Shared Drive. Once in the PennDOT Shared Drive, find and open the file folder named "AVL.GATIR.Guidance" to view these training documents.

### CHAPTER 20 WASTE MANAGEMENT

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### 20.1 GENERAL PROVISIONS

### INTRODUCTION

This chapter provides a condensed overview of federal and state regulatory requirements and Department policy for the proper management of wastes associated with highway maintenance operations, and the minimum basic waste management issues required to comply with federal and state regulations.

This chapter provides policy and non-specific procedures. More detailed information may be found in the PennDOT Publication 611 -Waste Management Guidance Manual.

Proper waste management is governed by both federal and state requirements which include:

- Federal hazardous waste management regulations developed under the Federal Resource Conservation and Recovery Act(RCRA);
- State waste management regulations under the Pennsylvania Solid Waste Management Act; and
- Regulations developed under other statutes that apply to wastewater discharges and air emissions.

### **POLICY**

It is Department policy to comply with all federal and state waste management regulations. Justifying noncompliance on the basis of financial considerations shall be unacceptable because the costs of noncompliance in terms of threats to human health and the environment outweigh the costs of compliance. Waste management decision making shall be based upon best engineering practices and managerial judgment.

Whenever feasible, the generation of all wastes shall be reduced or eliminated. All wastes generated shall be treated, stored or disposed of so as to reduce the present and future threat to human health and the environment. The hierarchy for waste management decision making shall be:

- First, consider REDUCTION --activities that reduce or eliminate the generation of hazardous wastes.
- Second, consider RECYCLING --the use, reuse or reclamation of wastes either on-site or off-site after they are generated.

- Third, consider beneficially using wastes for ENERGY RECOVERY. Some specific wastes can be beneficially used as a fuel under carefully controlled conditions to recover their energy value.
- Fourth, consider off-site TREATMENT to reduce the toxicity of hazardous wastes. Finally, consider LAND DISPOSAL.

The first step toward improved waste management is to reduce the quantity of the wastes generated. Waste reduction may include the following benefits:

- lower operating costs from the substitution of less expensive raw materials;
- lower energy costs through the use of newer, more efficient equipment;
- reduced transportation and disposal costs
- improved product quality;
- reduced long-term liability associated with handling and disposal of hazardous wastes;
- enhanced employee safety from reduced exposure to hazardous materials;
- cost savings from the reuse of materials;
- revenues from the sale of surplus materials;
- fewer regulatory compliance requirements;
- improved public image the less wastes produced, the less the Department is view ideas a contributor to environmental problems.

Standard operating practices that include good housekeeping are the simplest ways to reduce wastes. Other methods to reduce wastes include substituting materials, recycling and reuse and participating in waste exchanges.

### DEFINITIONS, ABBREVIATIONS AND ACRONYMS

The following words, phrases, abbreviations and acronyms when used in this chapter shall have, unless the context clearly indicates otherwise, the meaning given to them below.

AST -- Above-ground storage tank.

BIENNIAL - - Occurring every two years.

CERCLA- - Comprehensive Environmental Response, Compensation and Liability Act (also referred to as Superfund). Specifically, an act that affixes joint, several and strict liability for individuals, corporations, owners and operators of any site which has been declared to be an imminent hazard to human health or the environment.

CFR -- Code of Federal Regulations

CFRP -- Combined Facility Response Plan.

CHARACTERISTIC HAZARDOUS WASTES - Wastes that are not specifically listed as hazardous in 40 CFR Section 261.3, but exhibit any of the four hazardous waste characteristics: ignitability, corrosivity, reactivity or toxicity characteristic leaching procedure (TCLP) toxicity.

COMBUSTIBLE - -A term used by DOT to classify materials with a flash point greater than 1000 F, but less than 2000 F.

COMPATIBILITY -- The ability of materials and wastes to coexist without adverse environmental effects or health risks.

CORROSIVE -- Causes visible destruction or irreversible alternations in human skin tissue at the site of contact or, in the case of leakage from its packaging, a liquid that has a severe corrosion rate on steel.

DEPARTMENT - -Pennsylvania Department of Transportation.

DEP -- Pennsylvania Department of Environmental Protection.

DISPOSAL - -The introduction of any wastes into or on any lands or waters so that the wastes or any constituent thereof may enter the environment.

ENERGY RECOVERY - -Beneficially using wastes as fuels under carefully controlled conditions to recover their energy value.

ENVIRONMENT - - Air, earth, water, groundwater, wildlife and population.

ENVIRONMENTALLY SENSITIVE - -Represents a hazard to people or the environment if spilled, leaked or improperly handled.

EPA -- United States Environmental Protection

Agency.

EPA ID NUMBER -- An identification number assigned each generator; transporter and treatment, storage or disposal facility.

FORM U -- The application form requesting approval by the DEP for modification of a municipal landfill's permit to allow the acceptance and disposal of certain residual wastes.

HAZARDOUS WASTES -- Wastes that are specifically named or listed in the CFR, Title 40, Section 261.30-261.33 or exhibit any of the four hazardous waste characteristics (i.e., ignitability, corrosivity, reactivity or toxicity).

IGNITABLE -- If used by the DEP or EPA, wastes with flash points less than 1400 F. If used by the USDOT, materials with flash points less than 1000 F.

INCOMPATIBLE -- Wastes or materials unsuitable for commingling with other wastes or materials, where the commingling may result in extreme heat or pressure generation, fire, explosion or violent reaction; formation of substances which are shock sensitive, friction sensitive or otherwise have the potential of reacting violently; formation of toxic dusts, mists ,fumes, gases or other chemicals; and, violatization of ignitable or toxic chemicals due to heat generation, in such a manner that the likelihood of contamination of groundwater, or escape of the substances into the environment, is increased.

KG -- Kilogram. A metric unit of weight, about 2.2 US pounds.

LABELS - -Pictures or symbols indicating the contents of their containers. May be combined with a marking.

LAB PACKS - - A method of packaging small containers of hazardous wastes inside drums.

LAND DISPOSAL - -The disposal of wastes into land in landfills, surface impoundments, permanent waste piles and injection wells.

LARGE QUANTITY GENERATOR -- A generator of 1000 kilograms or more of hazardous waste in any month.

LISTED HAZARDOUS WASTES - Wastes specifically named as hazardous in the regulations. Any F, U, P or K numbered hazardous wastes. Does not include D numbered hazardous wastes.

MANIFESTS -- Forms required by the EPA which identify and track hazardous waste quantities through their generation, treatment, transportation and disposal.

MARKINGS - -Inscriptions indicating the contents of a container, generator information, accumulation start date and manifest document number. May be combined with a label.

MAY -- Indicates that an action is permitted but not required.

MUNICIPAL WASTES -- Garbage, refuse, Industrial lunchroom or office wastes and other materials resulting from operation of residential, municipal, commercial or institutional establishments and from community activities, and any sludge not meeting the definition of residual or hazardous wastes from a municipal, commercial or industrial water supply, wastewater treatment plant or air pollution control facility.

NA NUMBER - -North American number. Four digit numbers used to identify hazardous waste materials.

OFF-SITE -- Not on the same or geographically contiguous property. Two or more pieces of property which are geographically contiguous and are divided by public or private rights are considered a single site.

ON-SITE -- On the same or geographically contiguous property. Two or more pieces of property which are geographically contiguous and are divided by public or private rights are considered a single site.

POLLUTANTS -- Materials that contaminate air, water, land or other natural resources and render such air, water, land or other natural resources harmful, detrimental or injurious to public health ,safety or welfare; or to domestic, municipal, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses; or to livestock, wild animals, birds, fish or other life.

POTW -- Publicly Owned Treatment Works.

RCRA -- Resource Conservation and Recovery Act. A federal act authorizing the EPA to develop a nationwide program to regulate hazardous wastes. The act was established "to protect human health and the environment from the improper handling of solid waste and encourage resource conservation".

REACTIVE -- Wastes which are normally

unstable and readily undergo violent chemical change, but do not detonate; or react violently with water, or form potentially explosive mixtures with water, or generate toxic fumes with water; or are capable of detonation or explosive reaction, but require a strong initiating source or heat under confinement before initiation, or react explosively with water; or are capable of detonation or of explosive decomposition or reaction at normal temperatures and pressures.

RESIDUAL WASTE -- Any garbage, refuse, discarded materials or other wastes resulting from industrial, mining and agricultural operations; and any sludge from industrial, mining or agricultural water supply treatment facilities, wastewater treatment facilities or air pollution control facilities; provided that they are not hazardous.

SHALL -- Indicates that an action is required or mandatory.

SHOULD - -Indicates that an action is recommended, but not required.

SMALL QUANTITY GENERATOR -- Generators of less than 1000 kilograms of hazardous waste per month.

TCLP -- Toxicity Characteristic Leaching Procedure. A laboratory testing method which determines a wastes toxicity characteristics.

TREATING -- Any method, technique or process which changes the physical chemical, or biological composition of any hazardous waste and so renders it non-hazardous, safer for transport, capable of recovery or storage or reduces its volume.

TSDF -- Treatment, Storage and Disposal Facility for hazardous wastes.

UN NUMBER - - United Nations number. Four digit numbers used to identify hazardous wastes and materials.

USDOT -- United States Department of Transportation.

UST -- Underground storage tank.

WASTE - - Any material which cannot be used for its originally intended purpose.

### 20.2 HAZARDOUS WASTES

#### **GENERAL**

The definition of hazardous wastes is found in Title 40 of the US Code of Federal Regulations(CFR) Section 261.3. By definition, wastes are hazardous if they are (1) listed (specifically named)or (2) if they exhibit any of four hazardous waste characteristics (ignitability, corrosivity, reactivity or toxicity). Testing may be required to determine whether particular wastes are hazardous. Wastes generated by Department maintenance operations which may be classified as hazardous wastes, depending on test results, include:

- Waste paint filters
 - Used antifreeze
 - Used antifreeze
 - Waste pesticides
 - Spent paint abrasives
 - Waste paints

- Old batteries

- Waste asphalt emulsions - Waste inks

- Spent solvents

Waste generators are affected by both federal and state laws governing hazardous waste management.

- The EPA is the federal agency responsible for enforcing the federal environmental laws such as the RCRA.
- The DEP is the state agency responsible for enforcing the state environmental laws such as the Pennsylvania Solid Waste Management Act.

The DEP has the responsibility of administering the RCRA program under EPA oversight which includes:

- issuing RCRA permits;
- receiving RCRA reports and notifications;
- performing RCRA inspections.

The EPA retains primary responsibility for:

- education and training;
- research, development and technology transfer;
- federal policy and regulation development;
   and
- oversight of state program.

Although wastes may not be hazardous wastes, they may still have the potential to cause harm to human health and the environment if improperly managed. Wastes that are not hazardous are discussed in other sections of this chapter.

### **EPA ID NUMBERS**

Each maintenance facility shall obtain an EPA ID number by filing EPA Form 8700-12,"Notification of Hazardous Waste Activity "available from the regional DEP. No more than one EPA ID number shall be obtained for any maintenance facility. A revised "Notification of Hazardous Waste Activity" form shall be filed if:

- the generator category changes;
- hazardous waste recycling equipment is installed or
- on-site hazardous waste recycling is begun; or
- new or different hazardous wastes are generated
- bridge blast waste will be manifested under its own EPA number see PUB 611 for details

### **STORING**

Limitations on storing hazardous wastes at the facility's central accumulation area are dependent upon the quantity of wastes generated

### **SMALL QUANTITY GENERATOR**

Generation greater than 100kg and no more than 1000 kg/month of hazardous wastes (small quantity generator)

- Remove wastes within 180 calendar days after any product is accumulated.
- The 180-day clock starts as soon as any product has been accumulated.
- Never accumulate more than 6000 kg at the site at any one time. Hazardous wastes shall be removed at least annually, regardless of the quantity generated.
- Petition the regional DEP for a 30-dayextension if conditions beyond your control force the storage of wastes beyond the allowed limits.

Maintenance facilities shall never exceed these time and quantity accumulation limits; otherwise the facility will be considered a Large Quantity Generator and be subject to extensive additional

RCRA regulatory requirements.

Storage containers shall be:

- in good condition;
- compatible with the wastes contained in them;
- opened only to add or remove wastes;
- separated from other containers holding different wastes which could cause dangerous chemical reactions;
- in compliance with container

- requirements for shipping wastes off-site;
- marked with the date accumulation begins and with each subsequent date waste is placed in the container;
- labeled with the words "hazardous wastes";
- segregated by waste type and clearly marked to identify their contents;
- kept within a secured area permitting access by authorized personnel only;
- recorded in a running log of wastes accumu-lated in each container; and
- inspected for leaks and container deteriora-tion weekly with the inspection results recorded.

Storage areas shall have the following features:

- reactive or ignitable wastes shall be located at least 50 feet from the facility property line;
- wastes with flashpoints under 100o F shall be
- located at least 60 feet from any adjoining
- buildings or property lines;
- incompatible wastes shall be segregated;
- a base and dike capable of containing leaks,
- spills and accumulated rainfall; -adequate containment capacity necessary to hold a spill amounting to the volume of the largest container or plus 10% of the total volume of all containers, whichever is greater, plus a reasonable amount for precipitation;
- adequate space around containers to ensure access in the event of a spill or emergency;
- proper emergency equipment, as needed, such as alarms, telephones or fire extin-guishers;
- a design consistent with Department Publication 284 titled PennDOT Facilities Manual; and
- spill and leak response measures shall be incorporated in the CFRP Plan;

Hazardous wastes may be stored in an underground storage tank provided that the UST is equipped with secondary containment; however, storage of hazardous wastes in aboveground storage areas is preferred.

Wastes generated by parties other than the Department shall not be stored at any Department maintenance facility or within Department right-of-way unless approved by the Director of the Bureau of Maintenance and Operations through the Assistant District Executive for Maintenance.

#### **PACKAGING**

Hazardous wastes shall only be transported in packages that comply with USDOT requirements which are designed to prevent leaks or other releases during transport. General requirements include:

- packages shall meet the USDOT or UN specifications for the wastes; -packages shall be sufficiently tight to prevent releases of materials;
- mixing of reactive or combustible gases is not permitted;
- packages shall be adequately closed; and
- liquid containers shall have sufficient free space above the liquid to accommodate expansion of the liquid to 130 degrees Fahrenheit.

Product containers may be reused once for shipping wastes if the product containers:

- are acceptable USDOT or UN specification drums for the wastes;
- are in good condition and free of rust, damage or leaks;
- do not contain any incompatible residues;
   and
- do not carry any old marking labels that incorrectly identify the contents.

Reusing product containers to package wastes is convenient; however, reuse of containers that have not been thoroughly cleaned may result in combining incompatible wastes to produce toxic vapors or explosions as well as waste mixtures that are even more dangerous than the individual wastes.

Small items may be packaged in drums which are commonly referred to as lab packs. In general, lab packs shall be packaged as noted below. The specific packaging requirements shall be reviewed with the disposal contractor.

- outside packaging shall be an USDOT specification metal or fiber drum with are movable head;
- drum construction shall be compatible with the materials being packaged;
- outside packaging shall contain only one hazard class;
- inside packaging may be one or more glass packaging not exceeding one gallon, or one or more metal or plastic packaging's not exceeding five gallons; and
- inside packaging of liquid shall be sur-rounded by compatible absorbent material capable of absorbing the total liquid contents.

### **MARKING**

All containers used to ship hazardous wastes shall exhibit an USDOT hazardous waste marking completed with waterproof ink and showing:

- the proper USDOT shipping name of the waste;
- the UN or NA number;
- generator information including name, address and EPA ID number;
- the EPA waste number;
- the accumulation start date; and
- the manifest document number.

### **LABELING**

All containers used to ship hazardous wastes shall exhibit an USDOT hazardous waste label and may also require an USDOT shipping label if it meets a hazard class definition.

### **MANIFESTING**

The hazardous waste manifest shall be completed before shipping hazardous wastes. The manifest becomes the written record of the hazardous waste disposal. For shipments the EPA uniform hazardous waste manifest shall be used.

Copies of the manifest that are signed and returned by the treatment or disposal facility shall be maintained on file for five years for small quantity generators and twenty years for large quantity generators.

If a copy of the signed manifest is not received from the waste facility within 60 calendar days, the transporter and waste facility shall be contacted to determine the status of the shipment and the DEP notified of the status within 24 hours by telephone. If the wastes are not received within 60 days of shipment, the DEP shall be notified again within 24 hours by telephone and a written "exception report" shall be submitted which includes a legible copy of the manifest and a cover letter explaining the efforts to locate the hazardous wastes and the results of those efforts. The DEP may require additional reporting and actions depending on the disposition of the wastes.

In some instances, manifests are not required when using the service of a reclaimer; however, the Department shall manifest all hazardous waste shipments because it simplifies record keeping and reporting.

All Department personnel who are required to sign the manifest shall have proper documentation that they have completed the "Hazmat General Awareness" training.

### **SHIPPING**

- Contract with a licensed disposal contractor who will:
- contract with a facility authorized by the EPA
- or DEP to treat or dispose of hazardous
- wastes;
- package and label the wastes and prepare the manifest;
- prepare a hazardous waste characterization report;
- prepare a land band notification advising the treatment or disposal site of the standard to which the hazardous wastes shall be treated; and
- transport the hazardous wastes to the treatment or disposal facility.

Verify that the wastes were received at the waste facility by reviewing the signed manifest received from the waste facility. Liability does not end when hazardous wastes have been shipped and are no longer in the Department's possession. The Department is liable for any mismanagement of its wastes, now and forever.

### **RECORD KEEPING**

Maintaining hazardous waste records is a very important part of regulatory compliance. Good record keeping proves operating compliance and may avoid problems with regulatory agencies and minimize future cleanup liabilities. Facilities judged out of compliance face legal and enforced actions, fines and bad publicity. The following minimum records shall be maintained by small quantity generators for a minimum of five years.

- Test results or waste analyses made to determine if wastes generated are hazardous.
- Monthly summaries of wastes generated which substantiate the generator category. This summary should indicate the final disposition of the wastes, including those not manifested.
- On site waste accumulation records, including the date accumulation began and the quantity accumulated to date.

- In house inspections, including deficiencies noted and when such deficiencies were resolved.
- Records of employee training.
- Generator's copies of the manifests and those returned from the destination facilities.
- Copies of land ban notifications.
- Copies of reclaiming contracts.
- Spill or leak reports.

Large quantity generators shall maintain the above records and copies of quarterly reports, biennial reports and exception reports for a minimum of twenty years.

### SPILLS AND LEAKS

Numerous federal and state regulations specify extensive requirements for the prevention of spills and leaks of hazardous wastes at Department facilities. In addition, many federal, state and local agencies shall be immediately notified of a hazardous waste release. Severe penalties and fines are often imposed for failure to notify.

The first and most important step in a spill or leak response shall be to safely contain the spill and stabilize the situation by following the methods described in the facility's CFRP Plan.

The second step shall be to notify the appropriate agencies identified in the CFRP Plan. Notify the reporting agencies if there is a doubt of the reporting requirement. If a report is not required, you will be so advised.

The CFRP Plan is further discussed in Publication 284, "Facilities Manual".

#### REPORTING

The following reports shall be submitted to the DEP:

- quarterly reports
- biennial reports
- exception reports
- spill or leak reports

### TREATING

Hazardous wastes shall not be treated unless the facility is permitted or exempt from permitting requirements. Exemptions from permitting requirements include, but are not limited, the legitimate use, recycling or reclamation of hazardous wastes.

Hazardous wastes which are reclaimed continuously onsite without storing the wastes prior to reclamation are exempt from all hazardous waste management requirements. All residues removed from reclaiming equipment shall be managed according to all hazardous waste requirements.

Hazardous wastes which are reclaimed onsite but are stored before reclaiming shall be subject to the following hazardous waste management requirements:

- The wastes being reclaimed shall be included in the calculation to determine the generator category.
- The wastes being reclaimed shall be properly stored and labeled.
- The reclaiming process itself shall not be subject to any hazardous waste requirements and shall not need a permit.
- Residues from the reclaiming process are hazardous wastes and shall be managed following hazardous wastes requirements except that the residues need not be included in the calculation to determine generator capacity.

Hazardous wastes shipped off-site to a commercial reclaimer are subject to all hazardous waste management requirements except that a manifest is not required in some instances; however, it is Department policy to manifest all hazardous wastes shipments. The use of manifests for all hazardous wastes shipments simplifies record keeping and reporting.

Scrap metal, industrial ethyl alcohol that is reclaimed and spent lead acid batteries that are intact and reclaimed are exempted from all federal hazardous waste regulations. Batteries bound for disposal are subject to all hazardous waste regulations. Ethyl alcohol is still a hazardous material for transportation purposes and shall be shipped according to USDOT hazardous materials regulations.

### **DISPOSING**

Hazardous wastes shall only be disposed at a permitted treatment, storage or disposal facility. Hazardous wastes shall never be disposed at Department facilities or within Department right-of-way.

### 20.3 RESIDUAL WASTES

#### GENERAL

Residual wastes are any garbage, refuse, discarded materials or other wastes resulting from industrial, mining and agricultural operations; and any sludge from industrial, mining or agricultural water supply treatment facilities wastewater treatment facilities or air pollution control facilities; provided that they are not hazardous.

Examples of residual wastes, depending on the results of analysis of representative samples, are:

- used, floor dry, empty paint drums
- waste construction material
- shop rags
- spent paint abrasives
- waste oil not contaminated with gasoline or halogens
- oil and fuel filters that are properly drained
- intact lead acid batteries sent to a reclaimer
- paint filters
- traffic paint wash water
- oil-water separator wastes
- used Antifreeze not contaminated with Hydrocarbons

Although wastes may not be hazardous wastes, they may still have the potential to cause harm to human health and the environment if improperly managed.

### **STORING**

Residual wastes shall be stored in a manner which minimizes their effect on the environment. Standards for storage include:

- adequate primary containment;
- waste segregation;
- emergency containment;
- inspections for leaks and container deterioration; and
- contingency plans for leaks and spills.

Residual wastes should be stored no longer than ninety calendar days but may be stored up to 180 days before disposal.

Residual wastes generated by parties other than the Department shall not be stored at any Department maintenance facility or within Department right-of-way unless approved by the Director of the Bureau of Maintenance and Operations through the Assistant District Executive for Maintenance.

#### **PACKAGING**

Residual wastes shall be packaged similar to the packaging requirements described for hazardous wastes in Section 20.2 of this chapter.

### MARKING

All containers used to ship residual wastes shall exhibit a waterproof marking indicating the contents of the container and the date the drum reached 90% full and secured.

### **SHIPPING**

Contract or arrange for shipment of residual wastes to a facility permitted to accept the wastes.

### RECORDING, SPILLS AND LEAKS AND REPORTING

Record keeping, spills and leaks and reporting requirements for residual wastes shall be consistent with those discussed for hazardous wastes in Section 20.2 of this chapter.

### **DISPOSING**

Residual wastes shall be disposed of in municipal landfills permitted to accept those wastes. Most municipal landfills in Pennsylvania are permitted to accept municipal wastes only and are required to apply for a permit modification from the DEP to dispose of residual wastes by completing the DEP Form U and Form 25R. The generator is responsible for submitting the Form U and 25R.

- Forms U and 25R are not likely required for oil filters, fuel filters, a few shovels of oil absorbent material and empty cans.
- Forms U and 25R may be required for paint filters, roadway sweeping wastes, abrasives from equipment cleaning and damaged or empty drums.
- Forms U and 25R is probably required for paint wastes and tons of road rubble.
- Forms U and 25R requirements should be discussed with the landfill prior to attempting disposal.

### TRANSPORT OF RESIDENTIAL/MUNICIPAL WASTE

Vehicles that transport municipal or residential wastes to a processing or disposal facility in Pennsylvania are required to have an active Act 90 Authorization Sticker, as required under Act 90 - Waste Transportation Safety Program. Disposal Facilities have the authority to reject waste if the transporter does not have a valid Act 90 Sticker and signage. Application forms and instruction can be downloaded from "PADEP's" website at www.dep.state.pa.us, Keyword "DEP Permits". Vehicles transporting municipal/ residual waste must display vehicle signage:

- A sign that include the name and business address of the vehicle owner. This address must include the city, state, zip code. Districts should use the address where the vehicle is principally parked.
- The sign must include the specific type of solid waste that is being transported.
   Mixed municipal and residual waste shall be designated: Municipal/Residual Waste.
- The sign shall have lettering that is 6 inches high. The required information shall be clearly visible and easily readable.
- The sign may be permanent or detachable.
   It is suggested that magnetic signs be purchased for Department vehicles.

Universal waste regulations are specific in 40CFR 273 and Pa Code 25 Chapter 266b.

### 20.4 MUNICIPAL WASTES

#### **GENERAL**

Municipal wastes are any garbage, refuse, industrial, lunchroom or office wastes and other material resulting from the operation of residential, municipal, commercial or institutional establishments and from community activities. Municipal wastes also include any sludges from municipal, commercial or institutional water supply treatment plants, waste water treatment plants or air pollution control facilities, which do not meet the definitions of residual or hazardous wastes.

### DISPOSING

Municipal wastes are disposed of in dumpsters and removed to DEP permitted municipal landfills.

### 20.5 UNIVERSAL WASTES

### **GENERAL**

Universal wastes are hazardous wastes, but because they are generated by a large number of businesses in relatively small quantities, EPA issued this universal waste category as promulgated under 40 CFR 273. Universal Wastes include batteries, pesticides, mercury containing equipment and lamps. It is PennDOT's policy to recycle all universal waste streams.

### **TREATING**

Universal waste must be labeled appropriately. Facilities are required to keep track of the accumulation time of universal waste. Several methods can be used, but ultimately, the facility needs to be able to demonstrate that no universal waste has been stored longer than one year from start of accumulation.

### **TYPES OF UNIVERSAL WASTES**

 Waste Batteries: Nickel cadmium, lead acid batteries, nickel metal hydride, mercuric oxide, silver oxide, and lithium batteries.(PennDOT purchases lead acid batteries from bid vendors, with a service agreement which requires the vendor to pickup and recycle the used batteries.) Contact District Waste Coordinator for list of available vendors.

- Lamps: used fluorescent lamps, high intensity discharge (HID) lamps, neon, mercury vapor, high pressure sodium, and metal halide lamps. Used lamps must be managed to prevent releases. Store used lamps in original boxes or boxes of similar size in designated storage area. Do not break or crush lamps. Do not tape lamps together, keep them separate to minimize breakage.
- Mercury containing waste: thermostats, switches, thermometers, relays, manometers, barometers, thermocouples and gauges. If mercury containing items break, store the broken pieces in a sealed container. Place a hazardous waste label on the sealed container. In addition, label the container with a clear description of the waste.
- Discarded or recalled pesticide: Manage discarded pesticides by storing waste pesticides in a closed, structurally sound container compatible with the pesticide or in an over pack drum. Label waste pesticides clearly with one of the phrases if the original label that was on or accompanied the product as sold or distributed is illegible

### **DISPOSING**

Shipment of universal waste should only be conducted by a Universal Waste transporter, subject to full transporter regulations (40 CFR 273.55).

### 20.6 WASTEWATER DISCHARGES

#### **GENERAL**

The Department produces waste waters which typically include:

 sanitary sewage wastes from sinks, toilets and other washroom facilities which generally

- discharge to a publicly owned treatment works (POTW), on-site Department treatment plant or septic system; or
- building floor drains which discharge to a POTW or directly to local surface streams; or
- yard runoff to a storm sewer system or directly to local surface streams.

Wastewater discharges from maintenance operations, including runoff from yard drains, may contain certain environmentally sensitive materials originating from various maintenance operations such as:

- equipment washing;
- salt storage and handling; and
- cleaning operations.

There are several regulatory requirements affecting wastewater discharges, including stormwater and runoff from yard drains. These regulations are dependent upon which operations generate waste waters and where the waste waters discharge. Waste waters shall be segregated as follows:

- sanitary wastewater discharges to POTWs
- sanitary wastewater discharges to septic tanks
- sanitary wastewater discharges to surface waters
- process wastewater discharges to POTWs resulting from equipment washing, other cleaning operations and floor drains
- process wastewater discharges to surface water -wastewater discharged to on-site
   Department treatment plant

### SANITARY WASTEWATER DISCHARGED TO POTWS

- Shall discharge directly to POTW without flowing through a pretreatment unit such as an oil-water separator.
- No other special requirements.

### SANITARY WASTEWATER DISCHARGES TO ON-SITE SEPTIC TANKS

- Septic tank shall be permitted by the DEP or County Health Department.
- Sanitary wastewater flows to septic tank systems should not exceed 10,000 gallons a day.
- Process and storm waste waters shall not be discharged to on-site septic tanks.

### PROCESS WASTEWATER DISCHARGES TO POTWS

- Hazardous wastes shall not be discharged into POTWs.
- The POTW shall be contacted to determine if any specific prohibitions or limitations apply to the facility's discharge.
- Pretreatment such as oil-water separators may be required.
- The discharge shall be sampled and analyzed periodically, but at least annually, to determine the presence of hazardous wastes whether or not monitoring is required by the POTW.
- Solids generated from any pretreatment unit such as an oil-water separator shall be sampled and analyzed periodically, but at least annually to determine if they are hazardous wastes
- Records of flows, inspections and monitoring and sludge removals shall be maintained for a minimum of five years.

### PROCESS WASTEWATER DISCHARGE TO SURFACE WATERS

- An NPDES permit shall be obtained from the DEP.
- All conditions of the permit, which may include discharge limitations and prohibitions, monitoring requirements and record keeping, shall be adhered to.
- Treatment may be required to achieve discharge limitations.
- The NPDES permit may allow process wastewater to be combined with sanitary waste waters for treatment and discharge to surface waters.

### WASTEWATER DISCHARGED TO ON-SITE DEPARTMENT TREATMENT PLANT

- Treatment plant must be permitted by the DEP
- All conditions of the permit, which may include discharge limitations and prohibitions, monitoring requirements and recordkeeping shall be adhered to.
- Treatment may be required to achieve discharge limitations.

### STORMWATER RUNOFF DISCHARGES TO SURFACE WATERS

- A NPDES permit is not required for stormwaters unless the facility is specifically designated by the DEP.
- Efforts should be made to keep pollutants and contaminants from contacting stormwater.

### ACCIDENTAL WASTEWATER DISCHARGES

 Accidental discharges of waste waters shall be addressed in the CFRP. After taking immediate action to prevent further contamination, the appropriate agencies identified in the CFRP Plan shall be notified. Notify the reporting agencies if there is a doubt of the reporting requirement. If a report is not required, you will be advised.

### 20.7 TRAINING

#### **GENERAL**

Annual training which improves awareness is required in the following areas:

- Pennsylvania Worker Right-to-Know;
- Hazardous Materials and Wastes Handling; and
- First Responder Awareness Training.

Some of the training requirements in these three areas overlap and have been condensed into the single course, "Combined Training for Chemical Hazards". All training shall be documented in the Department's automated training system.

## 20.8 SPECIFIC GUIDANCE FOR CERTAIN WASTE MANAGEMENT ISSUES

### WALKAROUND INSPECTIONS

- Weekly, the Equipment Manager shall inspect the 01 stockpile maintenance facility hazardous and residual waste storage area and the Assistant County Manager shall inspect all non-01 stockpile hazardous and residual waste storage areas for compliance with this chapter.
- Quarterly, the Equipment Manager shall inspect the 01 stockpile perimeter and environs and the Assistant County Manager shall inspect the non01 stockpile perimeters and environs for environmental concerns with emphasis on good housekeeping practices.
- Biannually, the County Maintenance Manager shall conduct an inspection of the 01 stockpile perimeter and environs for environmental concerns.
- Annually, the County Maintenance Manager shall inspect the non-01 stockpile perimeters and environs for environmental concerns.

 Biennially, the Assistant District Executive for Maintenance shall conduct an inspection of all01 stockpiles and at least one non-01 stockpile per county for environmental concerns.

#### BURNING

Opening burning shall be prohibited at all maintenance facilities.

### **USED OIL FILTERS**

All used oil filter canister domes shall be punctured to release their anti-drain back valve and then hot drained for at least twenty-four hours or crushed. Properly drained or crushed filters shall be placed in a container marked "used oil filters" and disposed of every ninety days.

### **SCRAP METAL**

Scrap metal shall be stored orderly in a designated area without commingling with other materials and disposed of within one year.

### **USED LEAD ACID BATTERIES**

Used lead acid batteries that have no cracks shall be stored in a designated area, protected from the elements, with primary and emergency containment constructed of impervious material and segregated from non-compatible materials and wastes. Used lead acid batteries should be disposed of within ninety days, but shall be disposed of within one year. Lead acid batteries that have cracks are a hazardous waste.

### **EMPTY DRUMS**

Drums are considered empty when there is less than one inch of product remaining in the drums.

Empty drums shall be stored neatly in a designated area with lids and bungs secured with end drums blocked to prevent rolling. The empty drum storage area shall be in a location that does not permit surface water to collect or wash through the storage area.

Empty drums shall be disposed of at least annually.

### **CLEAN FILL**

Clean fills are environmentally inert, uncontaminated, non-water soluble, solid

materials. Only clean fills shall be used to level an area or bring it to grade provided the area is not located in a wetland. Clean fills may be commingled with other clean fills at maintenance stockpiles while being stored prior to placement in a fill area. Examples of clean fills include:

- shoulder cuttings
- bituminous asphalt excavations
- pipe excavations (but not metal or plastic pipes)
- crushed Portland cement concrete without exposed reinforcement bars
- bricks and solid masonry blocks

Exceptions to the above may be authorized by the regional DEP. Such exceptions shall have written documentation.

#### **USED TIRES**

Used tires shall be stacked by size, type of construction and vehicle use and stored under roof or tarped. Used tires shall be disposed of annually or whenever they number 500 in count, whichever comes first.

### **CONFISCATED VEHICLES**

Vehicles confiscated by the State Police shall be stored only at maintenance facilities identified in the Memorandum of Understanding (MOU)between the Department and the State Police and only within a storage area complying with the model stockpile plan.

Vehicles confiscated by State Police or the State Police Weight Enforcement Team shall not be stored at any maintenance facility unless approved by the director of the Bureau of Maintenance and Operations through the Assistant District Executive for Maintenance.

### **SPENT ABRASIVES**

Spent abrasives from construction projects shall not be stored at maintenance facilities.

### CHAPTER 21 STORAGE TANK MANAGEMENT

### **TABLE OF CONTENTS**

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### 21.1 GENERAL PROVISIONS

#### INTRODUCTION

The Department owns and operates underground and aboveground storage tanks at the various maintenance facilities and other sites throughout the Commonwealth. Underground storage tanks contain regulated products such as gasoline and diesel fuel. Aboveground storage tanks contain regulated products such as antifreeze and liquid bituminous materials. All of these products are vital to the daily operation of the Department.

The proper management of the underground and aboveground storage tanks which contain regulated products is governed by a complex and ever changing set of federal, state and local regulations. These regulations include, but are not limited to:

- Federal underground storage tank regulations (40 CFR Part 280) developed under the Federal Resource Conservation and Recovery Act (RCRA) Subtitle I.
- Pennsylvania Storage Tank and Spill Prevention Act (Act 32-1989), Act of July 6, 1989, P.L. 169 as amended, 35 P.S. '6021.01-6021.2104.
- Pennsylvania State Police Fire Marshal regulations for Flammable and Combustible Liquids developed under "State Fire Marshal Law," Act of April 27, 1927, P.L. 450, No. 291, as amended, 35 P.S. '1181-1192.

This chapter provides an overview of federal and state regulatory requirements and Department policy for the proper management of the Department's underground and aboveground storage tanks.

#### **POLICY**

It shall be the Department's policy to comply with all federal, state and local regulations. Justifying noncompliance on the basis of financial considerations shall be unacceptable because the costs of noncompliance in terms of threats to human health and the environment, outweigh the costs of compliance.

Each Engineering District shall have a storage tank management coordinator.

The Bureau of Maintenance and Operations' Programs Unit shall be notified through the District tank coordinator prior to any installation, construction, erection, modification or removal from service all or part of an underground and/or aboveground storage tank facility.

### DEFINITIONS, ABBREVIATIONS AND ACRONYMS

The following words, phrases, abbreviations and acronyms when used in this chapter shall have, unless the context clearly indicates otherwise, the meaning given to them below.

ABOVEGROUND STORAGE TANK - Any one or a combination of stationary tanks with a capacity in excess of 250 gallons, including piping, which is used to contain regulated substances, and the volume of which is greater than 90% above the surface of the ground. The term includes any tank which can be visually inspected, from the exterior, in an underground area.

AFS - Automated Fuel System

AIR STRIPPING-A method in which groundwater contaminated with petroleum is mixed with air.

API - American Petroleum Institute

AQUIFER - A water-bearing layer of permeable rock, sand or gravel.

AST - Aboveground Storage Tank

BIOREMEDIATION – The natural process in which microorganisms break down petroleum products in the soil.

BTEX - Benzene, Toluene, Ethylbenzene and Xylene, which are all chemical compounds in gasoline. (Site investigations often measure the amount of these compounds in soil and groundwater).

CAP - Corrective Action Process. Regulations governing a sequence of requirements for confirming or disproving suspected releases; reporting releases; determining the extent of soil, sediment, surface water and groundwater contamination; taking necessary actions to abate risks to human health and the environment; taking steps to prevent further migration of the released substance into the environment; restoring or replacing affected or diminished water supplies and storing contaminated soil at the site of the release.

CATHODIC PROTECTION - A technique to prevent corrosion of a metal surface by making that surface the cathode of an electrochemical cell.

CERTIFIED INSPECTOR - A person certified by the DEP to conduct environmental audits and inspections of tanks or tank facilities.

CERTIFIED INSTALLER - A person certified by the DEP to install, erect, construct, modify or remove storage tanks.

CERCLA - The Comprehensive Environmental Response, Compensation and Liability Act of 1980.

CFR - Code of Federal Regulations.

CFRP - Combined Facilities Response Plan -A plan to minimize and abate the threat to public health and the environment from releases of regulated substances to ground or surface water.

CONSUMPTIVE USE - Consumed on the Premises.

DEPARTMENT - The Pennsylvania Department of Transportation.

DEP - The Pennsylvania Department of Environmental Protection.

DGS - The Pennsylvania Department of General Services.

DIKE - Built-up wall or high curbing around open area to retain large volumes of uncontrolled liquid flow.

DROP TUBE - Thin metal tube placed inside the fill pipe. Required for Inventory Control to reduce amount of disturbance in the tank when product is added.

EMPTY TANK - No more than one inch of residue remains in the tank.

EPA - The United States Environmental Protection Agency.

EQAD - Environmental Quality Assurance Division, PennDOT

EXTENSIVE CONTAMINATION - Contamination which extends more than three feet beyond the tank system in any direction, or impacts water in the evacuation.

FLASH POINT - The lowest temperature at which substances give off sufficient vapor to form a mixture which will ignite when a source of ignition is present, under standard conditions.

FREE PRODUCT - A regulated substance that is present in its liquid phase. (i.e., liquid not dissolved in water)

FRP -Fiber Reinforced Plastic

GROUNDWATER -Water beneath the surface of the ground that exists in a zone of saturation.

GROUNDWATER DEGRADATION - A measurable increase in the concentration of one or more contaminants in groundwater above background levels for those contaminants.

HEATING OIL - Petroleum that is No. 1, No. 2, No. 4 -light, No. 4 -heavy, No. 5 -light, No. 5 - heavy and No. 6 technical grades of fuel oil; other fuels when used as substitutes for one of these fuels. Heating oil is typically used in the operation of heating equipment, furnaces or boilers.

IMPERVIOUS - Not allowing entrance or passage; Impenetrable.

LOCALIZED CONTAMINATION - Contamination that does not extend more than three feet beyond the tank system in any direction, and does not impact water in the excavation.

MAY - Indicates that an action is permitted but not required.

MONITORING WELL - Sallow, perforated cylinder inserted into a special hole or boring in the ground for the purpose of obtaining ground water samples.

MOTOR OIL – A petroleum product used to lubricate the internal parts of an engine, including lubricating and operational fluids for the mechanical components associated with the engine, (i.e., hydraulic, transmission, gear or braking systems).

NEW FACILITY - A storage tank facility which did not exist prior to August 5, 1989.

NFPA - National Fire Protection Association and its recommended codes, which are generally accepted standards in petroleum handling.

NRC - National Response Center, operated by the U.S. Coast Guard receives reports when hazardous substances are spilled.

PEMA - Pennsylvania Emergency Management Agency

OBVIOUS CONTAMINATION - Contamination which includes, but is not limited to, product stained or product saturated soil or backfill, ponded product in the excavation or free product or sheen on the water in the excavation.

OSHA - Occupational Safety and Health Admin.

PEI - Petroleum Equipment Institute.

PLUME - Shape of the contaminated area, usually elongated.

PRESSURIZED PIPING - The piping in a pumping system which employs positive pressure to push the liquid product from a storage tank to a dispenser. (i.e., pump is in the tank)

RCRA - Resource Conservation and Recovery Act of 1976.

RECOVERY WELL - Installed for the purpose of pumping contaminated water or free product from an aquifer for treatment.

REGULATED SUBSTANCE - An element, compound, mixture, solution or substance that, when released into the environment, may present substantial danger to the public health, welfare or the environment which is:

- 1. Any substance defined as a hazardous substance in CERCLA, but not including any substance regulated as a hazardous waste under Subtitle C of RCRA.
- 2. Petroleum, including crude oil or any fraction thereof and hydrocarbons which are liquid at standard conditions of temperature and pressure (600 F and 14.7 pounds per square inch absolute), including, but not limited to, oil, petroleum, fuel oil, oil sludge, oil refuse, oil mixed with other nonhazardous wastes and crude oils, gasoline and kerosene; or
- 3. Any other substance determined by the DEP by regulation.

REMEDIATION - Process of cleaning up contamination.

REPORTABLE RELEASE -A quantity or an unknown quantity of regulated substance released to or posing an immediate threat to surface water, groundwater contamination caused by a release.

RESPONSIBLE PARTY - A person who is responsible or liable for corrective action under the act.

RMDS -Report Management Distribution System.

SECONDARY CONTAINMENT - Containment which prevents any materials spilled or leaked from reaching land or water outside the containment area before cleanup occurs. Secondary containment is provided by impervious liners under tanks, by diking, or by placing tanks in vaults.

SHALL - Indicates that an action is required or mandatory.

SHEEN - An iridescent appearance on the surface of water.

SHOULD - Indicates that an action is recommended but not required.

SITE INVESTIGATION - Process of confirming that a release of petroleum product has occurred. (i.e., determine the extent of soil and ground-water contamination caused by a release).

SOIL BORING.- Holes drilled in the ground to determine soil structure and/or monitor for the presence of contaminants in the soil.

SOIL VAPOR EXTRACTION - Draws (with a vacuum pump) fresh air into the ground and brings toxic contaminants up to the surface where they can be treated and safely discharged.

SOIL VAPOR SURVEY - A method used to collect and analyze volatile petroleum hydrocarbons from subsurface soils.

SUCTION PIPING - The piping in a pumping system which employs negative pressure to pull the liquid product from a storage tank to a dispenser. (i.e., pump is at dispenser)

TIGHTNESS TEST - Generic term for an UST testing methodology which can meet EPA performance standards for leak detection.

TPH - Total Petroleum Hydrocarbon, determines the amount of contamination at a site.

UNDERGROUND STORAGE TANK - Anyone or combination of tanks including piping which are used to contain an accumulation of regulated substances, and the volume of which is 10% or more beneath the surface of the ground.

UST Underground Storage Tank. VOC's - Volatile Organic Compounds-Carbon containing compounds that readily vaporize from a liquid to a gas at normal temperatures and pressures.

### 21.2 UNDERGROUND STORAGE TANKS (UST)

#### **GENERAL**

The prioritization of UST replacement should be accomplished by taking into account several factors which include; but are not limited to; potential liability, risk of tank release and site specific best management practices.

### **MAINTENANCE**

The Bureau of Maintenance & Operations Programs Unit, Pollution Prevention Section and the Bureau of Office Services Facilities Management Division partner to provide technical support to the District storage tank coordinator.

### **DISTRICT TANK COORDINATOR**

The District tank coordinator responsibilities include:

- Maintain records at District/County levels for tank testing
- Prepare emergency response procedure for leaks through CFRP for each site
- Coordinate field records from counties to tank testing
- Follow through to DEP regulations. (i.e., suspected releases, confirms releases or corrective action regulations in the event of a leak.)
- Maintain list of consultants and contractors for remedial action
- Assist professional, (i.e., contractor) in coordinating and monitoring clean up procedures and tank upgrades.
- Assist professional in preparing environmental compliance report(s) or studies for DEP.
- Maintain tank inventory

#### DESIGN

The Bureau of Office Services' Facilities Management Division shall be responsible for the design of all underground tank installations either by designing the projects in-house or by coordinating with the DGS or an outside consultant.

All UST systems shall be designed to meet or exceed all regulatory requirements.

#### **INSTALLATION**

New UST systems shall be properly installed in accordance with industry codes of practices. A list of industry codes of practice is provided in Section 5.

At a minimum, new underground storage tank systems including piping must be:

- properly designed, constructed and protected from corrosion
- equipped with leak detection devices
- equipped with spill/overfill protection installed by a DEP certified installer
- inspected by a DEP certified inspector during installation
- registered with DEP upon installation.

#### REMEDIATION AND EXCAVATION

The Bureau of Design, Pollution Prevention Section shall be responsible for providing technical assistance to the District storage tank coordinator of suspected releases, excavating, remediation, investigations and cleanup for Department contaminated sites

#### **UST CLOSURE**

Under the EPA rules, UST systems may be closed, either temporarily or permanently. Different requirements apply in each case.

#### **TEMPORARY CLOSURE**

It shall be Department policy to empty the UST whenever temporarily taking the UST out-of-service. The District shall submit an amended "Registration of Storage Tanks" form to DEP, Division of Storage Tanks indicating change in status and continue operation and maintenance of corrosion protection.

If an UST is out-of-service for more than three months, the District shall ensure that vent lines are open and functioning and that all other lines, pumps, manways and ancillary equipment are capped and secured. This requirement is included to prevent illegal dumping of hazardous materials into out-of-service USTs.

If an UST is out-of-service for more than twelve

months the District has two options 1) permanently close the UST system or 2) request an extension to DEP Regional Office by first performing a site assessment in accordance with DEP's requirements.

### PERMANENT CLOSURE

There are three options when permanently closing a UST system:

- Removing the tank-Placing an UST out-of service by removing the tank from the ground.
- Change in service-Placing an UST by discontinuing use of the tank to store a regulated substance, but continuing to use the tank to store a different regulated or nonregulated substance.

Permanent closures involve the District to complete DEP's forms: "Underground Storage Tank System Closure Notification Form "2530-FM-LRWM0127 4/96 and "Registration of Storage Tanks", WQ-0014-Rev. 9/95. Both above forms shall be forwarded to the DEP regional office and a copy of the "Underground Storage Tank System Closure Notification Form", to the State Police Fire Marshal at least 30 days prior to taking action to permanently close an UST. Removal of UST Tanks will be coordinated with the Facilities Administrator

Permanent closures shall be performed by a certified tank installer, UMR (Underground Manufactures Storage Tank -Removal). When removing an UST the certified tank installer shall make provisions for the following:

- Locate underground utilities Restrict vehicular and pedestrian traffic
- Monitor and control flammable vapors
- Eliminate ignition sources
- Have appropriate digging and lifting equipment on hand
- Follow federal, state and local regulations, (i.e., OSHA and DEP)

- Contain small spills
- Provide for emptying tank
- Make tank safe
- Provide a method for tank cleaning
- Make plans for handling tank liquids and sludge

During the removal of the UST the certified tank handler should initially excavate only that amount of soil and backfill necessary to remove the tank and piping. Excavated soils must be segregated into presumably contaminated and uncontaminated piles which require laboratory testing, treatment and disposal. The Department recommends the District to request the certified tank handler, (i.e., company who is removing the soil, environmental professional, DGS or a local professional) to perform the site assessment. See Table 2.1 flowchart (below) for performing a site assessment tank removal.

After the site assessment and the UST has been removed the District in conjunction with the certified tank handler should complete, DEP's, "UST System, Closure Report Form, 2530-FM-LRWM0159 4/96, and forward a copy to DEP's regional office.

### OPERATION AND MAINTENANCE OF CORROSION PROTECTION

Steel USTs with corrosion protection shall comply with the following requirements to ensure that releases due to corrosion are prevented for as long as the UST is used to store regulated substances.

- All corrosion protection systems shall be operated and maintained to continuously provide corrosion protection to the metal components of the UST that routinely contain product.
- All USTs equipped with cathodic protection systems shall be inspected for proper operation by a qualified cathodic protection tester as indicated by the manufacturer.

#### LEAK DETECTION FOR UST SYSTEMS

New underground storage tanks and associated piping that routinely contains product shall be equipped with leak detection at installation.

The District shall ensure that each UST site within the District complies with the EPA's leak detection requirements.

#### **TANKS**

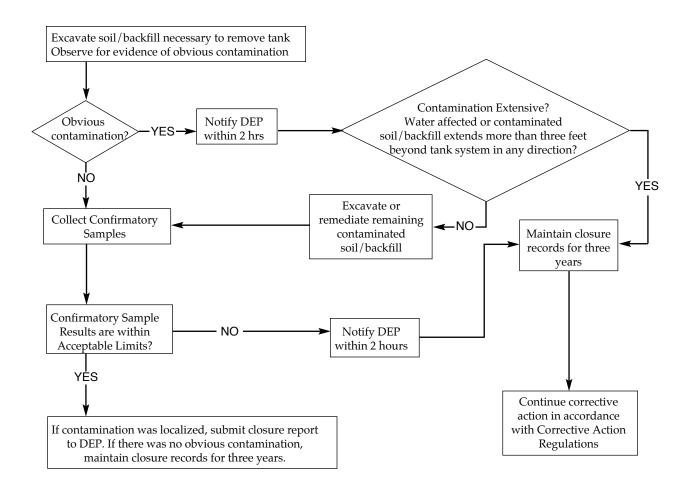
The EPA has given a variety of leak detection options for USTs which include:

- -inventory control and annual tightness testing
- -statistical inventory reconciliation -manual tank gauging
- -automatic tank gauging and interstitial monitoring

Until the UST has been upgraded, it shall be Department policy to use inventory control with annual tightness testing for leak detection of USTs.

**TABLE 2.1** 

#### SITE ASSESSMENT - TANK REMOVAL



After the upgrade is complete, it shall be Department policy to use automatic tank gauging and interstitial monitoring for leak detection of USTs

### TANK TIGHTNESS TESTING WITH INVENTORY CONTROL

Tightness tests require temporarily installing equipment in the tank. There are generally two types of tests: volumetric and non volumetric. A volumetric test involves filling the tank to a specified level and precisely measuring the change in level and temperature over several hours. Non-volumetric test methods include ultrasound techniques and tracer gas detectors. These are sophisticated tests and shall be performed by trained, experienced professionals.

Inventory control shall be used in conjunction with annual tightness testing until each fuel site facility is upgraded. Inventory control is like balancing a checking account.

Every month the product volume is balanced between what is delivered and what is dispensed from the tank with daily and ending measurements of the tank inventory taken with a gauge stick capable of measuring to the nearest 1/8 inch. If the account does not balance, the tank may have a leak.

The District shall ensure each fuel site is complying with EPA's minimum requirement, monthly reconciliation.

The monthly reconciliation involves recording data manually or on a spreadsheet on forms equal to or similar to EPA's (see Table 2.2) or accessing the Automated Fuel System Report.

Inventory data recorded manually or on a spreadsheet include the following information in the monthly reconciliation to determine the leak check.

- Monthly Reconciliation:
- Start Stick Inventory
- Gallons Delivered
- Gallons Pumped
- End Stick Inventory
- Daily Overage or Shortage

#### **LEAK CHECK:**

The leak check number is the maximum change in inventory allowed by federal regulations (1% of throughput plus 130 gallons) and is determined as indicated below:

- a. Take the "Total Gallons Pumped" number and drop the last two digits to get 1% (for example 6594 becomes 65).
- b. Add 130 (for example: 65 + 130=195).
- c. Determine "Leak Check" by comparing the "Total Gallons Over or Short" to the "Leak Check". If the "Total Gallons Over or Short" is larger than the "Leak Check" this may indicate a leak. Further investigation shall be conducted. See Table 2.3D (page 21-12).

The Automated Fuel System Report is in RMDS and is labeled as AFS675X. This is a daily report which accumulates up to 30 days worth of data for each tank at each site and then continually drops off the oldest day. The report should be monitored daily on RMDS to catch any potential problems; however, field sites are only required to printout one end of the month report for each gasoline and diesel underground storage tank. If you discover potential problems, (i.e., Inventory Reconciliation shows discrepancy for two months in a row,) see table 2.3D (page 21-12).

Monthly reconciliation, manually or on a spreadsheet or accessing the Automated Fuel System should be used for inventory control and kept on file for one year.

### RECOMMENDED EQUIPMENT FOR DOING INVENTORY CONTROL RIGHT

Below is the recommended equipment needed to do inventory control right:

- Gauge Stick -measures 1/8 inch
- Tank Calibration Chart -converts product level readings (inches) into volume (gallons) of product in tank.

- Inventory Control Reconciliation Form and Inventory Worksheet -records inventory control
- Drop Tube -Must be present in the fill pipe so that deliveries are made through it.
- Water Finding Paste -identifies water level
- Product-finding paste -improves product

### SMALL UNDERGROUND STORAGE TANKS

Manual tank gauging for small underground storage tanks, 2000 gallons or smaller, (i.e., used oil,) is a leak detection option.

The restrictions on the use of manual tank gauging are as follows:

Manual tank gauging can be used only on tanks 2,000 gallons or smaller;

- Tanks 1,000 gallons or smaller can use manual tank gauging alone.
- Tanks from 1,001 to 2,000 gallons can use manual tank gauging only when it is combined with periodic tank tightness testing.

The combined method, 1,001 to 2,000 gallons, should be used for 10 years after upgrading an old tank with corrosion protection and spill/overfill devices or after installing a new tank that has corrosion protection and spill/overfill devices. During the 10-year period, tanks should be tested every 5 years.

Tanks without corrosion protection and spill/overfill devices need tested every year.

Tank tests should be conducted by a DEP Certified tank inspector.

Manual tank gauging involves taking the tank out of service every week for 36 hours or more while measuring the tank's contents to see if changes in the tank's volume indicate a possible leak. During the test period nothing can be put into the tank or taken out. The length of the test depends on the size of your tank.

EPA's manual "Manual Tank Gauging for Small Underground Storage Tanks" should be consulted for specified procedures.

### AUTOMATIC TANK GAUGING AND INTERSTITIAL MONITORING

Automatic tank gauging requires a probe that is permanently installed in a pipe other than the fill pipe. The probe is connected to a monitor (also referred to as a control box) that continually measures the product level and gives information and monthly test results. The monitor must be able to detect a loss rate of .2 gallons per hour.

Interstitial monitoring requires a barrier (secondary containment) between the UST system and the soil. Types of barriers include double-walled tanks, leak proof excavation liners, leak proof jackets and concrete vaults. Automatic tank gauging will be used in conjunction with interstitial monitoring at each fuel site facility upgrade.

An automatic tank gauge and an interstitial monitoring test must be conducted on each storage system once a month. The test results should be read from the printout produced by the automatic tank gauge and interstitial monitor and recorded in the inventory file. Printouts and recorded readings must be kept on file for at least one year after the date of the last test recorded.

If a trouble signal, an alarm condition or a failed test should occur a repeat test should be conducted. If the repeat test should fail a certified tank handler should be contacted for further investigation. See Table 2.3E (page 21-12).

#### **PIPING**

New and existing underground piping that routinely contains regulated product shall be monitored for releases. Pressurized piping and suction piping have different requirements for leak detection.

#### PRESSURIZED PIPING

New underground pressurized piping shall be equipped with leak detection at installation.

Existing underground pressurized piping shall be equipped with an automatic line leak detector and shall have an annual line tightness test until the line has been upgraded with permanent leak detection. The automatic line leak detector shall be

# TABLE 2.2 INVENTORY CONTROL RECONCILIATION FORM MONTH/YEAR: Nov. '92

Facility Location:		Location		Facility Registration Number: (#)					
Type of Fuel:		<u>Diesel</u>	, ,			n: <u>Joh</u> ı	n Doe		
	-1- START STICK	-2-	-3- GALLONS PUMPED	-4- (1 + 2) - 3 BOOK	-5- END STI INVENTO		-6- (5-4) DAILY OVER	-7-	-8
DATE	INVENTORY	GALLONS DELIVERED	TOTALIZER	INVENTORY	INCHES	GALS	OR <short></short>	WATER	INITIALS
11/01	1364		505	860	17 5/8	897	37	0	JD
2	897	2191	502	2586	38 3/4	2543	<43>	0	JD
5	2543		610	1933	31 1/8	1935	2	0	JD
6	1935		357	1578	27	1605	27	0	JD
7	1605		381	1224	21 7/8	1211	<13>	0	JD
8	1211		451	760	15 1/4	728	<32>	0	JD
9	728		305	423	11 1/8	469	46	0	JD
12	469	2411	369	2511	38	2477	<34>	0	JD
13	2477		653	1824	29 1/4	1789	<35>	0	JD
15	1789	2231	434	3586	52 3/4	3537	<49>	0	JD
16	3537		449	3088	465/8	3132	44	0	JD
19	3132		376	2756	41 1/8	2717	<39>	1/4	JD
20	2717		475	2242	35 1/8	2257	15	1/4	JD
21	2257	1597	372	3482	52 1/2	3521	39	1/4	JD
23	3521		550	2971	44 1/2	2976	5	1/4	JD
24	2976		489	2487	37 1/2	2437	<50>	1/4	JD
26	2437		343	2094	33 1/2	2123	29	1/4	JD
27	2123	2378	529	3972	60 1/2	3926	<46>	1/4	JD
28	3926		600	3326	50 1/4	3374	48	1/4	JD
29	3374		410	2964	43 3/4	2921	<43>	1/4	JD
30	2921		556	2365	36 1/2	2362	<3>	1/4	JD
Math Check	1364	10808	9715	2457 (A +B) - C		2362	<95> (E-D)		

### SUM GALLONS PUMPED

D

LEAK CHECK: ( 9715 ) X .01 + 130 =  $\underline{227}$  If Sum of Daily Over or <Short> (Item F) is Greater Than Leak Check Result, Notify Regulatory Agency

A

В

tested annually according to manufacturer's requirements to determine if it is functioning properly.

The records of the last tightness test or annual test of the Automatic Line Leak Detector, Manufacturer's Certification of Equipment Performance, any work done on a permanently installed piping test device, records of calibration and maintenance repairs should be kept on file for five years at the fuel facility or until after its permanent closure.

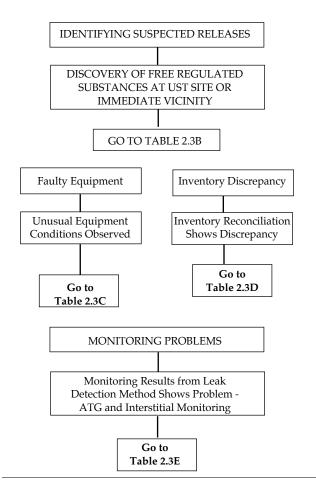
### **SUCTION PIPING**

New underground suction piping shall be equipped with leak detection at installation.

Existing underground suction piping shall have a line tightness test at least every three years until the line is upgraded with permanent leak detection equipment.

No leak detection is required for suction piping that was designed and constructed to meet the following requirements:

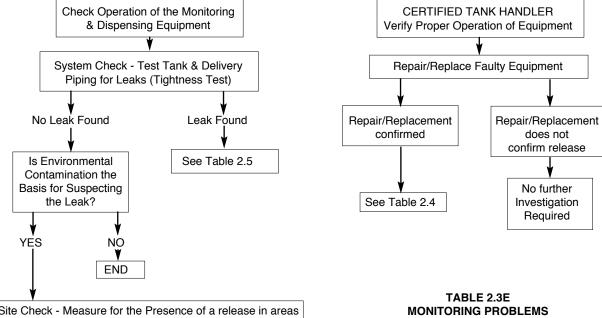
#### **TABLE 2.3**



#### **INVESTIGATING SUSPECTED RELEASES**

The District should immediately notify Bureau of Maintenance and Operation's Program Services Unit of a suspected release and within 7 days initiate and complete an investigation to confirm whether a release has occurred. Table 2.3B, Table 2.3C, Table 2.3D and Table 2.3E should be used to determine a suspected release.

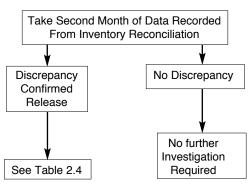
# INVESTIGATE AND COMPLETE WITHIN SEVEN DAYS TABLE 2.3B TABLE 2.3C DISCOVERY OF FREE REGULATED PRODUCT TABLE 2.3C FAULTY EQUIPMENT

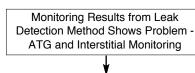


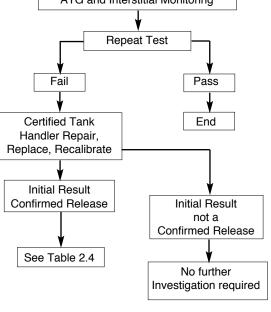
Site Check - Measure for the Presence of a release in areas where contamination is most likely to be present at the UST site (Don't go off site).



TABLE 2.3D INVENTORY RECONCILIATION SHOWS DISCREPANCY FOR TWO MONTHS IN A ROW



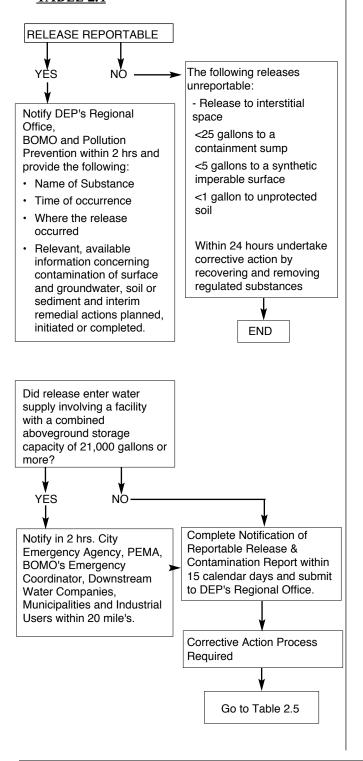




### CONFIRMING AND REPORTING RELEASES

Within 2 hours of confirming the release, the District shall be responsible for the release reporting. The following chart describes the confirming and reporting release process.

### **TABLE 2.4**



- The below-grade piping is sloped so that the contents of the pipe will drain back into the storage tank if the suction is released.
- The below-grade piping operates at less than atmospheric pressure.
- Only one check valve is included in each suction line.
- The check valve is located directly below and as close as practical to the suction pump.
- A method is provided that allows compliance with these standards to be readily determined.

### EXEMPTIONS FROM LEAK DETECTION REQUIREMENTS

Any UST that stores heating oil, (i.e., emergency generator), for consumptive use is exempt from the EPA's leak detection requirements. However, should a leak occur in any of these tanks, the Department could be held liable for causing any harm to human health or the environment.

### **IDENTIFYING A RELEASE**

Because UST systems are hidden from direct observation of unusual equipment conditions, discrepancy of inventory reconciliation or problems of monitoring results from other leak detection methods; suspected releases shall be investigated to identify or confirm that an UST is the source of the release. Monitoring results and other indicators in the environment are the suggestions of a release.

### CONFIRMING AND REPORTING RELEASES

Within 2 hours of confirming the release, the District shall be responsible for the release reporting. The following chart describes the confirming and reporting release process.

#### CORRECTIVE ACTION PROCESS (CAP)

Once a release is confirmed and reported, the District shall be responsible for completing the Corrective Action Process (CAP) which includes: Interim Remedial Action & Site Characterization, Site Characterization Report, Remedial Action Plan and Remedial Action Completion Report. A checklist and flow charts of these steps follow, however the CAP may be terminated at any given time when cleanup levels are met and the responsibilities may vary widely depending on the

location of the release, the product released and the guidance of DEP. Coordinate all CAP sites with the Pollution Prevention Section.

#### I. INTERIM REMEDIAL ACTION

The interim remedial actions should include the following, but are not limited to:

- Immediately pumping product out of tank
- Identifying, mitigating and continuing to monitor fire, explosion and safety posed by vapor and free product.
- Preventing/limiting the migration of contamination
- Recovering free product
- Monitoring plume of contaminants
  - Affected Diminished Water Supplies involving local residents/businesses' water supply
- Arrange and provide temporary water supply within 48 hrs and within 90 days provide permanent water supply.
- On Site Storage of Contaminated Soil
- Soil can remain on site in storage covered and fenced for 90 days.

### II. SITE CHARACTERIZATION

The site characterization should include the following, but is not limited to:

- Identifying the need for and initiating additional interim remedial actions.
- Opening and sampling storage tanks.
- Performing a tightness test or release detection test and monitoring.
- Identifying affected water supply and population RE: CFRP Plan
- Identifying affected sensitive environmental receptors, including groundwater recharge areas.
- Reviewing the site history and analyzing the data from the removal from service and interim remedial action activities.
- Using geophysical survey techniques to locate

- storage tanks and to determine geologic and hydrogeoligic characteristics.
- Drilling borings, conducting soil gas surveys and collecting soil samples.
- Use piezometer, well points, monitoring wells to determine:
  - 1) direction of groundwater flow
  - 2) contamination
  - 3) horizontal extent & thickness of free product
  - 4) determine soil, geologic, hydrogeologic and aquifer characteristics
- Sampling surface water and sediments
- Assessing potential migration pathways, (i.e., sewer lines, utility lines, wells, geologic structures and hydrogeologic conditions)
- Performing site surveying and topographic mapping.
- Identifying and applying appropriate groundwater modeling to characterize the site.
- Handling and disposing of soils properly.
- Preparing and implementing a site-specific plan for OSHA requirements.
- Identifying, screening, evaluating and selecting available remedial actions to remove or eliminate the pollution or contamination.
- Analyzing the data collected as a result of the site characterization.
- Recommending preferred remedial action options and for further site characterization work.

### III. SITE CHARACTERIZATION REPORT

The report should include, but not limited to the below information and submitted to DEP regional office within 180 days of reporting the reportable release.

- The sites, historical and current operations.
- A site map showing location of buildings, roads and storage tanks, including those removed from service or closed in place.
- Natural and manmade features pertinent to the site characterization.
- Details of the interim remedial actions

conducted at the site.

- Steps taken to restore or replace affected or diminished water supplies.
- The type and characteristics of regulated substances involved, including quantities, physical state, concentrations, toxicity, propensity to bioaccumulate, persistence and mobility.
- Report results of tightness test(s) results or other release detection method.
- Details of removal from service activities conducted at the site.
- Identify the sources of contamination, including the actual or estimated date and quantity from each source.
- Report the location and description of affected water supplies.
- Report the location and of affected sensitive environmental receptors including, groundwater recharge areas for water supplies, wetlands and special protection watersheds designated.
- Description of further site characterization work needed.
- Description of the discussion and conclusions that demonstrate the site characterization objectives.
- Report the rationale, equipment methodology and results of geophysical surveys.
- Explain the location, rationale and logs of soil borings.
- The location, rationale, construction details, including methods and materials and depth of groundwater of piezometers, well points and monitoring wells.
- Groundwater contour maps depicting groundwater flow direction at the site.
- Description of methods and equipment used to determine site-specific soil, geologic, hydrogeologic and aquifer properties.
- Sampling locations and rationale for selection of these locations.
- The results of a survey used to identify and sample used to identify and sample public and private wells.
- Parameters analyzed for, analytical methods used and detection limits of these methods.
   Field and laboratory analytical results and interpretations.
- Contaminant distribution maps in the media and contaminant phases.

- The results of groundwater performed.
- The disposition of site characterization wastes.
- Site-specific plans prepared and implemented for the provision of OSHA requirements.
- A description of each remedial action option considered and the process used to select the remedial actions identified.
- A discussion of the remedial action options.
- A discussion of the remedial action options.
- A conceptual design of the remedial action options selected.
- A report of additional tasks performed to characterize the site.
- Should be started by a Professional Geologist (P.G.)

#### IV. REMEDIAL ACTION PLAN

Within 45 days of submission of the site characterization report, the remedial action plan should include, but not limited to, the information below. Two copies of the remedial action plan should be forwarded to DEP regional office. Implementation of the remedial action plan shall begin upon approval by DEP.

- Brief summary of the site characterization report conclusions.
- Revised OSHA requirements if different than the site characterization report.
- List of required Federal, State and local permits or approvals to conduct the remedial action.
- Discussion of how the remedial action will remove or eliminate the pollution or contamination.
- Design and construct details, including expected effectiveness.
- Operation and maintenance details for the remedial action.
- Site map showing the location of buildings, roads, property boundaries and remedial equipment locations.
- Description of the analytical methods to be utilized and an appropriate for each.
- The methodology that will be utilized to verify the following:

- the pollution of contamination resulting from the release has been removed or eliminated
- groundwater degradation has been prevented
- groundwater affected by the release has been restored
- A description of additional items necessary to develop the remedial action plan.

#### V. REMEDIAL ACTION REPORT

Upon notice or approval of the remedial action plan from the DEP, implementation shall begin according to their schedule Remedial action reports shall be submitted quarterly to DEP, 3 months following the remedial action plan.

The following should be included, but not limited to:

- Summary of site operations and remedial progress made during the reporting period.
- Data collected from monitoring and recovery wells showing depth to groundwater and thickness and horizontal extent of free product.
- Groundwater contour maps depicting groundwater flow direction.
- Quantitative analytical results from groundwater, surface water, soil and sediment sampling.
- Maps for all media and all phases at specified times that indicate the distribution of concentrations of regulated substances.
- Reporting period and cumulative amounts of free product recovered, groundwater treated and soil and sediment treated or disposed.
- Treatment and disposal documentation for waste generated during the reporting period.
- Demonstration that required federal, state and local permits and approvals are being complied with.

The remedial action report can be suspended when:

- 1. the remedial actions have achieved cleanup standards of the remediation plan, or
- 2.the continued implementation of the remediation plan will cause additional environmental harm, or

3.the continued implementation of the remediation plan will not achieve the cleanup levels established in the remedial action plan.

If items 2 or 3 above occur the Department can submit a Remedial Action Completion Report, or a New or Modified Remedial Action Plan.

If groundwater degradation occurs and the level of cleanup has been established, designated monitoring wells shall be sampled and reported quarterly for one year and to the DEP regional office quarterly.

If the levels have not been achieved, the wells shall be re-sampled 30 days after the initial exceeding level was obtained. If additional analysis confirms the initial result, additional site characterization or remedial action shall be performed.

### VI. REMEDIAL ACTION COMPLETION REPORT

When the level of cleanup established in the remedial action plan and groundwater monitoring has been achieved a remedial action completion report shall be completed, with supporting documentation, indicating remedial action goals have been achieved.

The DEP regional office should notify, in writing, the District, their approval or may request further action or modification.

Please keep in mind copies of all reports, shall be kept at the fueling facility for 5 years or until the fuel is permanently closed.

#### COLOR CODING OF UST MANHOLES

Underground storage tank manhole covers shall be color-coded. The manhole covers shall be painted in accordance with the PennDOT Manhole Color-Coding for Underground Storage Tanks Chart and in accordance with the following:

- Unleaded Gasoline -White Cross with Red Background
- Diesel Fuel Yellow
- Fuel Oil -Green
- Kerosene -Brown
- Waste Oil –Black

- Hydraulic Oil (Used) -Black H with White Background
- Vapor Recovery -Orange Observation Well -Black Triangle with White Background
- Leak Detection -Red Bar with White Background
- Submersible Pump -Red and White Quarters

### 21.3 ABOVEGROUND STORAGE TANKS

#### LEAK AND SPILL CONTAINMENT

Careful design and construction, trained personnel and procedures strictly followed provide protection against leaks and spills. However, equipment malfunctions or failures, human errors and uncontrollable events may result in product releases. For these reasons, containment is necessary to prevent the spread of contaminants.

All ASTs which store hazardous or environmentally sensitive materials shall be equipped with emergency containment. Emergency containment typically consists of a dike around the AST; however, there are other suitable techniques to achieve secondary containment. Sound engineering judgment shall be used to determine the type of emergency containment for each AST. Pub. 284, "Facilities Manual", provides further information.

### ABOVEGROUND RELEASES (SPILLS, OVERFILLS, ETC.)

The release, spills or overfills, of a regulated substance, that result in an aboveground release exceeding the reportable quantity shall be reported within 2 hours to the DEP regional office. See Table 2.4 (page 21-13) for determining release reporting.

The release of a hazardous substance in excess of its reportable quantity shall be reported to the National Response Center and the local county Emergency Operations Center immediately, followed by a written report to the local EOC. Spills under the Reportable Quantity need not be reported as indicated in the CFRP. All spills shall be cleaned up immediately.

The documents, "The Storage Tank and Spill Prevention Act, C.E.R.C.L.A. List of Hazardous

Substances" and "1996 North American Emergency Response Guidebook" should be used for the following: determining reportable quantities, telephone number listing, (i.e., NRC,) identifying the classification involved and safety precautions during the initial phase of the incident.

#### **EMERGENCY SPILL CONTAINMENT**

Emergency spill containment shall conform to Pub 284, "Facilities Manual".

### MAINTENANCE OF EMERGENCY SPILL CONTAINMENT

Concrete structures are susceptible to cracking and frost damage. A weekly inspection schedule should be developed to address these problems so they can be repaired promptly.

#### INSPECTION OF ASTs

CFRP provides checklists to assist in the inspection process. The following is a list of key items to be addressed in the periodic inspection of ASTs. Each AST shall be inspected at least weekly.

- Presence and/or volume of oil or water in the containment area
- Soil color changes; noticeable sheen on water puddles
- Visual observance of tanks, pumps, valves and pipe connections
- Unusually strong odor of stored material -Storage tank overflowing
- Determination of accumulated liquids contained in area (i.e., uncontaminated storm water, contaminated runoff or pure product.)

### COMBINED FACILITIES RESPONSE PLAN (CFRP)

Every department facility must develop and implement a CFRP plan. Further details may be found in Pub 284, "Facilities Manual".

# FIGURE 21-2-5 TABLE 2.5 STORAGE TANK CORRECTION ACTION REQUIREMENT

PERFORM INTERIM REMEDIAL ACTIONS AND SITE CHARACTERIZATION

INTERIM REMEDIAL ACTIONS INCLUDE BUT ARE NOT LIMITED TO:

- Pump product out of tank
- Mitigate & monitor fire explosion & safety
- Prevent/Limit migration of contamination
- Recover Free product
- Monitor plume of contaminants

### IF CONTAMINATION AND/OR INTERIM REMEDIAL ACTIONS AFFECT OR DIMINISH THE WATER SUPPLY:

- A temporary supply must be provided within 48 hours
- A permanent supply must be established within 90 days

ON-SITE STORAGE OF CONTAMINATED SOIL - 90 DAYS COMPLETELY AND SECURELY COVERED

PREPARE A SITE CHARACTERIZATION AND SUBMIT A SITE CHARACTERIZATION REPORT TO THE DEP REGIONAL OFFICE WITHIN A MAXIMUM OF 180 DAYS OF REPORTING THE RELEASE

A SITE CHARACTERIZATION REPORT INCLUDES BUT IS NOT LIMITED TO:

- Reporting interim remedial actions taken and measured effects
- Define source, extent, of contamination
- Indicate affected areas, ground water & soil characteristics & site conditions
- Report on analysis of physical field date
- Provide insight on potential remedial action plan schedule

DEVELOP A REMEDIAL ACTION PLAN FOR SUBMISSION TO DEP REGIONAL OFFICE WITHIN 45 DAYS OF SITE CHARACTERIZATION REPORT SUBMISSION DEP NOTIFIES DISTRICT TO PROCEED AND IMPLEMENT REMEDIAL ACTION PLAN ARE REMEDIAL GOALS OBTAINED? YES NO DEVELOP REMEDIAL DEVELOP REMEDIAL **ACTION COMPLETION** ACTION REPORT AND REMEDIAL REPORT FOR SUBMISSION ACTION COMPLETION REPORT TO DEP FOR SUBMISSION TO DEP **DEP APPROVES** DEP MAY REQUIRE QUARTERLY PROGRESS REPORTS UNTIL **FURTHER NOTICE END** 

### 21.4 DOCUMENTATION/RECORD KEEPING

Record keeping is necessary to ensure compliance with the federal, state and local regulations. Records of a tank system shall be maintained for the operating life of the system and at least 5 years after its permanent closure. The original documents should be maintained on site, if possible.

### LIST OF REQUIRED RECORDS

- Inventory Records -Installation Details Modification/Repair Details
- Operation Records
   History of usage
   Physical inspection checklists/reports
   Monitoring records
   Leak/incident documentation
   Tank Handling Activity Report
- Legal Records
   Permits, notifications and certificates
   Agency correspondence
- Consultant/Contractor Reports
   Engineering assessments/surveys
   Tank and line testing results
   Environmental sampling results
   UST Inspection Report
- Tank Closure Records
   UST Closure Notification Form
   (ER-BWQ-33)
   UST Closure Report Form (ER-BWQ-37)
   Registration of Storage Tank Form
   (ER-BWQ-14)
   Notification of Reportable Release/
   Notification of Contamination
   (ER-BWQ-32)

### REGISTRATION OF STORAGE TANKS WITH DEP

All regulated ASTs and USTs shall be registered with DEP in accordance with Sections 303 and 503 of the Storage Tank and Spill Prevention Act. The Department is exempt from paying the annual registration fee.

When a new tank is installed at an existing registered facility, the District shall ensure that a new registration form for the entire facility be completed immediately as an "initial registration" after installation of the new tank.

Any changes made to the facility, tank or contact information, (i.e., removals, adding tanks, relocating tanks to another facility, etc.), the District shall ensure a registration of storage tanks form is amended.

To initially register or amend a storage tank, complete DEP form WQ-0014-Rev. 9/95, "Registration of Storage Tanks", using the instructions provided on the form. To obtain "Registration of Storage Tanks" forms, write or call the DEP regional office where the facility is located.

It is unlawful to operate a storage tank with any regulated substance unless the storage tanks are registered.

### CERTIFICATES OF REGISTRATION AND STICKERS

Upon receipt of a completed "Registration of Storage Tanks" form, DEP will issue, for new tanks, a letter that serves as a temporary (90) day proof of registration so product can be received until the permanent registration is received. For all other registrations DEP will issue a registration certificate.

The certificate should be posted in a protected area visible to the public at the facility where the tank is located

### CHAPTER 22 LOCATION REFERENCING SYSTEM

### **TABLE OF CONTENTS**

22.1	Introduction	22-1
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	Maintenance District Numbers	22-2
22.3	State Routes (SR)	22-3
22.4	Segments (SEG)	22-4
22.5	Offsets	22-6
22.6	Segment Markers	22-7

### 22.1 INTRODUCTION

The Location Referencing System (LRS) is designed to bring Pennsylvania's roadway designations into a verifiable, flexible, and constant engineering standard. It is the key to the collection, storage, and integration of roadway information within the Department.

CO/SR/SEG/OFFSET is the KEY series of numbers given to the location of a point or feature on a state route. This fourteen digit number (CO/SR/SEG/OFFSET) is an integral part of the computerized Roadway Management System (RMS) where key roadway data is stored.

Pennsylvania is divided into 67 counties. Each county (CO) has a number which represents the first two digits of the LRS KEY. In each county there are State Routes (SR's) identified by four-digit numbers. SR's are subdivided into approximate one-half mile segments (SEG), also identified by four digit numbers. Finally, the OFFSET is an even smaller subdivision of the segment. The offset is the distance (in feet) to a particular roadway feature from the beginning of the segment, expressed as a four digit number. An example of a fourteen digit KEY is:

KEY = 07/4016/0100/0857 CO = 07 (Blair) SR = 4016 SEG = 0100 OFFSET = 0857

The Location Reference System is not complicated and anyone can easily take advantage of the benefits it has to offer. It adds permanence, accuracy, and stability to our marker system. It is easy to understand, costs less to maintain, and generates a computerized representation of the state highway network.

The following material will provide some insight into how the LRS was developed and the type of information that could be inferred utilizing the 14 digit KEY.

The <u>Location Referencing System (LRS)</u> <u>Technical Manual</u> provides more detail regarding LRS related definitions, codes, and locations. Contact the District RMS Coordinator or the Bureau of Maintenance and Operations, Roadway Management Division, Roadway Inventory and Testing Section for more information or questions related to the LRS.

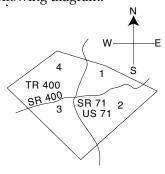
### 22.2 COUNTY NAMES, NUMBERS AND MAINTENANCE DISTRICT NUMBERS

County	County No.	Maint Dist.
NAME	(CO)	No.
ADAMS	1	8-1
ALLEGHENY	2	11-1
ARMSTRONG	3	10-1
BEAVER	4	11-2
BEDFORD	5	9-1
BERKS	6	5-1
BLAIR	7	9-2
BRADFORD	8	3-9
BUCKS	9	6-1
BUTLER	10	10-2
CAMBRIA	11	9-3
CAMERON	12	2-4
CARBON	13	5-2
CENTRE	14	2-1
CHESTER	15	6-2
CLARION	16	10-3
CLEARFIELD	17	2-2
CLINTON	18	2-3
COLUMBIA	19	3-1
CRAWFORD	20	1-1
CUMBERLAND	21	8-2
DAUPHIN	22	8-5
DELAWARE	23	6-3
ELK	24	2-8
ERIE	25	1-2
FAYETTE	26	12-1
FOREST	27	1-3
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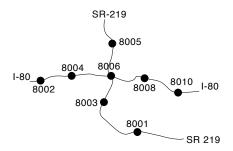
COUNTY NAME LACKAWANNA LANCASTER	COUNTY No. (CO) 35 36 37	Maint Dist. No. 4-2 8-7
NAME LACKAWANNA	(CO) 35 36	No. 4-2
LACKAWANNA	35 36	4-2
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### 22.3 STATE ROUTES (SR)

- A. SR Numbering Convention:
  - Traffic Routes: Routes that have been designated as Interstates, US or PA Routes .......0001-0999
  - 2. Quadrant Routes (Non-Traffic Routes)......1001-4999
  - 3. Relocated Traffic Routes.....6000-6999
  - 4. Turned Back, Abandoned, or Null Routes ......7000-7999
  - 5. Interchanges......8001-8999
  - 6. WYE's ......9101-9199
  - 7. Rest Areas ......9201-9299
  - 8. Truck Escape Ramps ......9301-9399
  - 9. Others ......9401-9499
- B. Odd/Even Convention: Odd numbers are assigned to SR's in the North/South direction. Even numbers are assigned to SR's in the East/West direction.
  - 1. The Odd/Even convention applies to Interstate Routes, except those that are Beltways or Spurs.
  - 2. The Odd/Even convention MAY or MAY NOT apply to PA or US Traffic Routes.
  - 3. The Odd/Even convention applies to Quadrant Routes.
- C. Other Numbering Conventions:
  - 1. The first digit of a quadrant route is based on which quadrant of the county the route is located, as shown in the following diagram.

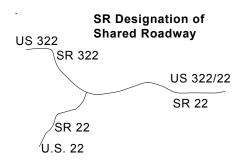


- 2. The last three digits of a Relocated Traffic Route are the same as the Traffic Route that was relocated.
- 3. Interchanges are numbered sequentially. Odd numbers are given to Interchanges along SR's in the North/South direction; even numbers are given to Interchanges along SR's in the East/West direction.



- 4. WYE's are given odd numbers if the connecting SR is odd numbered, and even numbers if the connecting SR is even numbered.
- 5. Rest Areas or Truck Escape Ramps are given odd numbers if they connect to the Southbound or Westbound side of an SR, and even numbers if they connect to the Northbound or Eastbound side of an SR.
- D. Hierarchy: If two or more traffic routes occupy the same section of roadway, the SR number is based on the "higher" type route, according to the following hierarchy.
- 1. Interstates
- 2. U.S. Routes
- 3. PA Routes
- 4. Quadrant Routes

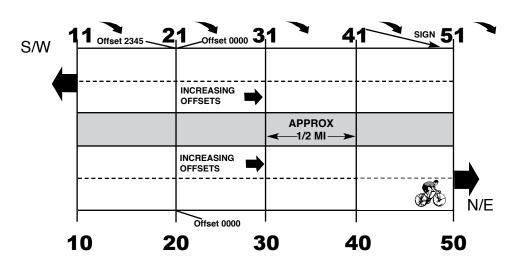
If the traffic routes are the same hierarchy class, then the SR number is assigned the lower numbered traffic route.



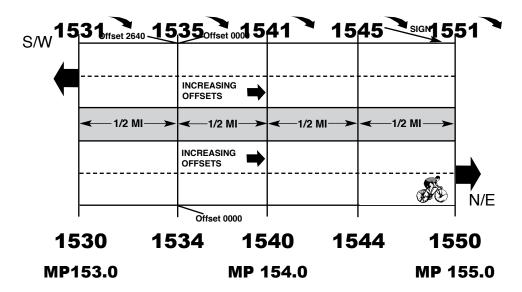
### 22.4 SEGMENTS (SEG)

- A. A Segment is a section of an SR approximately one-half mile in length. Segments are usually numbered by 10's.
- B. The beginning and ending points of Segments are placed at physical features where possible.
- C. Direction: Divided roads have directional segments; North or East are even numbers, South or West are odd numbers.
- D. Interstate Segmenting is associated with the mile post.

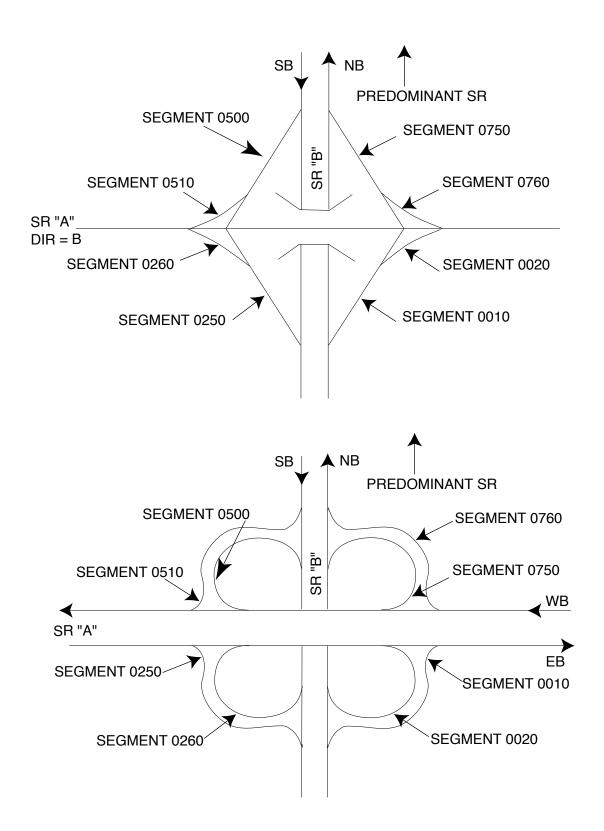
### **DIVIDED HIGHWAY SEGMENTING CONVENTION**



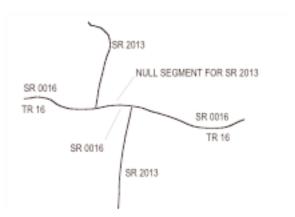
### **INTERSTATE SEGMENTING CONVENTION**



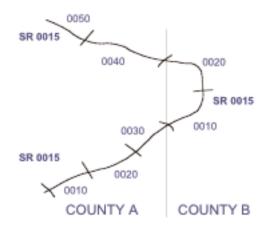
### E. Common Interchange Configurations and their Segmentation:



F. Turned Back, Abandoned and Null Segments are given numbers in the range of 7000-7999:

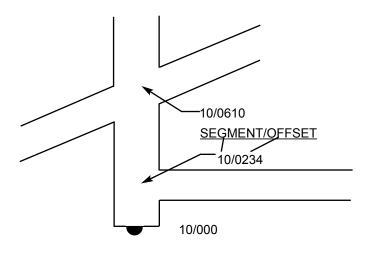


G. Segment Numbering of Traffic Routes at County Boundaries:



### 22.5 OFFSETS

Distance in linear feet from the beginning of a segment to a point of interest measured in the INCREASING segment direction.

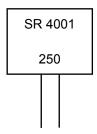


Note: In most cases, the location of feature is defined as the point where that feature meets the centerline of the route. When the feature is located to the side of the route, the location is defined as the point at which the roadway centerline and an "imaginary" line drawn perpendicular from the centerline to the feature would meet. The Location Referencing System (LRS) Technical Manual provides more detail regarding LRS related definitions, codes, and locations. Contact the District RMS Coordinator or the Bureau of Maintenance and Operations, Roadway Management Division, Roadway Inventory and Testing Section for more information or questions related to the LRS.

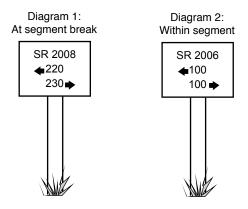
### 22.6 SEGMENT MARKERS

Identifiable in the field, easy for identification of maintenance/work areas on the State Highway System.

A. Segment Marker - indicates SR and segment number at the beginning of each segment. If the beginning of a segment occurs at a physical feature, then the point of reference is at the physical feature and NOT the sign.



B. Intersection - indicates segmentation at the intersection of two or more state owned highways.

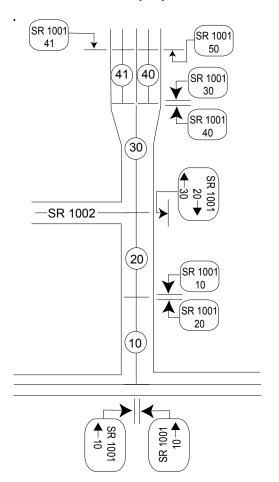


Note: Segment changes at intersections occur at the point that the centerlines of each route intersect. Varying rules apply with regard to intersections of divided routes. Ramps, wyes, rest areas and jug handles begin at the gore area (where pavement meets the unimproved surface). For clarification of a particular intersection, contact the District RMS Coordinator.

C. SR/Segment Sign Placement.

#### SAMPLE STATE ROUTE SIGNING

D. Maintenance – Segment additions, deletions, reversals or adjustments are initiated only by the District RMS



Coordinator or the Bureau of Maintenance and Operations, Roadway Management Division, Roadway Inventory and Testing Section.

If a segment marker is missing, it's location is in question, or if changes are necessary, contact the District RMS Coordinator. If required, a work order will be issued by the District RMS Coordinator to facilitate segment marker placement or movement. Under no circumstance, should segment markers be placed or moved in the field without receiving a work order from the District RMS Coordinator.

If the Legislative Route (LR) Station paddles, which identify locations according to the former LR method, are still located in the field, they may be removed.

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### CHAPTER 23 AGILITY

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#### 23.1 AGILITY OVERVIEW

Agility is a "way of doing business" which allows PennDOT and eligible partners to exchange services with each other. One of the biggest advantages of the Agility Program is that relationships are developed between the partners and PennDOT.

Trading services for services among eligible community organizations and local governments enables PennDOT and its partners to stretch limited resources and share equipment and staff. Eligible partners include local governments, water, sewer, housing and municipal authorities, council of governments, metropolitan and rural planning organizations, public school districts, state universities, communities, vocational technical schools, volunteer fire and rescue companies, volunteer emergency medical transport companies, state and federal government agencies, and charitable hospitals. The Agility Program is available in all eleven engineering districts, which cover 67 counties in Pennsylvania.

Service exchanges are reasonably equal in value between the Department and its partner. To avoid the exchange of service that may have a negative effect on the workforce, PennDOT enters into Agility Work Plans in cooperation with the American Federation of State, County and Municipal Employees (AFSCME). In this way, the Department, AFSCME, and the eligible partner provide services that benefit everyone without the need to pay each other cash for the services rendered. A Work Plan can be implemented after a fully executed Agility Agreement is in place.

The County Agility Coordinator (CAC) is responsible for the proper completion and implementation of an Agility Agreement and Work Plan. The Work Plan can be developed for services that are specified and approved in Attachment B of the Agility Agreement. Each Work Plan contains PennDOT's management, AFSCME's and the partner's signatures. Agility Agreements are valid for five years but can be cancelled after the terms of the agreement and Work Plan have been met. The Agility Agreement can be renewed based on the desires of the partner and PennDOT.

### PURPOSE OF THE AGILITY CHAPTER IS TO:

- Provide broad and consistent direction to the District Agility Coordinators (DAC), CAC, County Managers, Assistant County Managers and others who engage in service exchanges with eligible partners.
- Ensure that the field staff and the Agility Division are working from the same information.
- Present factors to consider in making Agility business decisions as they relate to the exchange of services with eligible partners.

The guidelines are not intended to address every issue that may arise, nor are they intended to stifle creativity or new ideas. The chapter is made up of two kinds of information:

- l. Requirements which must be followed and implemented in every service exchange.
- 2. Suggestions, which may be implemented by the District and County Maintenance Offices.

Finally, this document is a "work in progress" and will be continuously changed to show the evolution of service exchanges and relationships between PennDOT and its eligible partners, lessons learned from the field staff, AFSCME and our customers' changing expectations. Updates will be provided to the field staff through such sources as the Agility Digest, link to the Bureau of Municipal Services via the PennDOT website, at training sessions, etc.

### 23.2 THEORY OF "AGILITY":

Agility is an organizational strategy or a "way of doing business" that enables PennDOT to respond quickly to its customers, partners and continuously changing environment. PennDOT's environment entails providing transportation services and products to 12 million citizens of all ages, cultures and geographic locations.

Some people define "Agility" as an attitude that shows PennDOT's and AFSCME's joint interest in building and maintaining relationships with internal and external customers. These relationships position PennDOT to make positive differences in a wide variety of situations.

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Most agile relationships involve at least one or more of the following four principles:

- 1. Emphasizing People and Information-People and information determine the success of an organization, not technology, facilities, or equipment.
- 2. Organizing to Master Change and Uncertainty- Create a flexible organization that can quickly adapt its human and physical resources to a rapidly changing environment.
- 3. Enriching Customers- Involve customers in developing products and services, which are customized for them and meet their needs.
- 4. Cooperating to Enhance
  Competitiveness- Identify win-win
  relationships as the strategic justification
  for inter and intra organizational
  cooperative ventures.

To varying degrees throughout PennDOT, employees at all levels are encouraged to apply these four principles at work.

### 23.3 APPLYING AGILITY AT WORK

The Agility Program is an innovative approach to conducting business that can greatly enhance efficiencies for PennDOT and its local communities. Given the rapid changes in our operating environment and the many diverse demands on our organization, PennDOT must be increasingly more innovative and proactive. Below are the Agility Steering Committee's and the Deputy Secretary for Highway Administration's expectations for the District and County Agility Coordinators and others who work daily in the Agility Program.

### Maintenance

- Consider Agility service exchanges first, before contracting out for services.
- District and County Agility Coordinators are responsible for entering in to Agility Agreements and Work Plans so long as these transactions make good business sense. The lack of such activities deserves the respective district executive's review and guidance.

### **Bridges**

 When performing preventative maintenance on bridges, such as flushing activities, consider the use of Agility with local volunteer fire departments based on their availability.

### **Transportation Systems Operations & Security**

• Where practical, use the Agility Program to formalize Agility Agreements and Work Plans as "insurance policies" to access back-up crews, facilities, knowledge resources and equipment at the local level and across state-borders. The types of emergencies in which these service exchanges may be used include, but are not limited to: electrical outages, downed power lines, snow plowing, flooding, traffic control, etc.

### Safety

 Use Agility service exchanges as a way of meeting local governments' needs for lowcost safety services. This could help reduce fatalities and crashes. For example, a local government could cut tree limbs and brush along our right-of-ways and in return, the Department could install rumble strips along dangerous curves on local roads.

### Relationships

 Periodically, the Agility Division surveys AFSCME Council Directors, staff and local representatives using a standard survey to determine their level of satisfaction with the Agility Program. The survey results are quantified and given to the Assistant District Executives for Maintenance and others to use in strengthening relationships and to make further improvements in the program.

### 23.4 WHEN TO ENTER INTO AN AGILITY PARTNERSHIP

Establishing an Agility partnership for the purpose of exchanging services between PennDOT and a partner is voluntary and optional for both parties. Each party must believe that it makes good business sense for their organization to be involved in a service exchange. The exchange of

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services is a good deal if: more work gets done quicker, more work gets done within the same time frame, the exchange allows PennDOT to keep cash in its budget for other needed projects, as well as retains work in PennDOT instead of contracting out services, etc.

### WHAT SERVICE EXCHANGES ARE NOT

1. Service exchanges should not be confused with "giving away" services. The receiving partner must provide PennDOT with services of reasonably equal value. PennDOT is required by law to preserve the allocations that are distributed from the Motor License Fund (MLF). allocations are determined on a county-bycounty basis through a formal legislative process, which can only be altered by additional legislation. Furthermore, PennDOT is statutorily prohibited from diverting the MLF for proposals and activities that are contrary to Article VIII, Section 11 of the Pennsylvania Constitution of 1968 (relating to the use of proceeds from gasoline and other motor fuel excise taxes and motor vehicle registration and license fees). Reference to this antidiversion requirement can be found at Section 2001.2 of the Administrative Code of 1929, as amended, 71 P.S. Section 511.2.

Any "consideration," such as services or materials, funded from the MLF that is given to an Agility partner may result in offsetting the original formula allocations, which have been carefully established through legislation, or in diverting the funds contrary to the constitutional and statutory mandates. Therefore, when PennDOT uses its field staff, equipment and related materials to benefit a partner as part of a service exchange, PennDOT must receive a service of reasonably equal value back from that partner. Moreover, to ensure that the MLF is restored, the service or activity performed for PennDOT must be something on which it is permissible to spend MLF in the first place. To maintain the integrity of the MLF, the partner and PennDOT have up to five years, or by the expiration date of the Agility Agreement, to complete one or more Work Plans to

validate that the services received by PennDOT are of reasonably equal value to the services provided to the partner, thereby ensuring the integrity of the MLF.

- 2. Service exchanges are not good business decisions if the County Maintenance Office fails to factor in the costs associated with using equipment beyond the planned time frame to "extend" a service to complete a project. For example, if the field staff must borrow equipment from an adjoining district to perform a task for its partner, the field staff should factor in the "extended cost" of mobilizing the borrowed equipment. If, after considering this cost factor, it is still feasible to complete the project, then the field staff should proceed to do so.
- 3. Service exchanges are not good business decisions if the CAC fails to coordinate with his/her county on the shared use of purchased and/or rented equipment for service exchanges. For example, if the county rents equipment for 20 days and it is left idle for five of those days, the CAC could have used that rented equipment for the five days to perform a service exchange if proper planning and scheduling occurred.

### 23.5 MANY BENEFITS OF SERVICE EXCHANGES

The most significant benefit of an Agility partnership is that it helps PennDOT build relationships within their communities. Sharing information enables all parties to understand why decisions are made and brings to light factors which may influence those decisions as well. Other benefits include, but are not limited to:

- Enabling PennDOT and partners to use funds more efficiently and effectively.
- Enabling PennDOT and its partners to provide smoother and safer roads by reducing the number of outstanding maintenance needs.

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- Improving PennDOT's and its partner's response time on fixing road problems, preventing accidents, etc.
- Completing work that otherwise may not have been done.
- Enabling PennDOT to receive more timely and accurate information from its partners. This is because relationships formed under the Agility Program usually become strong relationships. In strong relationships, the quantity and quality of information is greatly improved.
- Strengthening relationships between PennDOT and AFSCME union leaders at all levels.
- Strengthening relationships between PennDOT, other state agencies and local governments, including municipalities.
- Increasing PennDOT's and government's positive image with the public.
- Increasing opportunities for employees to work in greater leadership roles.
- Increasing the quality of life by balancing social, economic and environmental concerns.

### 23.6 ROLES AND RESPONSIBILITIES

### -PLANNING DEPUTATE

The Agility Division is located in a non-highway deputate and is one of three divisions in the Bureau of Municipal Services. See Attachment A for a copy of the organizational chart.

The Agility Division is a support and program office whose Agility Program Specialists provide technical guidance to field staff that work in the Highway Administration's deputate.

The Agility Division's key products and services that support field implementation include:

- Executing Agility Agreements that allow Work Plans to be developed between PennDOT and its partners,
- Assisting with outreach efforts by conducting on-site training for potential and current partners as well as training for AFSCME employees,
- Reviewing Agility documentation to ensure the County Maintenance Offices' records are in proper order,
- Staffing the Agility Steering Committee,
- Maintaining an Agility Agreement database,
- Preparing an Agility Program Annual Report,
- Conducting Agility field visits,
- Maintaining an <u>Agility Partner Guide</u>,
- Developing an interactive compact disk training tool, i.e., <u>A Guide to Completing the</u> <u>Agility Agreement</u>,
- Maintaining this chapter,
- Maintaining an Agility website;
- Maintaining the <u>Agility Work Plan Training</u> <u>Manual</u>, and
- Issuing an <u>Agility Digest</u> and other items that directly support the CACs.

#### -HIGHWAY ADMINISTRATION

The Highway Administration's field staff works daily to maintain our highway and bridge systems. Typically, each engineering district selects a DAC to be a liaison between the Agility Division and the County Maintenance Office staff. Some of the responsibilities of the DAC include serving as a single point of contact for the Agility Division, communicating information on Agility from any source to the Assistant District Executive for Maintenance, County Managers, CAC, and

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others, performing quality assurance reviews on Agility Agreements, conducting and/or coordinating training on the Agility Program, assisting with identifying marketing opportunities for the Agility Program, serving as requested on the Agility Steering Committee, attending meetings as requested by the Agility Division, coordinating the collection of data requested by the Agility Division, and assisting with the resolution of Agility issues.

Some of the responsibilities of the CACs include serving as the single point of county contact for the DAC, communicating information on Agility to the County Maintenance Manager and the entire organization, performing quality assurance reviews on Agility Agreements prior to their submission to the DAC, participating in the development, review, and implementation of Work Plans, conducting training at the county level and/or coordinating training on the Agility Program for others, identifying, developing and implementing marketing strategies for the county to current and potential partners, attending meetings as requested on the Agility Program, completing data requests on the Agility Program, ensuring Work Plan activities are accurately tracked and reported, maintaining accurate and auditable records on the Agility Program, soliciting input from and providing information to customers, and encouraging their employees' participation in the program.

The District Municipal Services staff are also located in the Highway Administration deputate and have frequent contact with local governments who are current and potential Agility partners. This staff serves as a referral source for local governments who are interested in learning more about the Agility Program.

### 23.7 LEGAL FOUNDATION OF THE AGILITY PROGRAM

Chapter 19 of the Procurement Code (also referred to as Act 57) provides PennDOT with the statutory basis to enter into Agility Agreements. Although Chapter 19 does not specifically cite the word "agility," it enables PennDOT to engage in intergovernmental contracts with various levels and types of governmental bodies, as well as particular non-profit entities. Agility Agreements are one type of an intergovernmental contract.

Prior to Act 57, the Department's statutory authority for Agility Agreements was Section 561 of the State Highway Law, relating to minor routine maintenance by municipalities. When the Procurement Code took effect, it gave PennDOT further authority for the Agility Program and broadened the types of services that the partners could provide to PennDOT.

The Agility Program can "respond quickly" to its partners because these intergovernmental contracts involve less paperwork and shorter processing times. Traditional contracts, which take longer, are not necessary because PennDOT and its partners exchange services, not money.

#### -LEGAL ISSUES AND POLICIES

Throughout the Agility process, from drafting Agility Agreements to executing service exchanges, several legal issues may arise. One purpose of this chapter is to minimize the need to consult the Office of Chief Counsel and thus increase efficiency by providing accurate and coherent legal policies for the Agility Program.

Before specific legal and policy issues are discussed, it is important to state the five legal requirements that serve as the foundation of the Agility Program's operations:

### -REQUIREMENTS OF THE AGILITY PROGRAM

There are five legal requirements that must be followed in the Agility Program.

- 1) First, PennDOT must enter into a formal, written agreement with each partner. A letter of cooperation is not acceptable because it is not a formal agreement.
- 2) Second, to be a partner in the Agility Program, the partner must be a public entity that conforms to the definition of a "local public procurement unit." Partners must meet this definition because it is required by law (i.e., Act 57).
- 3) Third, no money can be exchanged between PennDOT and its partner. If money were involved in the Agility Program, then PennDOT would have to

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comply with the same lengthy and more involved Procurement Code requirements which apply to traditional contracts.

- 4) The MLF cannot operate in the red, or incur a deficit.
- 5) Materials can only be included in an Agility project if they are essential and incidental to perform the service. Materials alone cannot be exchanged between PennDOT and the partner, except for the following items: Road Signs, Salt Brine, and Magnesium Chloride.

### 23.8 ELIGIBLE PARTNERS

PennDOT can only enter into Agility Agreements with entities that are classified as "local public procurement units" or others who provide "external procurement activities" (essentially out-of-state government agencies and agencies of the federal government) under the Procurement Code. One preliminary indicator that PennDOT uses to identify a potential Agility partner is whether they secure and spend public funds. Public funds are taxes, fees or government appropriations. A second preliminary indicator is whether the partner's agency is managed by a Board of Directors and if these directors are publicly elected officials. However, public authorities are eligible, even though their directors are not elected. A third preliminary indicator is that the entity must expend the public funds in accordance with statutory or regulatory provisions that address its functions and activities, including its spending powers.

A local public procurement unit is defined in Section 1901 of the Commonwealth Procurement Code (62 Pa. C.S. Section 1901) as "A political subdivision, public authority, tax-exempt, nonprofit educational or public health institution or organization, nonprofit fire company, nonprofit rescue company, nonprofit ambulance company and, to the extent provided by law, any other entity, including a council of governments or an area government, which expends public funds for the procurement of supplies, services and construction."

PennDOT's Office of Chief Counsel ultimately determines whether the potential partner meets the requirements to be a local public procurement unit. When in question, potential partners may be asked to submit copies of their articles of incorporation, bylaws, annual audit report or other documentation concerning their organization and operation to the Office of Chief Counsel for review.

The following are examples of local public procurement units:

Municipalities
Water, Sewer Housing and Municipal Authorities
Councils of Government
Rural/Metropolitan Planning Organizations
Public School Districts, Vocational-technical
Schools and Universities
Charitable Hospitals
Volunteer Fire and Rescue Companies
Volunteer Ambulance Companies
State and Federal Agencies

## 23.9 PROCESSING AGILITY AGREEMENTS AND WORK PLANS

Incorrectly completed Agility Agreements or Work Plans can cause significant delays in the processing of either of those documents. This section details policies and procedures to follow that helps the CAC and the partner avoid common mistakes.

### - REQUIREMENTS OF THE AGILITY PROGRAM

An Agility Agreement (See Attachment B for a copy of an Agility Agreement) is a contract, which indicates PennDOT's and the partner's intent to exchange services with each other when and if an opportunity arises. Having an agreement in place does not obligate either party to perform a service. It provides the foundation and legal authority for exchanging services. The Agility Agreement also describes the potential service exchanges, the agreement time frame of five years, and other general terms and conditions of the relationship. The Agility Agreement submitted to the Agility Division for processing, must have original signatures. A "copy" of the Agility Agreement from the CAC cannot be accepted by the Agility Division.

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#### - Who Can Sign the Agility Agreement:

The Agility Agreement must contain a valid signature. This means that the signatures on the Agility Agreement must be from people who have the proper legal authority to sign the document. An executed resolution is necessary to grant someone within the partner's organization or its governing body the proper authority to sign the Agility Agreement. A resolution is a formal statement which allows a governing body to give an individual the authority to sign the Agility Agreement on behalf of the partner. As a matter of PennDOT policy, Agility Agreements must have a completed resolution.

If the agreement is with a nonprofit corporation, only one corporate officer needs to sign, provided that officer is a senior officer. Senior officers include:

Chairman

President

Vice-President

Senior Vice-President

**Executive Vice-President** 

Assistant Vice-President

Chief Executive Officer

Chief Operations Officer

If a senior officer signs the agreement for the corporation, then a junior officer may attest to the signature of the senior officer. To attest is to affirm the authenticity of the individual who has signed either the Agility Agreement or the resolution on behalf of the partner. The affirming individual is usually the secretary, treasurer, or other appointed individual.

## Signing an Agility Agreement on behalf of a Federal Agency:

For a person to sign an Agility Agreement on behalf of a federal agency, a citation to federal regulations must be included. This is an internal agency memo delegating signature authority, or in the case of a contracting officer, an appointment certification.

### Stamped Signatures on an Agility Agreement:

Stamped signatures on Agility Agreements are only valid in extenuating medical circumstances. For such a signature to be valid, it requires an attached letter from the municipal solicitor with an explanation for the absence of a manual signature.

#### **Valid Dates**

Agility Agreements must be submitted to the Office of Chief Counsel within sixty (60) days of the partner's signature date on page 2 of the agreement. If the 60 days are exceeded, the agreement is considered "stale" and will need to be resigned and redated, and the signature process will begin again.

The attest date must be either equal to or later than the signed date on the signature page. Agility Agreements or resolutions will not be accepted if the attest date is earlier than that of the signature.

#### **Obtaining Approval**

When processing an Agility Agreement with Attachments A and B, approval is required from the Agility Division, the Office of Chief Counsel, and the Office of the Comptroller. If activities other than what is listed on Attachment B are added, the Agility Agreement must then be approved by the Office of the Attorney General.

The Office of Chief Counsel will review the Resolution Page and the Agility Agreement for form and legality, and the reviewing attorney will return the agreement to the originator if problems exist.

When entering into an Agility Agreement with a Commonwealth Agency, a Letter of Understanding (LOU) must be used. No resolution is necessary with executive agencies—that is, those under the Governor's jurisdiction. However, independent agencies, such as the Pennsylvania Game Commission requires an Agility Agreement.

When the Agility partner is an out-of-state agency, an Agility Agreement must be used. These Agility Agreements must be approved by the Office of General Counsel and the Office of the Attorney General.

The Agility Division is responsible for submitting Agility Agreements and LOUs to the Office of Chief Counsel as well as for entering all Agility Agreements and LOUs into the Legal Approved Tracking System.

#### - Termination of Agility Agreements

An Agility Agreement may be terminated prior to the official termination of the agreement if PennDOT or the partner so desire. The terminating party must submit a letter of intent to this effect to the other party which references the thirty day termination notice.

If an Agility Agreement expires before work is completed under a Work Plan, the following actions must be taken immediately:

- 1. All work must cease until a new Agility Agreement is in place.
- 2. The new Agility Agreement must have a new and unique agreement number.
- 3. Indicate on the old Work Plan the "Balance still owed by either party at the end of the expired Agility Agreement" and reference the new Agility Agreement number.

#### -Legally Binding Contract

Signing an Agility Agreement does not obligate either party to perform any of the services listed on Attachment B of the Agility Agreement. The Agility Agreement becomes a legally binding contract only after a Work Plan is completed and signed by all parties: PennDOT, AFSCME, and the partner.

Since the Work Plan signed by all parties under an Agility Agreement is a legally binding contract, it would be a breach of contract if the partner or PennDOT did not perform the necessary work to the party's satisfaction. Should the partner refuse to perform or re-perform the work for PennDOT, the situation should be communicated to the District Office who can ask for assistance, if applicable, from the Agility Division. The reverse is also true: if PennDOT does not perform work for the partner to their satisfaction, it would be a breach of contract.

### - AGILITY AGREEMENT TERMS AND CONDITIONS

The following section is a brief description of the Terms and Conditions as listed in the Agility Agreement.

 Part One describes the partner's responsibilities under the Agility Agreement. As a supplier of personnel and equipment, the activities specified on

- the individual Work Plan must be of reasonably equal value to those supplied by PennDOT and meet the guidelines in the appropriate PennDOT publications.
- 2. Part Two outlines PennDOT's responsibilities under the Agility Agreement. PennDOT's activities specified on individual Work Plans must be of reasonably equal value to those supplied by the partner and meet the guidelines in the appropriate PennDOT publications. If the partner's organization has stricter policies or standards regarding highway maintenance, PennDOT will perform those services accordingly.
- 3. Part Three states that the partner's employees and lessors remain in the partner's employ when performing services under this agreement for PennDOT. PennDOT's employees and lessors remain in PennDOT's employ when performing services for the partner's organization. In addition, liability issues are addressed in the event an employee or lessor of either party commits negligent acts.
- 4. Part Four guarantees the right of inspection and remedies to both parties of the Agility Agreement. Inspections may be made by authorized representatives of either party within 60 days of the completion of work. Spot inspections can be performed at any time when activities are taking place under this agreement.
- 5. Part Five adds the Non-discrimination/Sexual Harassment Clause, Contractor Integrity Provisions, and the Provisions Concerning the Americans with Disabilities Act as attachments to this agreement.
- 6. Part Six allows you to sign the different sections of the agreement separately.
- 7. Part Seven describes the conditions under which PennDOT can receive your services. There are circumstances where you can provide services under this agreement when those services are already under contract with a private vendor. It also addresses training, meals and materials that you use in the performance of a service.

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8. Part Eight sets forth the conditions under which PennDOT can provide services to the partner's organization. It addresses the materials used, signs provided and how to handle surplus.

#### -Record Retention

All original Agility Agreements are maintained in the Agility Division and kept for seven years after they expire. In addition, copies of all agreements are maintained in the Electronic Document Management System (EDMS). The Agility field staff are required to maintain all Agility Agreement documents which include the agreement, Work Plans and supporting documents for seven years after the expiration date of the Agility Agreement.

#### -MISCELLANEOUS LEGAL ISSUES

#### **Information Disclosure**

Agility Agreements and Work Plans that the Department is a party to are considered public information under the Right to Know Law. Therefore, the Department must provide to the public non-confidential partner information upon request.

#### Grants

Under no circumstances can our Agility partner use grant funds to perform a service exchange for PennDOT.

However, Work Plans may be entered into with organizations that receive grant funding from PennDOT (such as publicly owned airports), as long as non-grant funding is used to pay for the grantee's service performance.

#### -WORK PLANS

A Work Plan specifically describes the nature of work that PennDOT and the partner will perform for each other under the Agility Agreement. The Work Plan also indicates the quantity and unit price of the Agility service exchange estimated and actual completion dates and contains signature lines for PennDOT, AFSCME and the partner, and related information. It is important to note that the "value" of the Agility service exchange is not indicated on the Work Plan. Information related to the value of an Agility service exchange should be kept in PennDOT's files along with supporting rate information.

An unlimited number of Work Plans may be developed and signed over the life of one Agility Agreement. The quantity is governed by the capacity of either party to perform the work within the life of the agreement.

It is a good practice to expect our partners to complete their work for PennDOT within one or two work seasons from the date that PennDOT finished providing its services to the partner. This increases accountability and lowers the risk of a partner defaulting on a Work Plan However, in all situations, the partner must provide services to PennDOT on or before the expiration date of the Agility Agreement.

#### - Use of Contractors and Subcontractors

An Agility partner may repay PennDOT by using contractors or subcontractors to provide the services. However, AFSCME must agree to this arrangement by signing the Work Plan.

#### -WORK PLANS WITH MULTIPLE PARTNERS

Some municipalities decide not to participate in the Agility Program because they lack the resources with which to provide a service exchange to PennDOT. Having multiple partners under an Agility Work Plan is allowable and may be especially helpful in enabling a group of municipalities to participate in the Agility PennDOT could have three Program. municipalities join together to "give something back" to the Department. Individually the three municipalities would have been excluded from the program due to their inability to compensate the Department for services rendered. For example: three municipalities could provide litter pickup to PennDOT in exchange for line painting on a roadway that runs through the three municipalities. By providing PennDOT's service to all three municipalities at the same time, PennDOT's mobilization costs would be reduced making the service exchange more affordable to the municipalities.

# -WORK PLANS UNDER A THREE-WAY AGILITY AGREEMENT

A three-way Work Plan refers to a Work Plan that contains three parties on the face of the Work Plan – PennDOT and two eligible partners, whom all must sign a Work Plan as part of the agreement. In this scenario, PennDOT could complete an

Agility project for Partner A but be compensated for doing so by partner B. Partner B would then receive a service from Partner A so that all three parties benefit in some way from being in the Agility partnership.

#### - AMENDING WORK PLANS

If after work begins under a Work Plan, PennDOT or the partner wants to change the scope of the service exchange, all parties may renegotiate and amend the costs and work activities in the Work Plan. The amended Work Plan should be initialed and dated by PennDOT, AFSCME and the partner.

#### -BANKING

Banking is like a savings account where one party "saves up" dollar values by performing more than one service for their partner over an extended period of time. The cumulative value of these performed services is then paid back by the receiving partner within the time frame of the Agility Agreement. Note that the exchange of services under a banking arrangement must be fully documented and completed before the Agility Agreement expires between partners. Although permissible, banking should be kept to a minimum and the nature of the service exchanges should be established when the Work Plan is being developed.

#### -CLAIMS PROCESS

A dissatisfied partner can sue PennDOT in the Board of Claims, as long as the value of the disputed services is \$300 or more. This is why PennDOT must view Work Plans signed under an Agility Agreement as legally binding documents. Conversely, if PennDOT has a claim against a partner, the available forums are either the Commonwealth Court or the Court of Common Pleas for the county where the partner is located (the choice of the forum rests with PennDOT); and there is no minimum dollar value. In the latter situation, the County Maintenance Office staff should first contact the Agility Division before taking any action.

#### -LETTER OF UNDERSTANDING

A LOU is a document used by two state agencies that wish to exchange services, since the Commonwealth cannot formally contract with itself. LOUs are signed by each agency's designated signatory, who is usually located in the Harrisburg area. Once approved, staff from each

County Maintenance Office, which includes AFSCME, may develop a Work Plan with the other agency's field or regional staff and their union representatives to exchange services. Documentation must be maintained to support the Work Plans that are completed as a result of having LOUs in place.

#### -LIABILITY

Work performed under an Agility Agreement should be viewed similar to the way that PennDOT views work performed by a contractor. Under Section 1911 of the Procurement Code, a partner that provides personnel, property, supplies or services to another partner shall be immune from liability for any damages which arise out of the use of such personnel, property, supplies or services." Also, Section 561(b) of the State Highway Law, 36 P.S. Section 670-561 (b), provides that a municipality which completes minor routine maintenance work on the roadway or shoulders of a state highway for PennDOT under a contract is relieved from any tort liability arising after the completion of the work so long as it conforms to the standards of the contract as agreed to by PennDOT.

Partners sometimes ask whether PennDOT would be liable if the partner's employee was injured while working on an Agility service exchange for PennDOT. The answer to this question is no, because the Procurement Code provides immunity. The injured person's employer is responsible for providing him or her with worker's compensation and related insurances. The same principle applies to PennDOT employees undertaking projects for partners—PennDOT is responsible for the worker's compensation coverage, and the partner is immune from liability.

Further, Agility partners should be kept to the same safety standards as PennDOT employees. The standards can be found under the Terms and Conditions portion of the Agility Agreement (See Attachment B of the Agility Agreement), and are interpreted in an earlier section of the guidelines.

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#### 23.10 FINANCIAL MATTERS

#### - "COSTING OUT" AN AGILITY SERVICE EXCHANGE THAT WILL BE PROVIDED TO PENNDOT'S PARTNER

"Costing out" an Agility service exchange can be a challenge. This is because the items that go into "making a business offer" to PennDOT's partner often vary from one District to another and sometimes from county to county. There are also times when unforeseen circumstances arise as part of completing a Work Plan activity. For these reasons, costing out an Agility service exchange is not an exact science.

Generally, PennDOT considers two or more items as part of costing out an Agility service exchange for its partner. These items are the:

- 1. Direct or hourly cost of PennDOT's field staff that are providing the Agility service exchange plus the cost of their benefits
- 2. Equipment cost
- 3. Material cost (that is incidental to the service being provided)
- 4. Other Costs

These four categories are defined below along with several places where the cost information can be obtained.

#### - DIRECT COSTS AND BENEFITS

Direct costs include direct salaries, wages and overtime that are incurred by the Department's district and county staff in implementing the work included in the Work Plan. The direct cost of Central Office staff who works in the Agility Program should not be included in these calculations. The hourly cost of PennDOT's staff to perform a service can be determined by looking at actual payroll costs. Actual payroll costs contains information on salaries, wages and overtime as well as the average, hourly cost of PennDOT's field staff to perform a service, plus the cost of their benefits, payroll additives, etc.

#### - EQUIPMENT COSTS

Plant Maintenance equipment costs refer to the cost to PennDOT to own, maintain, and operate equipment or the cost to PennDOT to rent and operate equipment. All County Maintenance

Office staff maintains a list of these hourly equipment rates. Be sure to include costs for Department forces and equipment to mobilize for the service being provided. Also, the rates to use and operate outside rented equipment are usually maintained at the County Maintenance Office.

#### - MATERIAL COSTS

Material costs refer to the cost of materials that PennDOT purchases or provides to the partner that are incidental to the service rendered. The word "incidental" means "something that is minor in nature..." when compared to the overall cost of the service. Material costs can be found on the Plant Maintenance system or by calling local suppliers and/or by researching Internet sources.

PennDOT is prohibited from providing only materials to a partner as part of an Agility service exchange, with the exception of the materials listed on page six. If materials are provided, the materials must be incidental to the service that PennDOT also provides to the partner. Examples of what materials not to exchange: PennDOT can not exchange salt alone to a partner. In addition, district office staff has the discretion to provide only services to their partner.

#### - OTHER COSTS

Other costs involved in an Agility service exchange may result in additional expenses that result from the local conditions in which the work is to be performed. For example, PennDOT's lack of knowledge of a geographical area where the work is to be done may result in extending the time frames in which the job can be completed. Other costs to consider are the distance to the work site, nature of the work (cutting overgrown shoulder areas instead of regularly maintained areas), differences in the age and condition of equipment, need for flaggers, extensive work zone set-up and administrative costs incurred at the district/county offices.

By adding the costs in two or more of the four categories above, PennDOT arrives at a "business offer" or the amount of resources PennDOT believes it will need to complete an Agility service exchange for its partner. Some county maintenance office staff refers to their "business offer" as the "price" of the Agility service exchange.

Some other thoughts to keep in mind when calculating and presenting PennDOT's business offer to the partner are:

- a. It is likely that PennDOT's business offer to complete the partner's Agility project may be marginally higher in amount than what PennDOT's actual costs are. This is because PennDOT must factor in other costs that were described earlier.
- b. PennDOT may, but is not required to, share its cost calculations with the partner. This is a business offer and PennDOT should keep in mind that had the partner procured a contractor to do the same work, it is unlikely that the contractor would itemize and share its costs with the partner.
- c. When developing a Work Plan where a partner is to provide PennDOT with winter services, be sure that a municipal agreement is not already in place with PennDOT for the same areas being described in the Work Plan.

### -DEVELOPING THE AGILITY WORK PLAN (SEE AGILITY WORK PLAN TRAINING MANUAL FOR DETAILS)

## WHAT TO CONSIDER WHEN VALUING AN AGILITY WORK PLAN

The value of an Agility service exchange is different from the cost of an Agility service exchange. The word "value" means the amount of money that a service is worth to the person receiving it. The value of a service exchange could be determined by answering one of the following questions: "How much money would PennDOT need to complete the same or similar work with Department forces?" Or, "How much money would PennDOT need to pay a contractor to complete the same or similar work that the partner will perform?" The value of the work the Department receives from the partner should be reasonably equal in amount when compared to the cost PennDOT will incur to serve the partner.

### Processing a Work Breakdown Structure Element (WBS)

A SAP WBS Element is required for each Agility Work Plan. The following steps are used when completing the WBS Element request:

1. **Project Key** – always represented by the letter "T" which refers to a manual entry in SAP.

2. **SYS** – always represented by the number "0"

- 3. Roadway System/Work Order represented by the 5-digit Agility Agreement number assigned to that Agility partner
- 4. **Sub-project** represented by the Agility Work Plan project number for that partner. For example: if this was the first Agility Work Plan developed for that partner, the sub-project would be represented by the number "1." The second project would be "2" and so on.
- 5. **Phase** always represented by the number "9" which refers to work being completed by maintenance.
- 6. Section represents the 3-digit municipality code. For partners such as the fire department, state agency, etc, the code may be alpha or numeric. For example: for the Department of Corrections, the code may be "DOC."
- 7. **Org** represents the 4-digit organization code. For example: the Agility Division is 6410.
- 8. **Program** represents Agility Program activities which are always "618."
- 9. **Part Code** always represented by the number "2" which refers to the service exchange being funded with 100% state funds.

# 23.11 MONITORING AGILITY ACTIVITIES

Since the life of an Agility Agreement is usually five years, our partners may take up to five years to complete Agility service exchanges for PennDOT. This is subject to arrangements made in the Work Plan. Therefore, it is important to monitor the quality and quantity of the services being provided to PennDOT over a number of years by the partner.

Two ways to do this include producing a written receipt of the quality and quantity of services provided by the partner to PennDOT. The receipt will indicate to the partner what the current balance due to PennDOT is and subsequently be maintained on file in the County Maintenance Office. The written receipt can be the

Work Plan if it is initialed and dated by all parties after the work has been performed and officially noted by the receiving party that the job was acceptable.

A second method is to capture this information on a computer system that will enable the CAC to electronically maintain such information. Regardless of the approach taken, the CAC is required to maintain documentation that supports the figures and information cited in the Work Plan for auditing purposes of equal importance is PennDOT's need to document, in writing, that the partner accepted the Department's work as described in the Work Plan and the date this acceptance occurred. Likewise, the Department's acceptance of the partner's work and the date of acceptance should also be documented. (See Attachment D for a copy of the Agility File Checklist).

#### 23.12 RELATED ACTIVITIES

# -Agility Work Plans with Penn State University (PSU):

Developing Work Plans with PSU is a complicated issue, which needs to be considered on a case-by-case basis. Therefore, when completing Work Plans with PSU, there is an additional approval required. After the Work Plan has been signed off by PennDOT, the partner and AFSCME, it must then go to the Agility Division which will forward the Work Plan to the Office of Chief Counsel for final approval.

#### WORK VERSUS VOLUNTEER ACTIVITIES

Sometimes, in promoting the Agility Program and other Department initiatives, union-covered employees are recruited to represent PennDOT at state fairs, speak at customer advisory board meetings or otherwise promote some aspect of the Department in forums with partners, customers, and other employees. In these situations, the union-covered employees who carry out these approved Agility work tasks are to be compensated for their time even if the work is performed outside of their regular work hours.

Other paid work activities may include, but are not limited to, union-covered employees speaking on behalf of the Department at schools or other locations in order to educate people about transportation, or to carry out activities listed in the Department's business plans. In these cases, an employee is not acting as a volunteer: he or she is

acting as an employee of the Department.

In contrast and as defined by the U.S. Department of Labor, a volunteer is a person who offers his/her services "...freely and without pressure or coercion, direct or implied from an employer" (U.S. Department of Labor, 29 CFR 555.103).

Three examples in which an employee is acting as a volunteer and not entitled to compensation while performing activities associated with the Department are the following:

- 1. An employee who is a member of a volunteer fire company requests and is granted permission to drive a piece of Department equipment in a parade. In this case, while the Department may get some publicity by showcasing the equipment in the parade, the employee has requested to use the equipment in his role as a volunteer fireman.
- 2. The Department sponsors a sports team for youth, and an employee volunteers to be a coach for the sports team. In this case the employee is acting as a volunteer.
- 3. As a union representative, an employee attends an evening meeting to develop and sign an Agility Work Plan.

For assistance and clarification on these matters, please contact your Labor Relations Officer.

## GENERAL COMMONWEALTH INFORMATION REQUIREMENT

No PennDOT employee can use the information contained in this chapter for the purpose of superceding any Commonwealth or Department policies and procedures. Purchasing and contracting activities involving Commonwealth funds and all expenditures and practices must adhere to Commonwealth policies. Where applicable, this chapter incorporates such policies and procedures. Questions about the use of the Agility concept for activities that are not covered in this chapter should be directed to the Agility Division, the district office, or the responsible program area.

#### 23.13 ZIPY PAYROLL

County Maintenance Office staff are required to complete a ZIPY Payroll for contracted services

payroll information, using appropriate codes, just as if the work was performed by a paid contractor. All ZIPY payroll information must be entered in time to meet the Bureau of Maintenance and Operations' fiscal year deadline. The fiscal year closeout occurs on the fourth working day of July. Anything entered before that date will be counted and anything entered after that date is irrelevant to the previous fiscal year.

#### MARKETING THE AGILITY PROGRAM

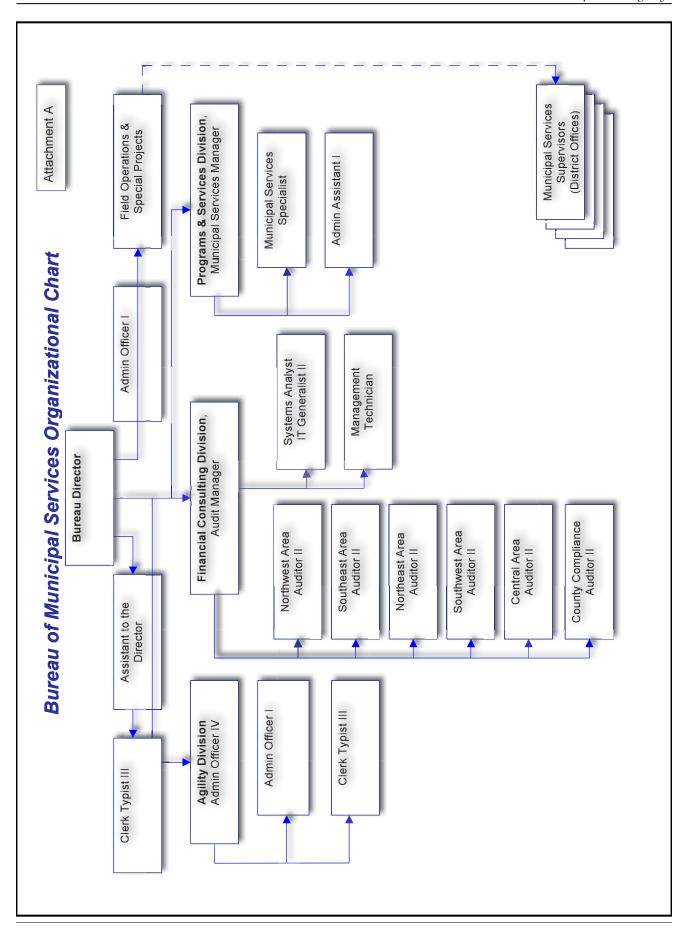
Marketing is the process of planning and executing the conception, pricing, promotion, and distribution of ideas. This process creates exchanges of goods and services that satisfy individual and organizational objectives.

The following activities are just some of the ways that you can market the Agility Program. Union employees are an integral part of any marketing outreach plan:

- a. Personally contact every municipality and promote Agility with ENTHUSIASM
- b. Attend a township meeting to explain the concept of Agility
- c. Send a list of all active Agility service exchanges to all municipalities each month
- d. Send the <u>Agility Diges</u>t to municipalities
- e. Encourage media coverage where possible
- f. Send invitations to individuals and municipalities inviting them to attend Customer Advisory Board meetings
- g. Use advertising activities for the Agility Program as one immediate way for the partner to compensate PennDOT
- h. Do satisfaction surveys including telephone and person-to-person calls

i. Directly mail letters to a targeted audience

j. Use the Internet Web Page to advertise the program and encourage partners to "visit" the website regularly





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	AGREEMENT NO.	
Effective Date:	FEDERAL ID NO.	
(DEPARTMENT will insert)		

# AGILITY AGREEMENT (Attachments A and B)

1) THIS AGREEMENT is made and entered into by and between the Commonwealth of Pennsylvania, acting through the Department of Transportation, ("DEPARTMENT") and the following public procurement unit(s) as defined in the Commonwealth Procurement Code, 62 Pa. C. S. § 101, et seq., ("PARTNER(S)").

Partner:	Federal ID No.:
City:	County:

- 2) NOW, THEREFORE, in accordance with the Terms and Conditions of Attachment A, attached to and made a part of this Agreement, the parties, with the intention of being legally bound, agree to perform those activities to be set forth in the Agility Work Plan which, upon completion by the parties, will be attached to and made a part of this Agreement.
  - a. Attachments B, which list the services that may be performed by the parties, is made a part of this Agreement
  - b. Modifications to the services to be performed as identified in the Agility Work Plan may be made at any time during the term of this Agreement by execution of an Agility Agreement Amendment that is signed by authorized agents for both/all parties involved.
- 3) This Agreement shall be effective for five years, beginning on the date noted in the upper left hand corner, unless terminated sooner for cause upon thirty (30) days' written notice by either party to the other, at which time all obligations shall cease.

			Attachment B
			MS-1
	AGREEMENT	NO	
IN WITNESS WHEREOF, the partie written.	es have executed this agreen	ent on the date fi	rst above
		TH OF PENNSYL OF TRANSPORT	
	BY Secretary of Transpo or designee	ortation Date:	
		Name of Partner)	
ATTEST:	RV		
Title: Date:	Title:	Date:	
APPROVED AS TO LEGALITY AND	D FORM:		
BYfor Chief Counsel			
for Chief Counsel	Date:		
FUNDS COMMITMENT DOC. NO.: Certified Funds Available Under			
GL ACCOUNT:Amount \$:N/A			
BYfor Comptroller	Date:		

Attachment B Rev. 01/09 MS-1

### AGILITY AGREEMENT TERMS AND CONDITIONS

NOW, THEREFORE, the parties, in consideration of the mutual promises set forth below, with the intention of being legally bound, agree as follows:

- 1. The PARTNER, using its own personnel and equipment owned or leased by it, or materials owned by it or supplied by others, shall provide the maintenance activities identified in the Agreement in quantities determined and specified on individual work orders to be of equal value to the maintenance activities provided by the DEPARTMENT under this Agreement. The PARTNER shall perform all maintenance activities in accordance with applicable provisions of the most current version of the DEPARTMENT's Publication No. 408, Specifications, and its amendments and supplements; the policies and procedures set forth in the most current version of the DEPARTMENT's Publication No. 113, MORIS Highway Maintenance Foreman's Manual, and its amendments and supplements; and all applicable provisions of the most current version of the DEPARTMENT's Publication No. 213, Work Zone Traffic Control Guidelines, and its amendments and supplements and Publication No. 212, Official Traffic Control Devices, and all amendments thereto. These publications and regulations are all incorporated by reference as though physically attached to this Agreement. The PARTNER's (s') provision of these maintenance activities on state highways shall serve as consideration for the DEPARTMENT's provision of maintenance activities which it is providing under this Agreement on the PARTNER's (s') roads.
- 2. The DEPARTMENT, on state and local highways, shall provide the maintenance activities identified in the Agreement in quantities determined and specified on individual work orders to be of equal value to the maintenance activities provided by the PARTNER(s) under this Agreement in good workmanlike manner. The DEPARTMENT shall use its own personnel and equipment owned or leased by it, and/or materials owned by it or supplied by others and shall perform these maintenance activities in accordance with applicable provisions of the most current version DEPARTMENT's Publication No. 408, Specifications, and its amendments and supplements; the policies and procedures set forth in the most current version of the DEPARTMENT's Publication No. 113, MORIS Highway Maintenance Foreman's Manual, and its amendments and supplements; and all applicable provisions of the most current version of the DEPARTMENT's Publication No. 213, Work Zone Traffic Control Guidelines, and its amendments and supplements and Publication No. 212, Official Traffic Control Devices, and all amendments thereto. These publications and regulations are all incorporated by reference as though physically attached to this Agreement. In the alternative, if the PARTNER(s) has (have) its (their) own ordinances, specifications, standards, manuals, criteria, policies or procedures relating to highway maintenance, and the applicable provisions of these documents are stricter than those found in the DEPARTMENT's publications listed above, the DEPARTMENT shall follow the municipal documents in providing the maintenance activities on highways under the jurisdiction of the affected PARTNER(s). DEPARTMENT's provision of these maintenance activities on municipal roads shall

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serve as consideration for the PARTNER's (s') provision of maintenance activities that it is providing under this Agreement on state highways.

- The DEPARTMENT and the PARTNER(s) agree, acknowledge and understand that each 3. party undertakes its responsibilities independently and that its employees or lessors shall not be considered employees of the other party for purposes of undertaking activities under this Agreement. The DEPARTMENT shall not be liable, nor shall it indemnify, defend, or save harmless the PARTNER(s) for the negligent acts of the DEPARTMENT's employees or lessors during the undertaking of, or resulting from the undertaking of, activities under this Agreement. The PARTNER(s) shall not be liable, nor shall it (they) indemnify, defend, or save harmless the DEPARTMENT for the negligent acts of the PARTNER's (s') employees or lessors during the undertaking of, or resulting from the undertaking of, activities under this Agreement.
- Activities undertaken by any party under this Agreement on another party's roadways or 4. other property shall be subject to inspection by the duly authorized representatives of the other party within sixty (60) days of completion. If the inspection establishes that certain activities are not in general conformance with the specifications, policies, and procedures, of the receiving party or have not been undertaken and completed in a good and workmanlike manner, the party that has performed the activity shall correct or re-perform it, as necessary, to the satisfaction of the other party. The parties are not obligated to conduct an inspection program. Any party, at its complete discretion, may conduct spot inspections or inspections of a particular maintenance activity being preformed within its jurisdiction by another party.
- 5. The following designated contract provisions are hereby incorporated by reference as if physically attached to this Agreement:
  - Commonwealth Nondiscrimination/Sexual Harassment Clause dated June 30, 1999.
  - Contractor Integrity Provisions dated December 20, 1991.
  - Provisions Concerning the Americans with Disabilities Act dated January 16, 2001.
- This document may be executed by the parties' signatory in counterpart. Execution in 6. counterpart shall be deemed to have the same force and effect as simultaneous execution; and all counterparts shall together constitute a single Agreement.
- 7. The following conditions apply to services that the Department wishes to receive:

- a. Services—The Department cannot accept a service if there is a state-wide or local services contract with a private vendor for the service unless:
  - The contract is amended, upon concurrence by all parties to the contract, with language to allowing the Department to obtain service/supply from another source; or

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2. The vendor(s) cannot provide the service or equipment when requested. The vendors MUST be contacted at the time a work plan is generated to verify that the vendor(s) cannot provide the equipment/service requested.

- b. **Training**—Training must be for appropriate maintenance related training or for subjects offered by Transportation University, but are not available when needed. Attach out service forms and approvals to Work Plan.
- Training not allowed—The following training will not be allowed under any circumstances:

#### **2** Computer training

- d. Meals—If the other party is providing any meals in conjunction with meeting rooms, Form OS-58 (5-98), Donation of Excess Prepared Food, must be attached to the Agreement. However, if there is a local contract in place for provision of meals to the Department, the Department cannot accept meals from that party unless the conditions set forth above in 7.a. are met.
- e. **Materials**—The Department can accept materials outright, except for materials that are under a statewide contract. However, if the materials are being provided incidentally to the performance of a service, the prohibition against accepting materials that are under a statewide contract does not apply. Furthermore, any materials provided incidentally to the performance of a service shall be considered part of the service.
- 8. The following conditions apply to services that the Department wishes to provide:
  - a. Materials—The Department cannot provide materials, other than signs, described below, outright. Materials may be included as part of a service normally performed with Department forces so long as the overall purpose of the activity is the performance of the service and the materials are being provided incidentally thereto.
  - b. Signs—The Department will provide signs within MORIS Group No. 16 outright. If the signs do not fall within this grouping, they would be considered surplus and must have the DGS green tag approval form attached.
  - c. **Surplus**—If materials being included as part of a service are surplus (e.g., guiderail or pipe), DGS green tag approval form for surplus materials procedures must be attached and the Agreement must refer to the DGS surplus procedures.

01/09



### Agility Services – Attachment B

SERVICE
Roads - Unpaved
Shaping
Re - stabilization
Dust Palliative - Bituminous/Calcium Chloride/Other
Dust Palliative - Spot
Patch/Base Repair
Roads - Paved
Patching - Manual
Patching - Manual (Emergency)
Patching - Manual - Pipe Trenches
Patching - Layered - Including Patch Machine
Patching - Mechanical - Tow Paver
Patching - Mechanical Mixer Paver
Patching - Mechanical - Paver Finisher
Patching - Edge - Mechanical
Surface Treatment - Mixer Paver
Surface Treatment - Mixer Paver - Pre Hauling
Surface Treatment - Liquid Bituminous - Mechanical
Surface Treatment - Sand Bleeding Roads
Surface Treatment - Liquid Bituminous - Prehauling
Surface Treatment - Plant Mix - Paver Finisher
Base/Subbase Repair - Flex. Base - Light Duty
Base/Subbase Repair - Flex. Base - Heavy Duty
Base/Subbase Repair - Rigid Base
Base/Subbase Repair - Widener
Skin Patching - Liquid Bituminous - Manual
Skin Patching - Liquid Bituminous - Mechanical
Skin Patching - Liquid Bituminous - Manual Distribution & Spray Wand
Skin Patching - Prehauling
Crack Sealing - Bituminous Surface
Leveling - Tow Pav/Pav Finish - Mechanical
Leveling - Mixer Paver - Mechanical
Leveling - Mixer Paver - Prehauling
Milling - Bituminous Surfaces
Spot Milling Only
Recycling – Bituminous Surfaces
Slurry Seal and Ralumac

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ERVICE
Roads – Paved (Continued)
Surface Treatment - Plant Mix – Paver, 1 1/2
Surface Treatment - Plant Mix - ID 3
Pavement Widening BCBC - Mechanical
Pavement Widening Recycled Material - Mechanical
Concrete Patching - Full Depth
Concrete Patching - Spalls
Joint Sealing Concrete Roads
Joint Sealing Concrete Roads - Pavement/Shoulders Separation
Stockpile Aggregate
Minor Risk Management/Safety
houlders – Unpaved and Side Approaches
Grading - Mechanical
Stabilization - Add Material - Mechanical
Stabilization - Prehauling
Dust Pallative Bituminous or Calcium Chloride
Cutting - Belt Loader
Cutting - Front End Loader
Upgrading - Paving Mechanical
Stabilization - Add Material - Manual
harden Danid and Cida America
houlder – Paved and Side Approaches
Patching - Manual
Patching - Manual Patching - Mechanical - Plant Mix
Patching - Manual Patching - Mechanical - Plant Mix Surface Treatment - Plant Mix
Patching - Manual Patching - Mechanical - Plant Mix Surface Treatment - Plant Mix Surface Treatment - Mechanical - Liquid Bituminous
Patching - Manual Patching - Mechanical - Plant Mix Surface Treatment - Plant Mix Surface Treatment - Mechanical - Liquid Bituminous Surface Treatment - Liquid Bituminous - Prehauling
Patching - Manual Patching - Mechanical - Plant Mix Surface Treatment - Plant Mix Surface Treatment - Mechanical - Liquid Bituminous Surface Treatment - Liquid Bituminous - Prehauling Driveway Adjustment
Patching - Manual Patching - Mechanical - Plant Mix Surface Treatment - Plant Mix Surface Treatment - Mechanical - Liquid Bituminous Surface Treatment - Liquid Bituminous - Prehauling Driveway Adjustment Base/Subbase Repair - Light Duty
Patching - Manual Patching - Mechanical - Plant Mix Surface Treatment - Plant Mix Surface Treatment - Mechanical - Liquid Bituminous Surface Treatment - Liquid Bituminous - Prehauling Driveway Adjustment Base/Subbase Repair - Light Duty Base/Subbase Repair - Heavy Duty
Patching - Manual Patching - Mechanical - Plant Mix Surface Treatment - Plant Mix Surface Treatment - Mechanical - Liquid Bituminous Surface Treatment - Liquid Bituminous - Prehauling Driveway Adjustment Base/Subbase Repair - Light Duty Base/Subbase Repair - Heavy Duty Skin Patching - Manual - Liquid Bituminous
Patching - Manual Patching - Mechanical - Plant Mix Surface Treatment - Plant Mix Surface Treatment - Mechanical - Liquid Bituminous Surface Treatment - Liquid Bituminous - Prehauling Driveway Adjustment Base/Subbase Repair - Light Duty Base/Subbase Repair - Heavy Duty
Patching - Manual Patching - Mechanical - Plant Mix Surface Treatment - Plant Mix Surface Treatment - Mechanical - Liquid Bituminous Surface Treatment - Liquid Bituminous - Prehauling Driveway Adjustment Base/Subbase Repair - Light Duty Base/Subbase Repair - Heavy Duty Skin Patching - Manual - Liquid Bituminous Skin Patching - Mechanical - Liquid Bituminous
Patching - Manual Patching - Mechanical - Plant Mix Surface Treatment - Plant Mix Surface Treatment - Mechanical - Liquid Bituminous Surface Treatment - Liquid Bituminous - Prehauling Driveway Adjustment Base/Subbase Repair - Light Duty Base/Subbase Repair - Heavy Duty Skin Patching - Manual - Liquid Bituminous Skin Patching - Mechanical - Liquid Bituminous Skin Patching - Mechanical - Liquid Bituminous
Patching - Manual Patching - Mechanical - Plant Mix Surface Treatment - Plant Mix Surface Treatment - Mechanical - Liquid Bituminous Surface Treatment - Liquid Bituminous - Prehauling Driveway Adjustment Base/Subbase Repair - Light Duty Base/Subbase Repair - Heavy Duty Skin Patching - Manual - Liquid Bituminous Skin Patching - Mechanical - Liquid Bituminous Skin Patching - Mechanical - Liquid Bituminous Skin Patching - Prehauling

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SERVICE
Drainage, Cleaning, Repair or Replacement
Cleaning - Inlet/Endwall/Basin - Manual/Mechanical
Cleaning - Inlet - Clogged
Cleaning - Ditch/Drain Chan - Mechanical
Cleaning - Ditch/Drain Chan - Manual
Cleaning - Swales - Mechanical
Cleaning Pipes & Culverts
Install Rock Lining
Replace Inlet & Endwall - Manual
Replace Pipes and Culverts under 36" - Mechanical
Replace Pipes and Culvert 36" over - Mechanical
Replace/Install Parallel Pipe
Pipe Extension
Replace Pipes and Culverts - Pipe Hauling
Repair/Replace Structure under 8' Length
Repair Pipe and Culvert
Install Subsurface Drain (U-Drain)
Roadway Section Restoration
Side Dozing - Mechanical
Repair/Install Gabions/Retaining Walls
Repair Sink Holes/Slides - No Storms - Slope Removal
Graffiti Removal
Damage and/or Disaster Restoration
Major Slides
Major Structure Damage
Patrol
Rain or Wind Patrol
Maintenance and Repair
Repair/Replace - Bridge over 8' Length
Clean/Flush - Deck
Clean/Flush - Bearing and Super Structure
Clean/Flush - Open Grid
Painting - Spot
Painting - Full

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Bridge, Maintenance and Repair (continued) Seal - Joint (Liquid Only)	
Repair Joints	
Repair/Replace - Guiderail/Median Barrier/Parapet	
Lubricate - Bearings	
Repair/Replace - Bearings	
Repair/Replace - Pedestal/Seat	
Repair/Replace - Approach Slabs	
Repair/Replace - Deck	
Repair/Replace - Sidewalk/Curb	
Repair/Replace - Deck Drainage	
Repair/Replace Superstructure Member	
Repair/Replace - Truss Member	
Repair/Replace - Backwalls	
Repair/Replace - Substructure	
Maintenance - Underpinning	
Maintenance - Rejointing	
Repair/Replace - Slopewalls	
Repair/Replace - Culverts	
Erosion Protection - Stream Bed/Rock/Defl	
Erosion Protection - Scour Hole Backfull	
Erosion Protection - Channel Cleaning	
Const/Install - Temporary Supports	
Repair/Replace - Slabs/Box Culvert	
Other - Bridge Activities	
Tunnel Maintenance & Repair	
Wash/Clean - Various	
Traffic Service - Various	
Light System Service - Various	
Electro - Mechanical Equipment Maintenance	
Other - Tunnel Activities	
Special Charges	
Hauling Nondisabled Equipment-Lowboy Oper, Only	

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### Agility Services – Attachment B

Snow Season Preparation, Snow Removal & Ice Control	
Plow Snow, Spread Anti-Skid, Chemical or Plow/Spread	
Anti-icing Anti-icing	
Snow removal - Non-storm activities	
Winter Services	
Pavement Marking	
Traffic Line Painting - Mechanized	
Pavement Marking - Hand Operated Machine	
Raised Pavement Markers	
Eradicate Paint Lines	
Thermo Plastics	
Repair paint machines - Crew only	
Other - Pavement Marking Activities	
Signs	
Construction Detour & Other Temporary Signs	
Delineators, Hazard	
Sign Review	
Permanent Signs under 16 Square Feet	
Permanent Signs 16 Square Feet and over	
SR & Segment Markers	
Other - Sign Activities	
Guiderail, Median Barrier and Impact Attenuation Devices	
Guiderail Repair - Mechanical - Cable	
Guiderail Repair - Mechanical - w/beam	
Guiderail Repair/Replace - Manual	
Guiderail Removal	
Other - Guiderail, Median Barrier & Impact Attenuation Device	
Lighting	
Service - Highway, Bridge & Sign Lighting Systems	
Traffic Services – Incidental Services	
Sweeping	
Other - Incidental Service Activities	
Deer Removal	•

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### Agility Services - Attachment B

Springs	
Service Special Payments	
In-Service Training	
Condemnations	
Administration	
Meeting Facilities	
Meeting I denities	
Inspection - Surveys - Etc Dept. Forces	
Material & Construction Inspection & Soils Testing	
Surveys, Staking, etc.	
Laboratory Tests	
A -224. D J21.	
Agility Roadside Vegetation Management	
Mowing	
Mowing - Mechanized	
Plant Growth Reg (PGR's)	
Herb Application - Non-select	
Herb Application - Broadcast Foliage	
Broadcast Growth Regulator (Fosamine)	
Brush & Select Tree Thin & Removal - Manual	
Brush & Select Tree Thin & Removal – Mechanical 1	
Herbicide Basal Bark & Dorman Stem	_
Seed & Soil Supplement	_
Wildflower Planting	
Maintaining Beautification Plots	
Other Vegetation Management & Scenic Feature Act.	
Public Service Facilities	
Maintenance of Interstate all Weather Roadside Rest	
Maintenance of all Other Roadside Rests & Table Sites	
Roadside Litter Pickup & Debris Removal	
Tire Casting Removal	
Other - Public Service Facility Activities	
Outer Tueste Service Fuentity Henrities	
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### Agility Services – Attachment B

Maintenance of l	d Operations of Buildings and Grounds	
Maintenance of	Grounds	
Repair or Alterat		
Repair or Alterat		
Repair of Afficial	ions to Grounds	
<b>Agility Special</b>	Charges	
General Mainte	nance	
Services on Bone		
Inspect Bonded		
Exchange Equip	ment	
Exchange Mater		
Engineering Serv		
Inspection Service	es	
Labor, Equipmen	pered Equipment  t & Material for Dispersion of Fuel, Oil, Etc.  rity and Emergency Preparedness	
Homeland Secur		
Design Services	1.	
Engineering Gra Other Costs	DNICS	
	acception.	
Construction Co.	igestion	
	tion or Reconstruction	
Installation of Cu		
Interspetion Safe	y and Improvement	
intersection said		
intersection sale		

DE IT RESOLVED, by the authority of the	(Name of Governing Body)
	(Name of Governing Body)
of the(Name of Partner)	(County)
County, and it is hereby resolved by authority of	of the same, that the (Designate official title)
	(Designate official title)
of said Partner be authorized and directed to si	ign the attached Agreement or Amendment on its
pehalf.	
Chair.	
ATTEST:	
	(Name of Partner)
	By: (Signature & designation of official title)
Signature & designation of official title)	(Signature & designation of official title)
Ι,	Official Title)
(Name)	(Official Title)
	ing body and Partner) , do
(Name of govern	ing body and Partner)
nerby certify that the foregoing is a true and con	rrect copy of the Resolution adopted at a regular
meeting of the	held
(Name of govern	ing body)
he of 20	
Date:	
	(Signature & designation of official title)
Note: A congrete Desclution must be some	lated and included for each neutron listed as a
Note: A separate Resolution must be comploarty in this Agreement.	leted and included for each partner listed as a

Agility Work Plan l					ttachment C Rev. 1/0
Agility Agreement					
Partner Name:					
WBS Element:					
Services/ Resources Received from Partner	Quantity	Unit Price	Total	Estimated Date of Completion	Completion Da Initials/Dates of Work Approve
TOTALS:					
Services/ Resources Provided to Partner	Quantity	Unit Price	Total	Estimated Date of Completion	Initials/Dates of Work Approva
TOTALS:					
Accepting:					
Signature, PennDOT		Title		Date	<del> </del>
Signature, Partner		Title		Date	
Signature, AFSCME		Title		Date	
Signature, AFSCME		Title		Date	

	Agility File Checklist
Agreement No. Partner Name:	
□ A	gility Agreement – fully executed
□ W	ork Plan – fully executed by PennDOT, partner and AFSCME O All signatures on Work Plan – PennDOT, Partner and 2 AFSCME
٠	<ul> <li>WBS Element obtained for Work Plan</li> <li>Form completed and forwarded to District Office</li> <li>WBS Element received from District Office</li> </ul>
٠	Cost Estimate Work Sheets completed by PennDOT
٠	Supporting Documents on file  O Plant Maintenance O Costing Work Sheets, District/County Costs, etc
	Estimated Date of Work on Agility Work Plan  • Estimated date of work included in yearly plan
٠	Notification/Create Work Order  O RP – Work Performed by PennDOT  RR – Work Received from partner
٠	PennDOT contact partner when work is to begin O Documented on Communication Log
٠	Date work was completed by PennDOT and included on Agility Work Plan  o Partner accepted completed work by PennDOT  o Notification of acceptance included in file  o Print out from Plant Maintenance acceptance form
٠	Partner notified PennDOT when work was to begin O Documented on Communication Log
٠	<ul> <li>Date work was completed by partner and included on Work Plan</li> <li>PennDOT accepted completed work by Partner</li> <li>Notification of acceptance included in file</li> </ul>
	ZIPY payroll completed and entered
٠	Financial analysis of work completed by PennDOT  O Services provided by PennDOT equal to or less than value by partner  Expenditure Analysis documented in file
٠	Work Plan closed out with all supporting documents
٠	SAP form to close out WBS Element

PUB 23 (7-10) Glossary

#### **GLOSSARY**

ABRASION - Wearing away by friction.

ANTI-SKID - Graded granular material used to reduce or prevent slipperiness on road surfaces.

ACIDITY - The degree of strength of an acid. A liquid is said to be acidic if it has a pH factor less than 7.

ADHESION - The force by which one substance clings to another of a different nature.

ADDITIVE - A substance or agent added in small amounts to a basic ingredient of a mixture prior to mixing.

ADMIXTURE - A substance added to a mixture to give a desired result, such as pozolyth in concrete, anti-stripping agents in bituminous mixes, calcium chloride or sodium chloride to clay, etc.

ALKALINITY - The degree of strength of an alkali. A liquid is said to be alkaline if it has a pH factor greater than 7.

ALLIGATORING - A large number of cracks or checks in bituminous surfaces extending over areas of variable proportions and resulting from a yielding of wet subgrade due to live loads or from drying out of the surface.

ASPHALT - A bituminous substance, soluble in gasoline or naphtha; used in liquid form for maintenance work in crack and joint sealing and to cement together and coat the surface of mineral aggregates.

BACKFILL - Material used to replace or the act of replacing material removed during construction; also may denote material placed or the act of placing material adjacent to structures.

BASE COURSE - The layer or layers of specified or selected material of designed thickness placed on a subbase or a subgrade to support a surface course.

#### **BINDER**

- 1. Materials used to stabilize or cement together loose soil or aggregate.
- 2. An intermediate course between a base course and an asphalt surface course usually consisting of a coarse graded aggregate asphaltic concrete.

BITUMEN - Any of several flammable substances (hydrocarbons) which may be liquid, semiliquid or solid. For road maintenance work, "bitumen" commonly means any of several road oils, either asphalt or tar.

BITUMINOUS CONCRETE - A designed combination of dense graded mineral aggregate filler and bituminous cement mixed in a central plant, laid and compacted while hot.

BLEEDING - The accumulation of excess bituminous material on the roadway surface, caused by heat or the use of excessive quantities of bituminous material in construction, patching or resurfacing.

BLOWUP - Displacement of rigid-type pavement by a combination of vertical and horizontal stresses due to expansion. Generally, a blow-up is a heave in a concrete or brick pavement caused by pavement expansion from excessive heat, sometimes resulting in shattering or displacement of the road surface.

BORROW - Suitable material from sources outside the roadway prism, used primarily for embankments.

BRIDGE - A structure including supports erected over a depression or an obstruction such as water, highway or railway, and having a track or deck for carrying traffic or other moving loads and having an opening measured along the center of the roadway of more than eight feet between supports.

BUDGET - A plan showing estimates of costs and revenue for proposed activities for a given period.

CALCIUM CHLORIDE - Deliquescent (melting) chemical flakes used to lay dust, to stabilize gravel surfaces, to accelerate the curing of portland cement concrete and as an aid in ice control.

CAMBER - The upward curvature given to a beam or superstructure in order to compensate for the downward curvature resulting from the application of the load.

#### **CHARGES**

- 1. DIRECT Costs which can be identified specifically with a product, service or activity.
- 2. INDIRECT Costs which cannot be identified readily with a product, service or activity, the distribution of which must be made by proration.

CHECK-DAM - A structure, usually made of stone or concrete, placed in a water course to retard the flow of water, thereby reducing erosion.

Glossary PUB 23 (7-10)

CHIPS - Small, angular fragments of stone containing little or no dust.

COAL TAR - A bitumen made by distilling bituminous coal at high temperatures.

COLD PATCH - A mixture of bituminous material and aggregate used for general winter maintenance pavement patching and applied at below normal temperatures.

CONCRETE - A mixture usually composed of portland cement, an aggregate of hard, inert particles and water.

CONTRACT - The written agreement between the contracting agency and the contractor setting forth the obligations of the parties thereunder for the performance of the prescribed work.

CONTRACTOR - The individual, partnership, firm, corporation or any acceptable combination thereof, or joint venture, contracting with the highway agency for performance of prescribed work.

CONTRACT ITEM - A specific unit of work for which a price is provided in the contract.

CONTRACT TIME - The number of working days allowed for completion of the contract.

COURSE - A layer of road material, separately compacted, used as a wearing surface or as a base for a wearing surface.

CREOSOTE - An oily liquid obtained by the distillation of wood or coal tar used as a wood preservative.

CRACK - A fissure or open seam not necessarily extending through the depth of the pavement.

CROWN - In tangent section of highway, the difference in elevation of the center of the road in relation to the outside edge of the road surface.

CULVERT - Any structure under the roadway with a clear opening of eight feet or less measured along the center of the roadway, not classified as a bridge.

CUTBACK - Bituminous material mixed with light, volatile, petroleum distillate to reduce viscosity and increase workability.

CUT SECTION - That part of the roadway which, when constructed, is lower in elevation than the original ground.

DEADMAN - A buried object serving as an anchor, such as cable guiderail guy anchors.

DECIDUOUS - Having leaves which are shed at the end of the growing season (as opposed to evergreen).

DELETERIOUS - Substances which are present in amounts that contaminate or cause inconsistent performance of the properties of a specified construction material; (ie., concrete, graded aggregate, bituminous mixtures.)

DELINEATOR - An indicator, such as a reflectorized button, flag, etc., used to improve night-time visibility on a highway.

DELIQUESCENT - Becoming liquid by absorbing moisture from the air.

#### **DENSITY**

- 1. The degree of consolidation or compactibility.
- 2. The ratio of weight to volume of a substance.

#### **DUST PALLIATIVE**

- 1. Any chemical, in flake form or in solution, used to lay dust (such as calcium chloride or sodium chloride).
- 2. Liquid bituminous material.

#### **ELEVATION**

- 1. Altitude; height in relation to sea level or any assumed datum.
- 2. A view on a plan drawing usually as seen from the front.

EMBANKMENT - A structure of soil or soilaggregate or broken rock between the embankment foundation and the subgrade.

EMERGENCY An unforeseen occurrence or combination of circumstances which calls for immediate action or remedy.

EMULSION - An asphalt emulsion is a suspension of extremely small droplets of asphalt coated with water in the presence of an emulsifying agent, which is usually a type of detergent.

ENCROACHMENT - Unauthorized use of highway right-of-way or easements as for signs, fences, buildings, etc.

EROSION - A slow wearing away of the surface by natural action of wind and water.

PUB 23 (7-10) Glossary

#### **EXCAVATION**

- 1. The act of taking out material.
- 2. The materials taken out.
- 3. The cavity remaining after materials have been removed.

EXPRESSWAY - A divided arterial highway for though traffic with full or partial control of access and generally with grade separation at major intersections.

FILL SECTION - That part of the roadway which, when constructed, is higher in elevation than the original ground.

FLASH POINT - That particular temperature at which a material gives off a flammable vapor in sufficient quantity to burn instantaneously at the introduction of a flame or spark.

FLEXIBLE PAVEMENT - A pavement structure which maintains intimate contact with and distributes loads to the subgrade and depends on aggregate interlock, particle friction, and cohesion for stability.

FLOW-LINE - The bed or lowest point of a stream or culvert that water flows over.

FOG SEAL - A thin application of bituminous material without cover aggregate.

FORCE ACCOUNT WORK - Prescribed work paid for on the basis of actual costs and appropriate additives.

FROST HEAVE - Displacement of pavement by an accumulation of ice crystals which builds up in the subgrade to the extent that the pavement is heaved up and badly distorted.

GORE - The area immediately beyond the divergence of two roadways, bounded by the edges of those roadways.

#### **GRADE**

- 1. The profile of the center of the roadway or its rate of ascent or descent.
- 2. To shape or reshape an earth road by means of cutting or filling.
- 3. To arrange according to size.

GRADE SEPARATION - A crossing of two highways, or a highway and a railroad, at different levels, or elevations.

GRADATION - A general term used to describe the composition by size of aggregate in a mixture. Gradation is expressed as the percentage of aggregate that will pass each of several size sieves.

GRADE CROSSING (Railroad) - The intersection of a highway and a railroad at the same elevation.

GRADE SEPARATION - A structure which provides for highway traffic to pass over or under another highway or the tracks of a railroad.

GRADING - Planing or smoothing the surface of various parts of the road by means of motor-driven equipment designed for this purpose; (ie, motor grader.)

GRAVEL - Aggregate composed of hard, durable stones or pebbles, crushed or uncrushed, often intermixed with sand.

GROUT - Mortar, composed of sand, cement and water of such consistency that it can be worked easily.

GUNITE - A type of portland cement mortar "shot" into place by compressed air. The materials are mixed while being forced through a nozzle.

GUNITING - Application of a coating of mortar to a surface with a "cement gun"; the mortar is commonly known as gunite.

HEADWALL - A vertical wall (usually of concrete) at the end of a pipe constructed to prevent earth from spilling into the channel, and also to prevent erosion of soil at the pipe inlet.

HOT MIX - A general term used for hot plantmixed bituminous concrete and sheet asphalt mixtures which are manufactured and laid at temperatures ranging from 250° F and above.

IMPERVIOUS - A layer or bed of hard or waterproof material through which water will not move under ordinary hydrostatic pressure.

INVERT - The paved flow line of a pipe or culvert.

INVERTED EMULSION - A minute quantity of water surrounded by asphalt.

JOINTS - designed or designated vertical planes of separation used in placing concrete pavement to aid in contraction, expansion or construction.

LEVELING COURSE - The layer of material placed on an existing surface to eliminate irregularities prior to placing an overlaying course.

Glossary PUB 23 (7-10)

LOAM - Soil containing relatively even mixtures of the different grades of sand, silt and clay.

MACADAM - A layer of coarse, graded, angular mineral aggregate with a filler of fine aggregate, interlocked by compaction in bituminous material to form a bituminous paving mix.

MEDIAN - The portion of a divided highway separating the traveled ways for traffic in opposite directions.

MOISTURE CONTENT - The percentage, by weight, of water contained in soil or other material, usually based on the dry weight of that material.

MORTAR - In cement concrete a mixture of cement, sand and water.

MUDJACK - An operation that raises a section of concrete pavement by hydraulic on pneumatic pressure applied by forcing an approved slurry mortar under the section to be raised.

MULCH - Any organic matter such as leaves, straw, etc., used to protect plant material and surface soil from heat, cold and erosion and to conserve water.

NOXIOUS - Injurious, destructive, objectionable; as in "noxious weeds or odors".

ORGANIC - Consisting of, or containing, decayed or partially decayed plant and/or animal matter.

OUTCROP - The cropping out of a rock stratum; exposed at or near the surface of the ground.

#### OVERHAUL

- 1. The distance for which payment is made for haulage of excavated material when it is in excess of a specified distance of free haulage.
- 2. To examine thoroughly and make complete, extensive repairs.

PATCHING - Mending, repairing; especially, to repair a road surface.

PAVEMENT STRUCTURE - The combination of subbase, base course and surface course placed on a subgrade to support the traffic load and distribute it to the roadbed.

PERVIOUS - A layer of material, through which water will move under ordinary hydrostatic pressure.

pH FACTOR - The actual concentration of hydrogen ions in a solution. pH factors have a range from 0 to 14, with distilled water at 7. A pH factor less than 7 is acidic; a pH factor greater than 7 is alkaline.

PLANS - The contract drawings which show the location, character and dimensions of the prescribed work, including layouts, profiles, cross sections and other details.

PLASTICITY INDEX - The range of moisture content through which the soil material is plastic, expressed as the difference between the liquid limit and the plastic limit, which are expressed as a percentage of the weight of the completely dried soil sample.

PLUMB - Vertical.

POROUS - Full of pores; having many small openings through which liquids may pass.

PORTLAND CEMENT - A hydraulic cement consisting of compounds of silica, lime and alumina; so called because of its resemblance in color, when set, to the Portland stone of England.

#### **PREMIX**

- 1. To mix in a central mixing plant, or elsewhere, previous to placing.
- 2. Any prepared bituminous patching or surfacing material that can be applied either hot or cold.

PRIME COAT - An application of a low viscosity liquid bituminous material to coat and bind mineral particles preparatory to placing a base or surface course.

PROFILE - A longitudinal section of a highway, drainage course, etc., usually showing the grade.

PUGMILL - A type of mixer used for mixing bituminous paving materials.

PUMPING - the unintended movement of the roadway surface caused by unstable subsurface conditions amplified by normal or heavier than normal traffic loads.

RANDOM SAMPLE - A small part of a lot which is used to represent the whole, so chosen that each portion of the lot has an equal probability of being selected.

RAVELING - The progressive loosening and loss of the aggregate in the surface course of a road.

PUB 23 (7-10) Glossary

RED DOG - Burned refuse from coal mines having a reddish color.

REFLECTION CRACK - A crack appearing in a resurface or overlay caused by movement at joints or cracks in underlying base or surface.

REPAIR - To restore or mend, usually a more extensive operation than patching.

REPROCESSING - The working of an existing surface or shoulder material by scarifying, remixing with additional materials, then reshaping to prosper contour.

RESURFACING - The placing of one or more new courses on an existing surface.

RIGID SLAB - A section of portland cement concrete pavement bounded by joints and edges, designed for continuity of tensile stress.

RIGHT-OF-WAY - A general term denoting land, property or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

RIGID PAVEMENT - A pavement structure which distributes loads to the subgrade having as one course a portland cement concrete slab of relatively high bending resistance.

RIP RAP - The installation of stone to stabilize slopes and/or ditches to prevent erosion. Erosion control stone should meet the requirements of Form 408, Section 850 and the standard drawings.

ROADBED - The graded portion of a highway within top and side slopes, prepared as a foundation for the pavement structure and shoulder.

ROAD MATERIAL - Any road material, such as concrete, gravel, crushed stone, slag, etc., which is used for a wearing surface.

ROADSIDE - A general term denoting the area adjoining the outer edge of the roadway.

ROADWAY - The portion of a highway, including shoulders, for vehicular use.

RUMBLE SURFACE - A rough textured surface constructed for the purpose of causing the tires of a motor vehicle driven over it to vibrate audibly as a warning to drivers.

RUNOFF - The surface discharge or rate of discharge of a given watershed after a fall of rain or snow.

SAND (Size <#4 Sieve - >#200 Sieve) - Loose, single-grained material resulting from the natural disintegration of rocks or the crushing of rocks.

SATURATED SOLUTION - Combined in solution until there is no further tendency to combine. A solution is said to be saturated when sufficient soluble material has been added to a liquid to leave a portion of the material undissolved after being thoroughly stirred.

SCALING - Separated and flaking off; initial surface disintegration, as on concrete pavements.

SCREED - A long piece of wood or metal moved across the surface of newly placed concrete with a sawing motion to close and level the surface.

SEAL COAT - A thin treatment consisting of bituminous material, usually with cover aggregate, applied to a surface course. The term includes but is not limited to sand-seal, chip seal, slurry seal and fog seal.

SELECTED MATERIAL - Suitable native material obtained from roadway cuts or borrow areas or other similar material used for subbase, roadbed material, shoulder surfacing, slope cover or other specific purposes.

SERRATED - Having teeth or scalloped edges.

SET - To become firm or rigid; to lose plasticity.

#### **SHOE**

- 1. A bridge bearing device.
- 2. A mechanical device for regulating the height or clearance of a cutting edge above the road surface or ground.

SHOULDER - The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles for emergency use, and for lateral support of base and surface courses.

SIEVE - An apparatus with square openings used to separate various sizes of aggregates.

SILT - (#200 Sieve (75mm)) - Finely divided soil material which may appear cloudy when dry, but which breaks down easily and has a soft, floury feel when rubbed between the thumb and finger. Silt has little plasticity; when wet, the soil runs together readily.

SKEW - Oblique; not at right angles.

SKIN PATCH - A surface patch which is 2 inches or less in thickness.

Glossary PUB 23 (7-10)

SLUMP - The measure of consistency of the concrete determined by properly placing the concrete in a slump cone and measuring the slump.

SLURRY SEAL - A mixture a slow-setting emulsified asphalt, fine aggregate and mineral filler with water added to produce slurry consistency mixed in a traveling plant and spread through a squeegee screed.

SODIUM CHLORIDE - Common salt, used in stabilization of roads and in ice control (rock salt).

SPALLING - Chipping along the edges, as at joints in concrete pavement and structures, or on the surface.

SPECIFICATION - The compilation of provisions and requirements for the performance of prescribed work.

SPECIFIC GRAVITY - The ratio of the weight of any volume of a substance to the weight of an equal volume of water at 40°C; taken as a standard.

STABILIZATION - Modification of soils or aggregates by incorporating materials that will increase load bearing capacity, firmness and resistance to weathering or displacement.

STATION - A standard length of 100 feet measured along the centerline of a road or along a survey line.

STRAIGHTLINE DIAGRAM - A drawing which furnishes the following physical description of a highway:

- 1. Type of road including depth, width, composition, year built and subsequent improvements.
- 2. Cities, towns, municipalities and subdivisions.
- 3. Stations at the intersection of all roads, streets, highways and structures.
- 4. Description of all structures.

SUBBASE - The layers of specified or selected material of designed thickness placed on a subgrade to support a base course.

SUBGRADE - The top surface of a roadbed upon which the pavement structure and shoulders including curbs are constructed.

SUBSEALING - The process of correcting pumping at a joint by injecting hot bituminous material under the slab to fill voids and seal off the

source of water.

SUBSTRUCTURE - The foundation of a bridge below the level of the end supports.

SUPERELEVATION - The rise of the outer edge over the inner edge of the road surface at curves, expressed in feet per foot, for the purpose of counteracting centrifugal forces.

SUPERSTRUCTURE - The bridge structure above the level of the end supports.

SURFACE COURSE - One or more layers of a pavement structure designed to accommodate the traffic load, the top layer of which resists skidding, traffic abrasion and the disintegrating effects of climate. The top layer is sometimes called "Wearing Course".

SURFACE TREATMENT - An application of bituminous material and cover aggregate or thin plant mix (under 3/4 inch thickness) on an old pavement.

TACK COAT - An application of bituminous material to an existing surface to provide bond with a superimposed course.

TAR - A thick, brown-to-black viscous liquid derived from organic material such as coal, etc.

UNDERDRAIN - Porous concrete, perforated drain pipe or graded aggregate under a roadway or shoulder used to provide sub-surface and capillary drainage.

UNSTABLE - Subject to change; base material subject to frost heave or settlement.

VERTICAL CURVE - A curve laid out in a vertical plane instead of a horizontal plane.

VISCOSITY - The resistance of a fluid to flow. A measure of "thickness" of a fluid.

VOIDS - The empty spaces between particles in a substance or mixture.

VOLATILE - Evaporating readily. The substance in paint or in cutback asphalts that evaporates and causes the substance to "set".

WINDROW - Material deposited along the road in a continuous mound.