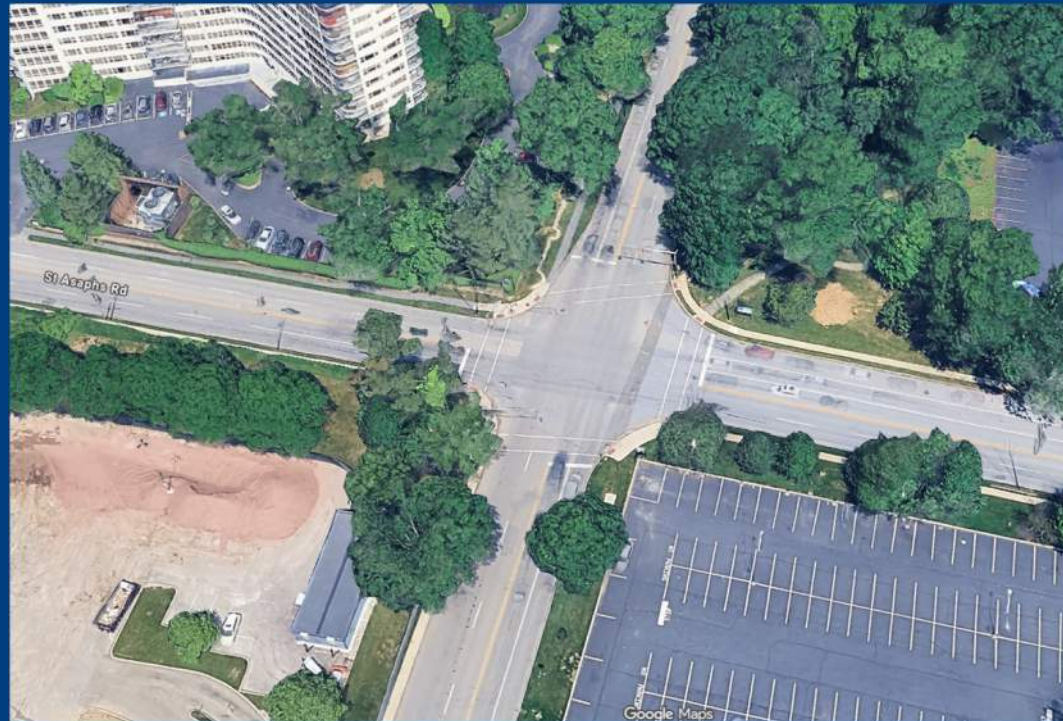


BELMONT AVENUE AND ST ASAPHS ROAD INTERSECTION IMPROVEMENT PROJECT ALTERNATIVES ANALYSIS



INTRODUCTIONS



- Nathan Parrish, P.E., Consultant Project Manager



- Michael P. Mastaglio, P.E., PTOE, Project Manager



- Andrew Gould, P.E., Project Engineer



WELCOME & AGENDA

Project Overview

Project Timeline & Purpose

Crash Data & Traffic Growth Scenario

Alternatives Discussion

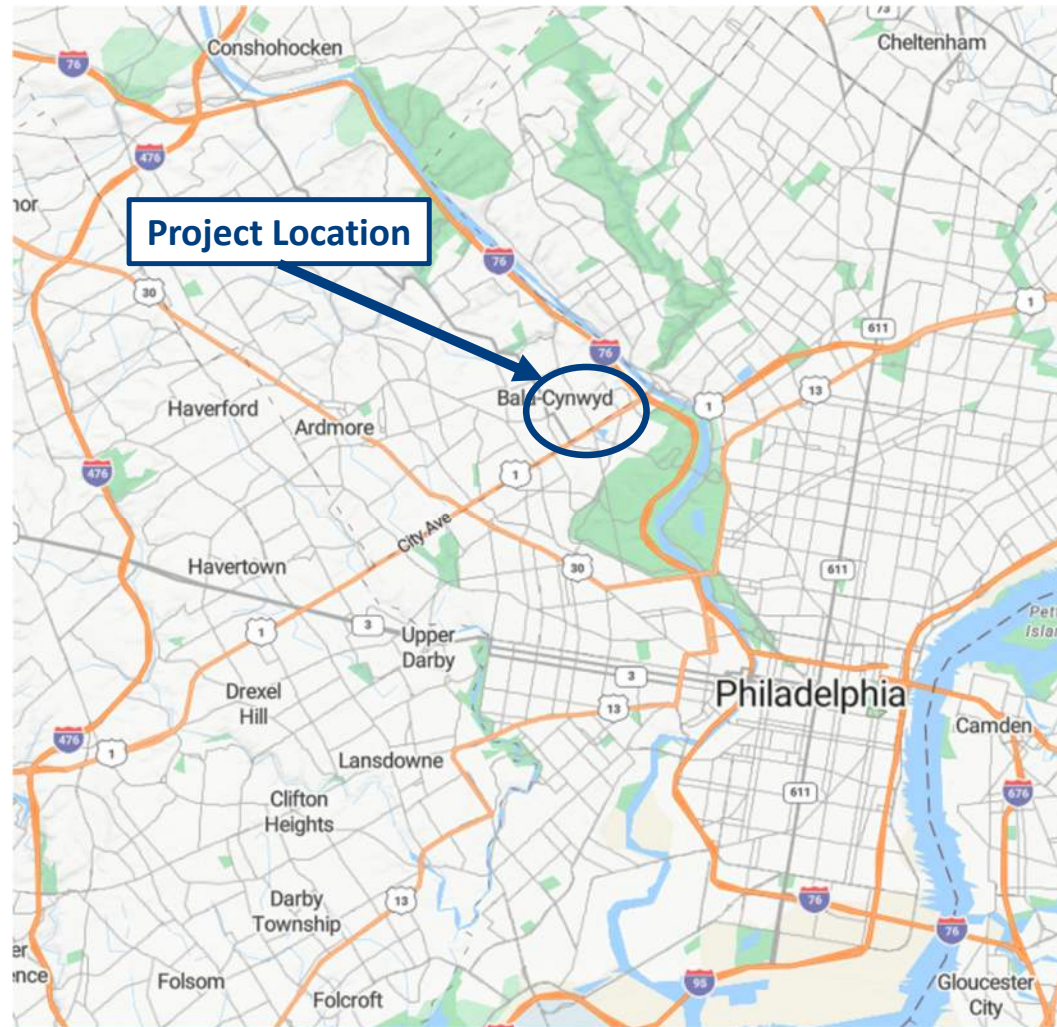
Decision Matrix

Next Steps

Questions and Answers



PROJECT OVERVIEW



PROJECT TIMELINE

Project Related Activities/Schedule

- | | |
|--|---------------------|
| • Preliminary Engineering | Fall 2021 – ongoing |
| • PennDOT Public Meeting | Spring 2024 |
| • Public Meeting Follow up (NCBC) | Spring 2024 |
| • PennDOT meeting with “working group” @ Fairmount | Fall 2024 |
| • Alternatives Analysis | 2025 |
| • PennDOT Public Meeting (Alternatives Analysis) | Fall 2025 |



PURPOSE & NEED

- Reduce the number and severity of potential crashes at the intersection (Belmont & St Asaphs Rd).
- Improve pedestrian connections and accommodate redevelopment in three of the four quadrants.



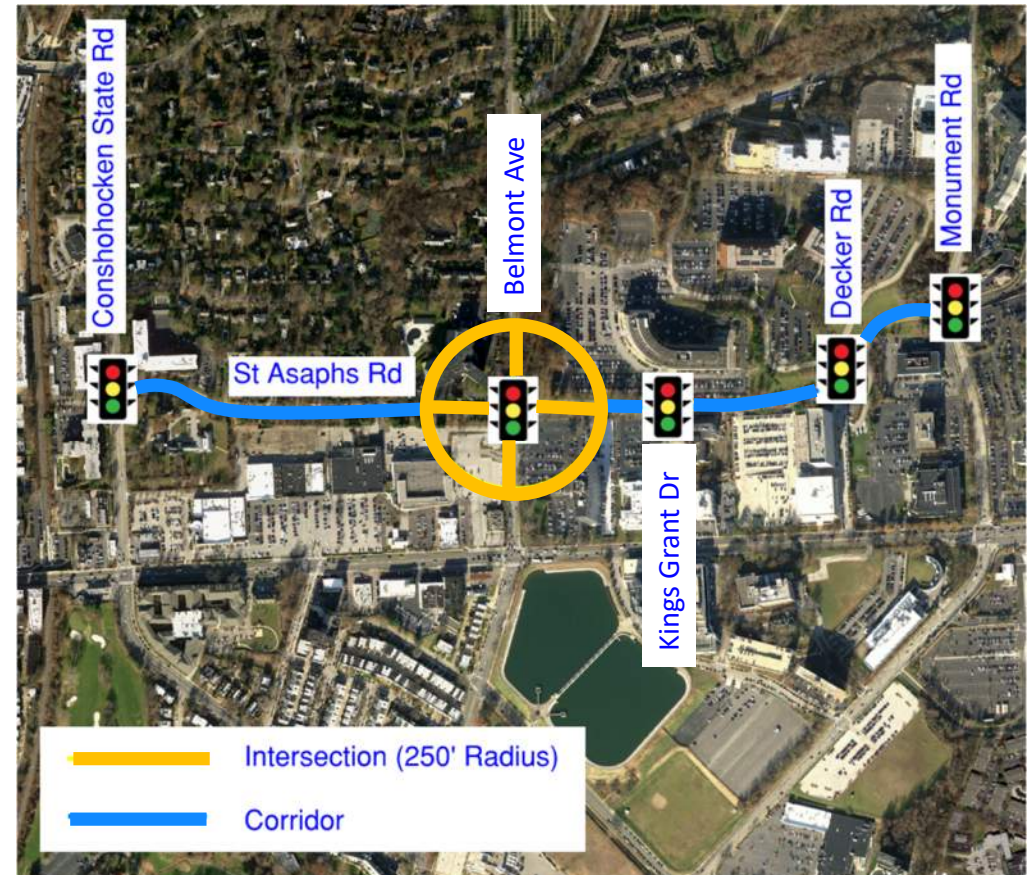
CRASH INFO

- Intersection (Belmont & St Asaphs Rd) (2020-2024) – **31 crashes**

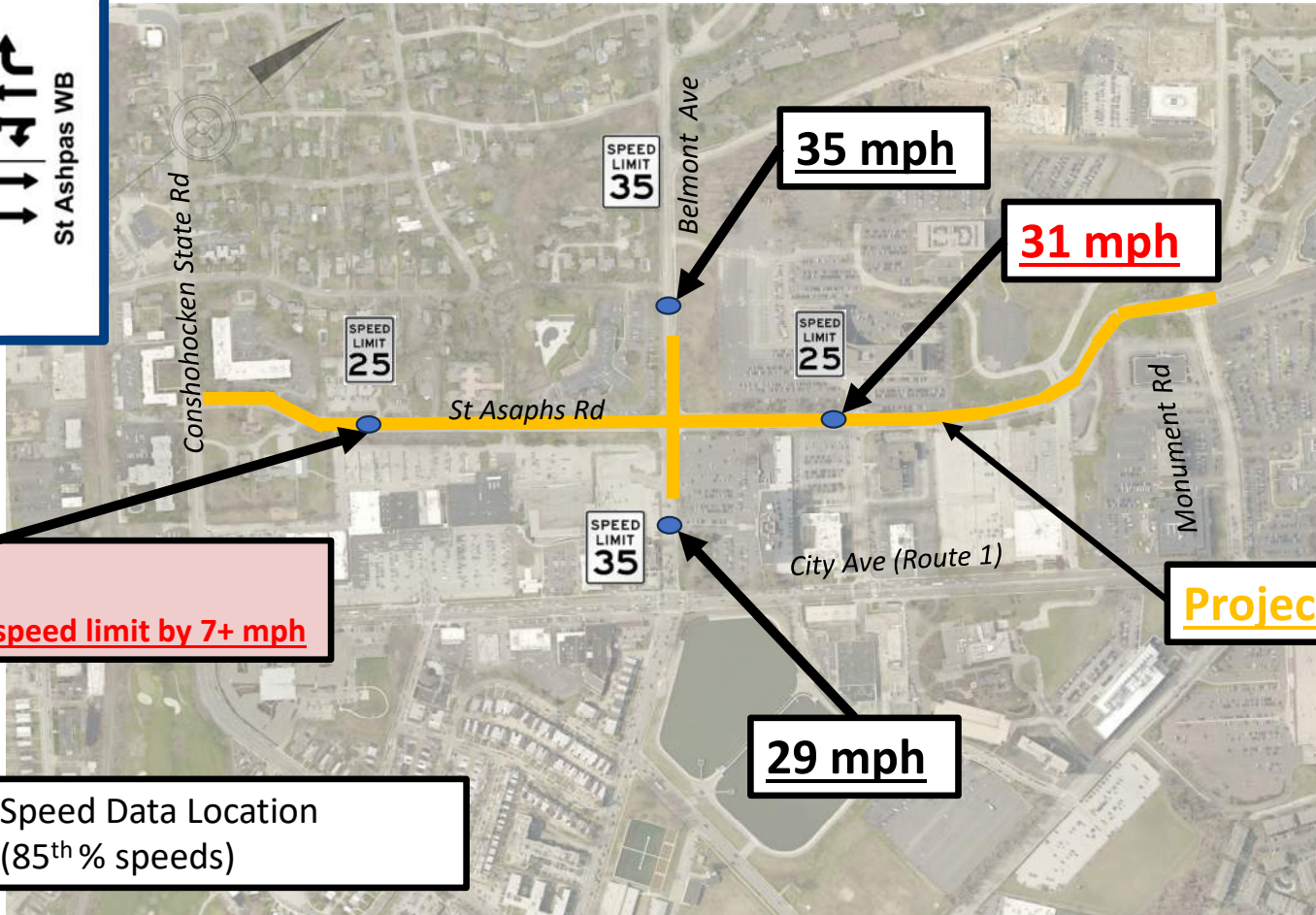
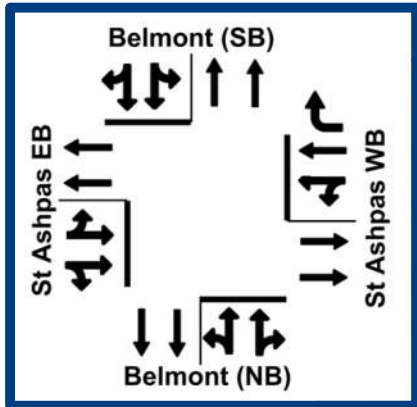
- 51% had suspected serious, minor or possible injury.
- 77% angle crashes.
- 81% no weather or environmental factors.

- St Asaphs Rd Corridor (2020-2024) – **35 crashes**

- 31% had suspected serious, minor or possible injury.



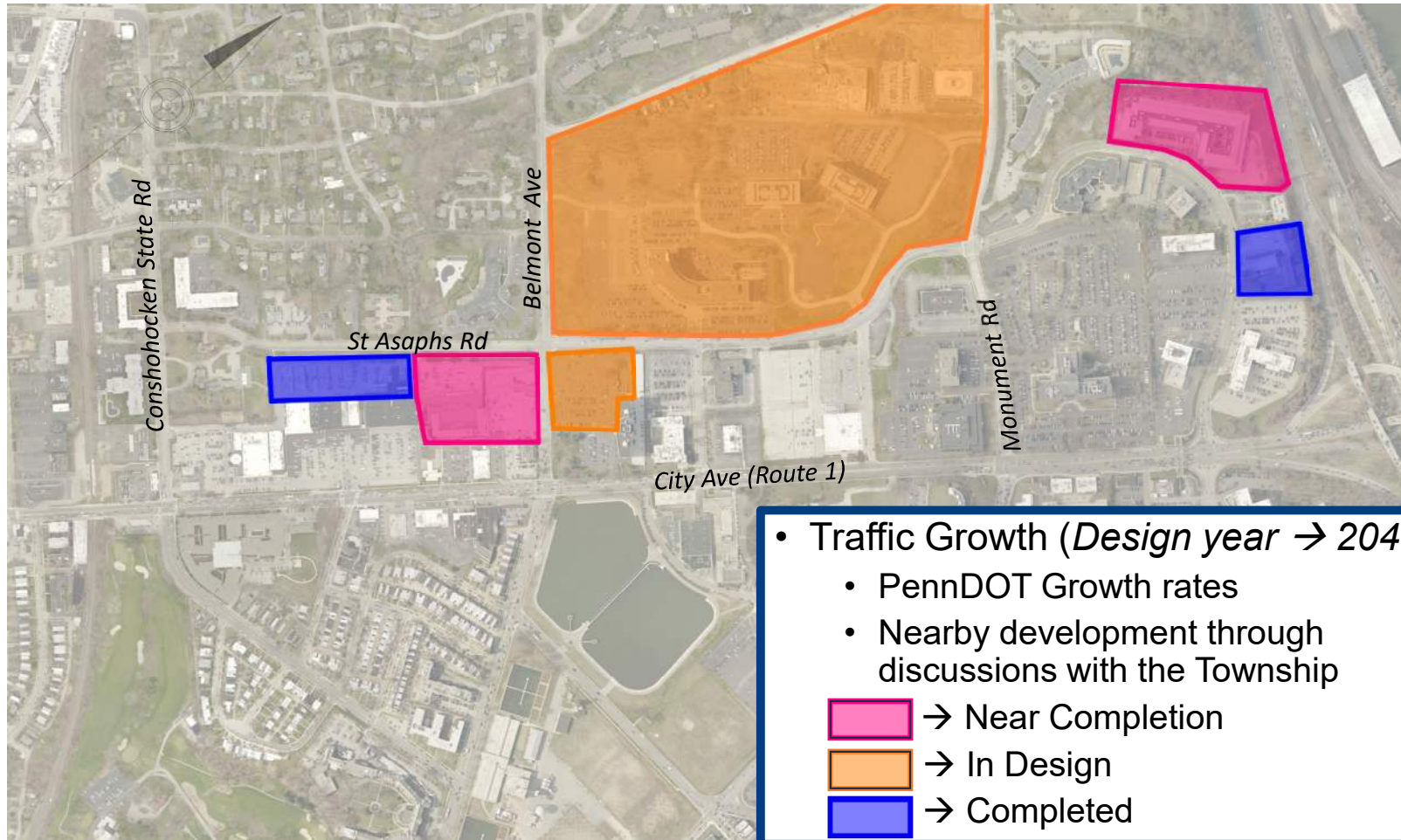
EXISTING SPEEDS



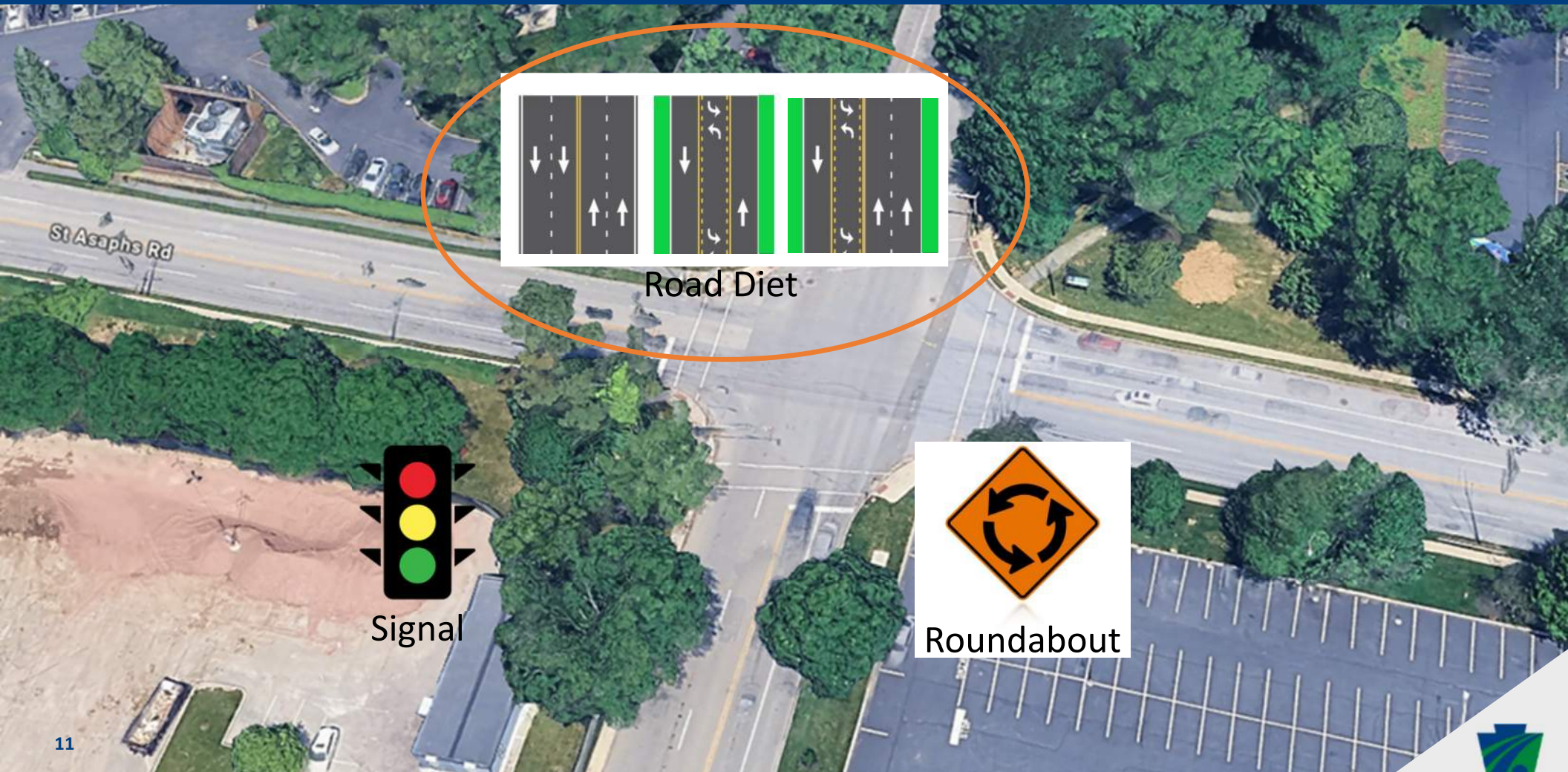
Speed Data Location
(85th % speeds)



TRAFFIC GROWTH

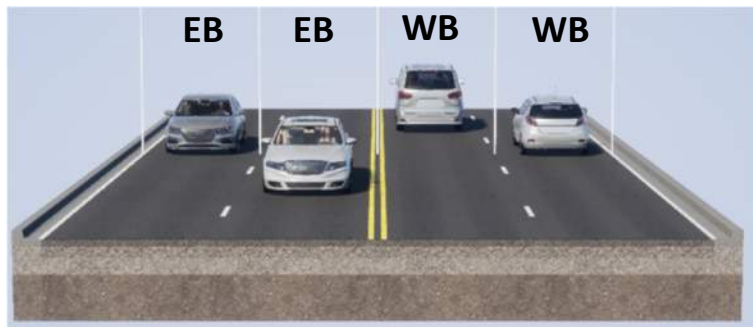


ALTERNATIVES DISCUSSION

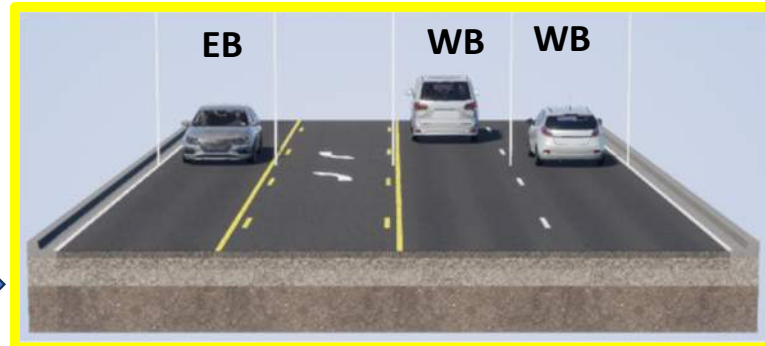


ROAD DIET

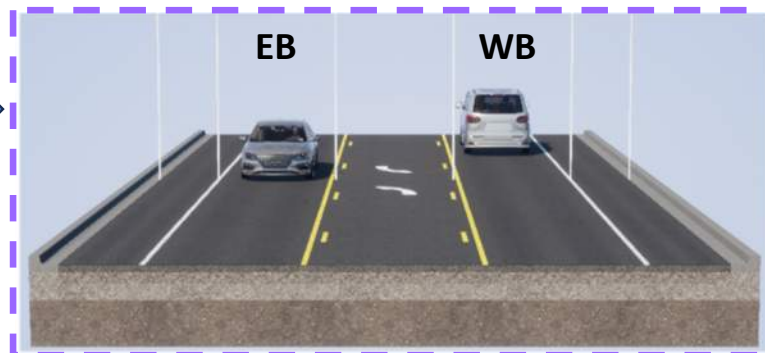
St Asaphs Rd



Existing Condition



Conshohocken
State Rd to Kings
Grant Dr

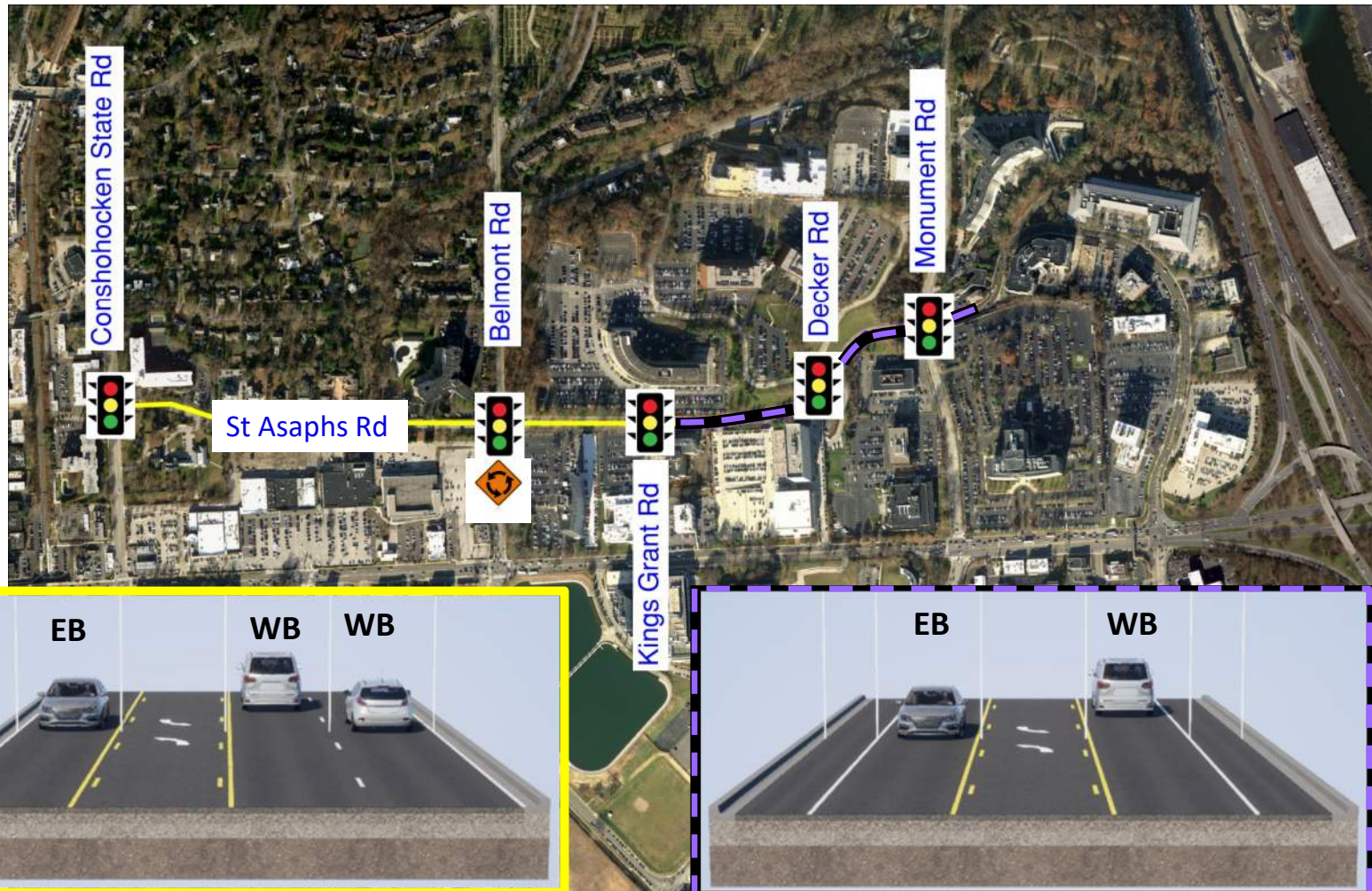


Kings Grant Dr to
Monument Rd

Proposed Condition

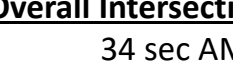


ROAD DIET

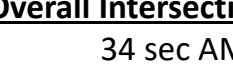


ROAD DIET

Conshocken (NB)



Conshocken (SB)



St Ashpas WB

Design Year (2047)
Overall Intersection Delay

34 sec AM

29 sec PM

Conshocken
State Rd

The Fairmount

*The Church of Saint
Asaphs*

St. Asaphs Rd

EB

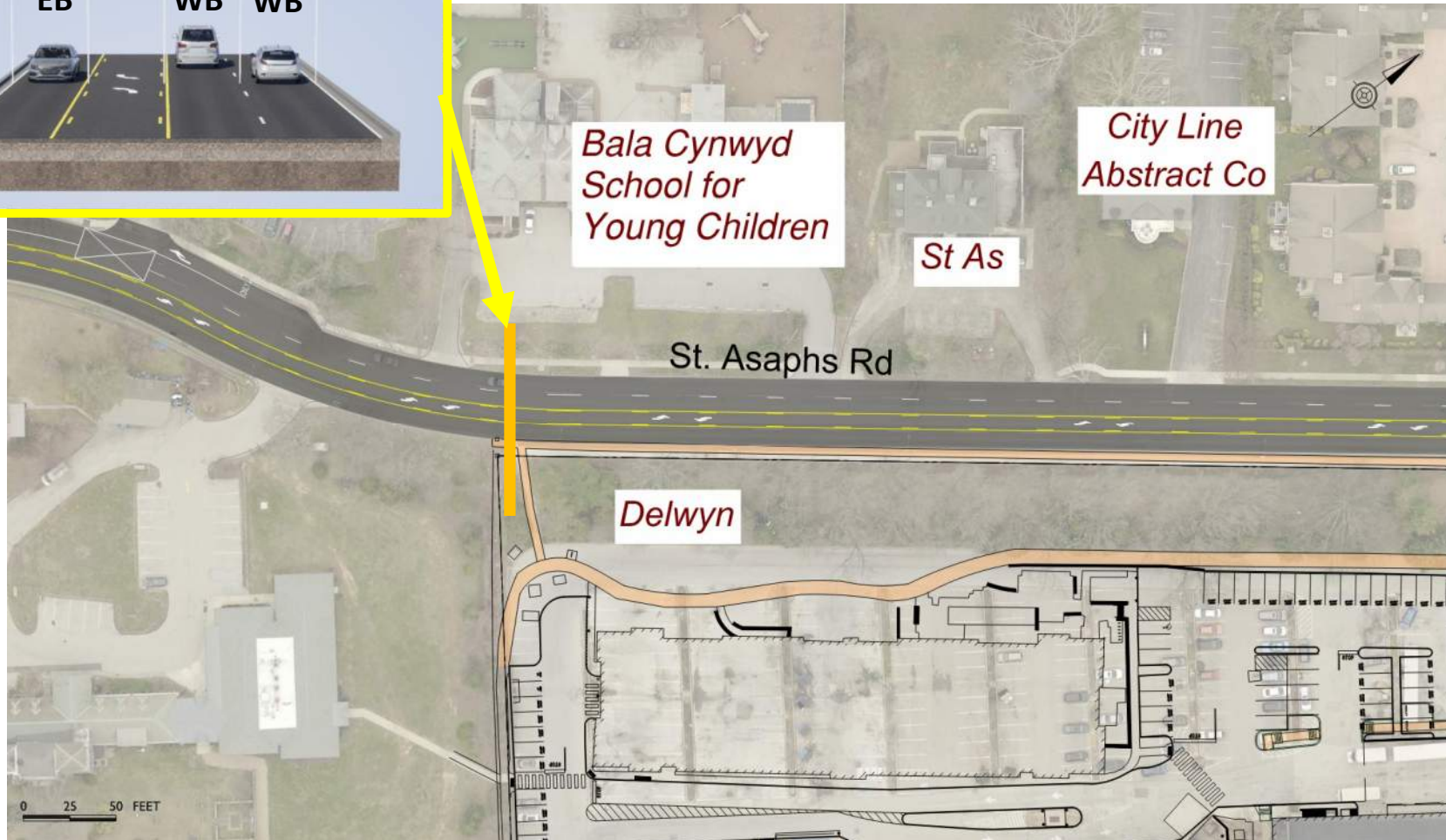
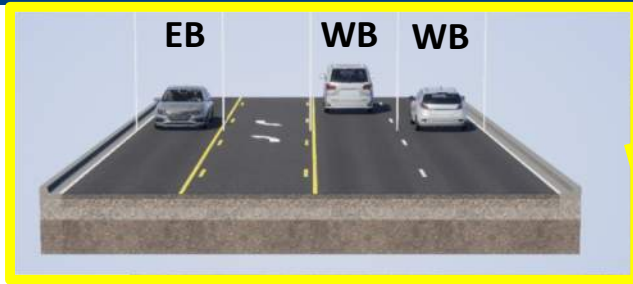
WB

WB

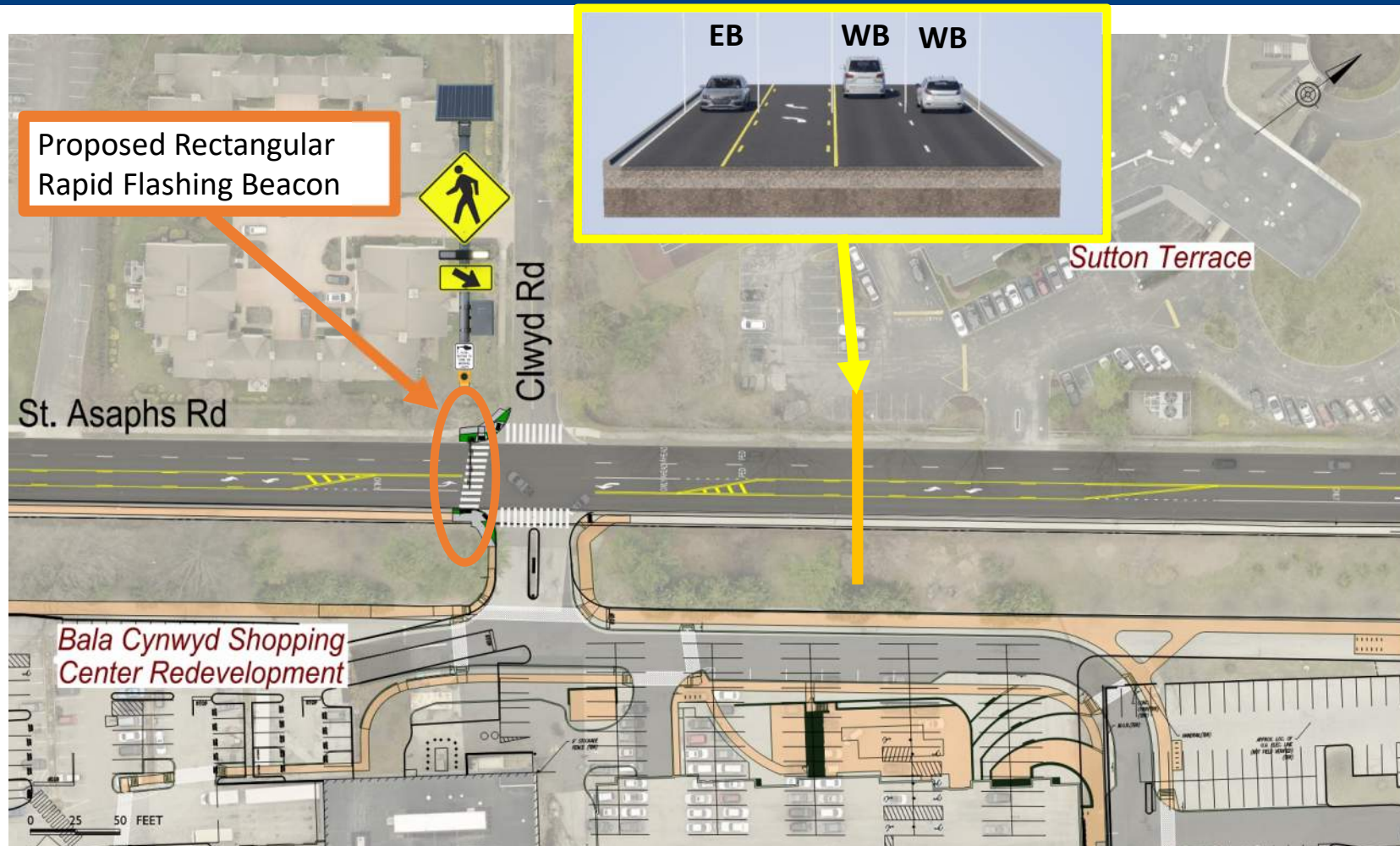
0 25 50 FEET



ROAD DIET

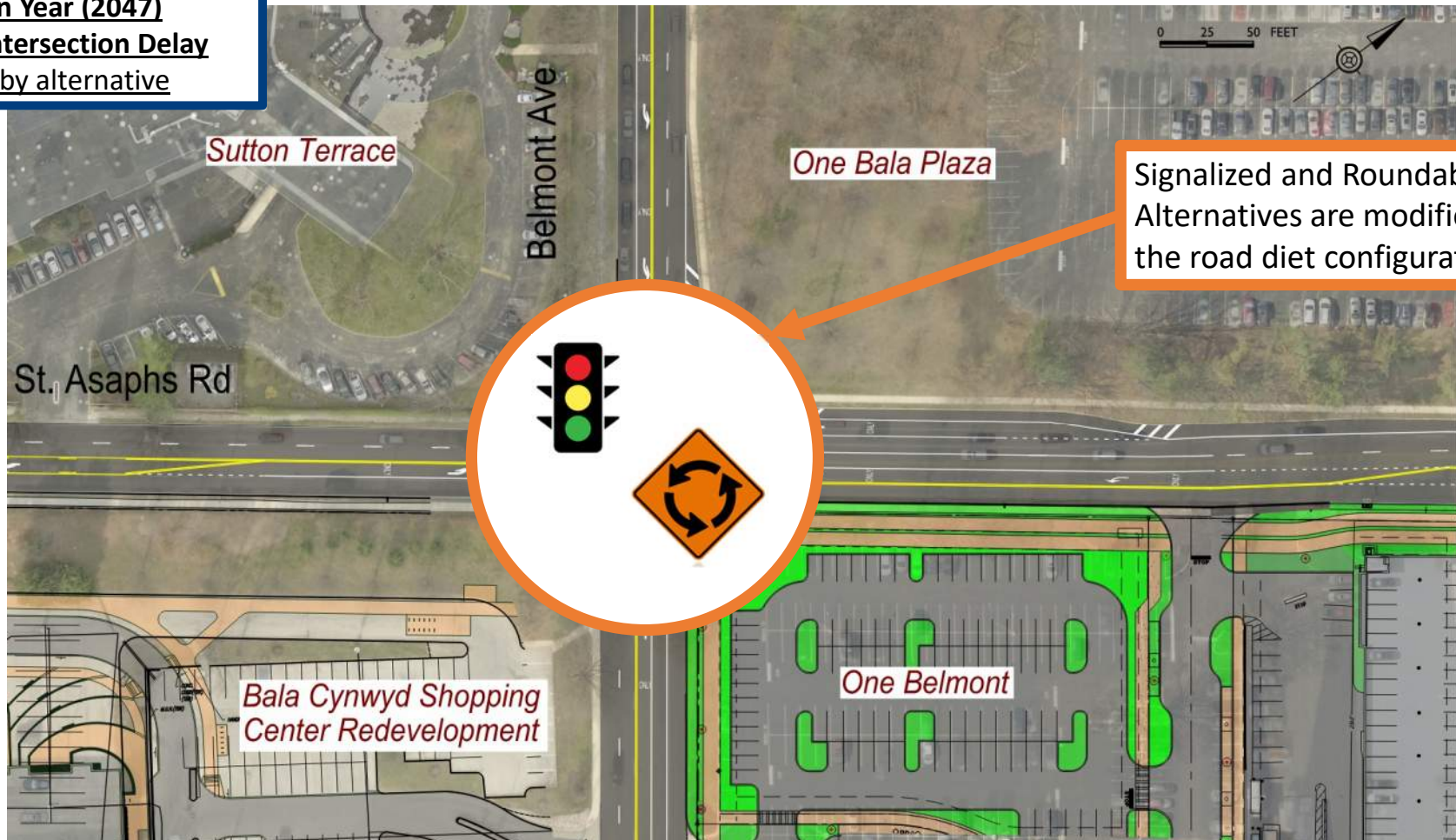


ROAD DIET

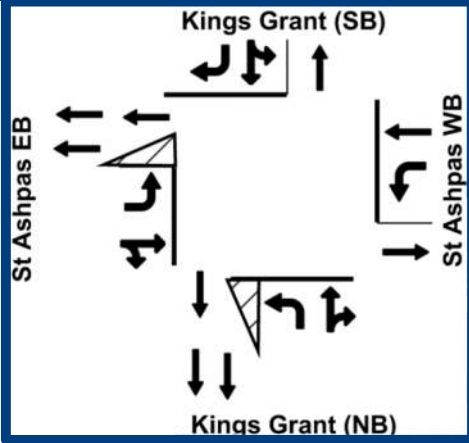


ROAD DIET

Design Year (2047)
Overall Intersection Delay
varies by alternative

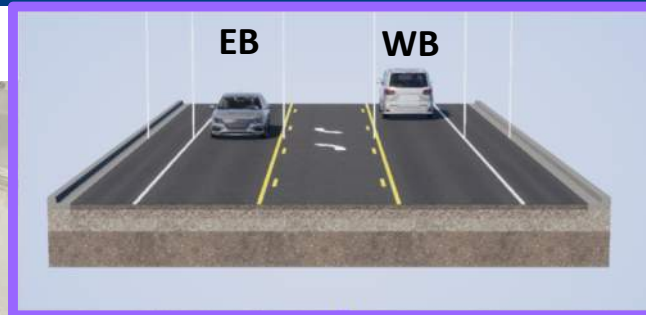


ROAD DIET



Design Year (2047)
Overall Intersection Delay

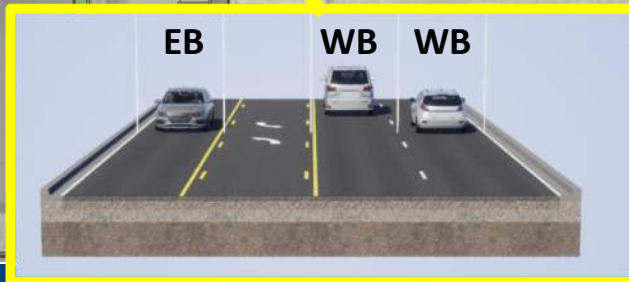
14 sec AM
 34 sec PM



One Bala Plaza

St. Asaphs Rd

One Belmont



Kings Grant Dr

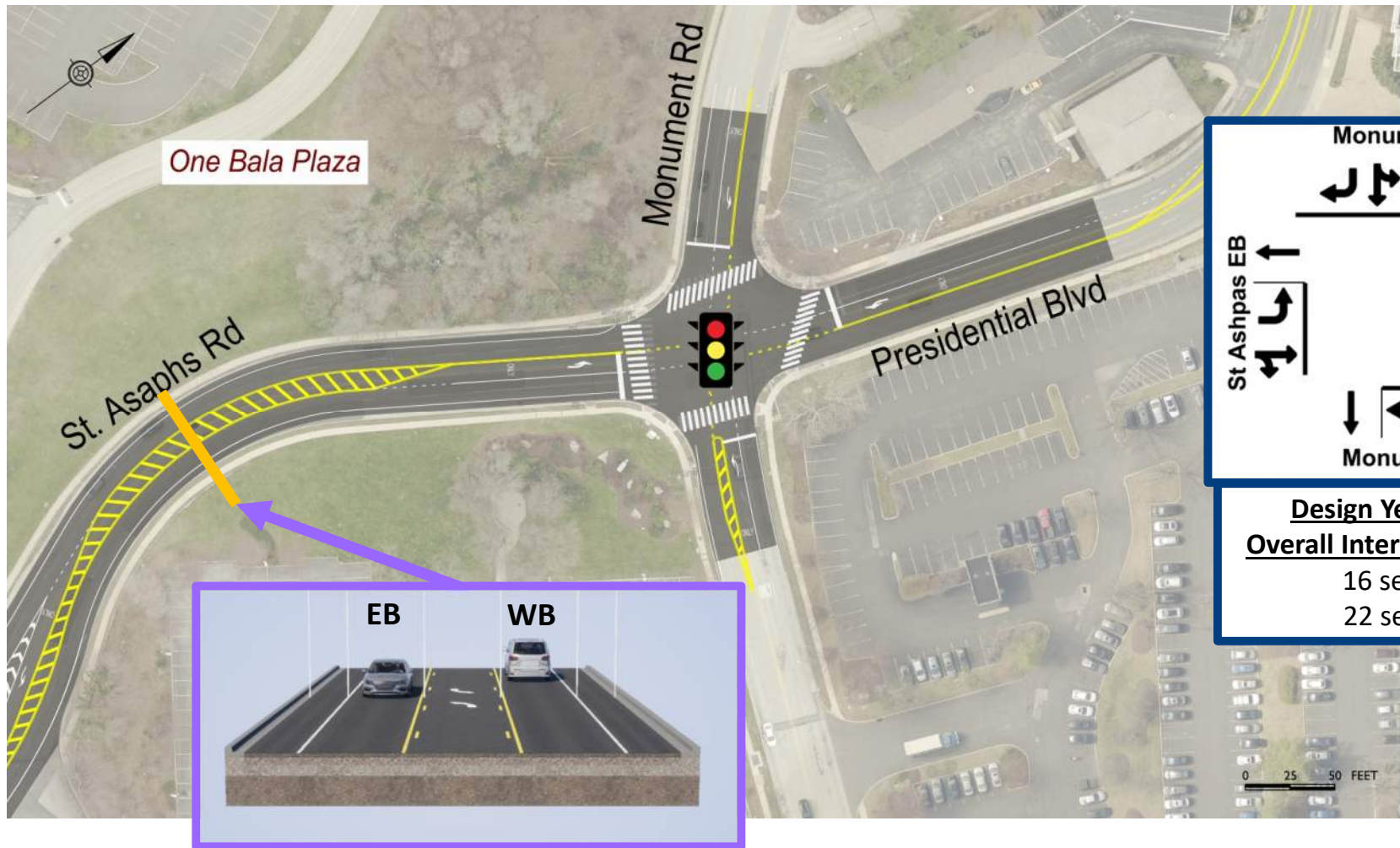
0 25 50 FEET



ROAD DIET



ROAD DIET



ROAD DIET – SAFETY – SOCIETAL BENEFIT



Source: FHWA

Summary of Predicted Crashes

Alternative	Predicted Crash Change (%)			<u>Societal Benefit</u>
	Fatal/Injury	Property Damage Only	TOTAL	
Road Diet*	34% ↓	34% ↓	34% ↓	<u>\$22,000,000</u>

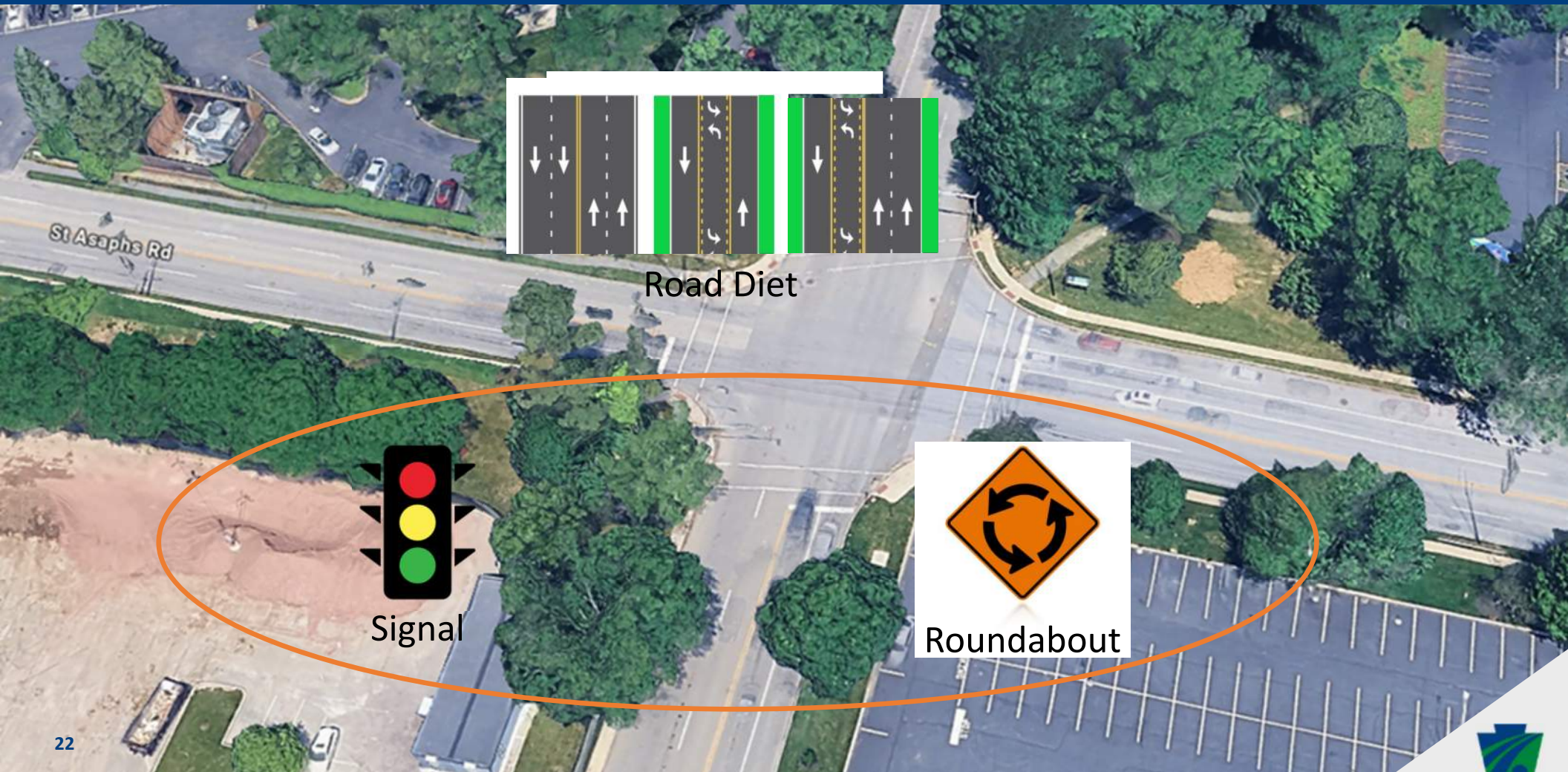
*Countermeasure for safety improvements include

- Install a road diet - 4 lanes to 2 lanes plus turning lane (Kings Grant Dr to Monument Rd)
- Install a road diet - 4 lanes to 3 lanes plus turning lane (Conshohocken State Rd to Kings Grant Dr)

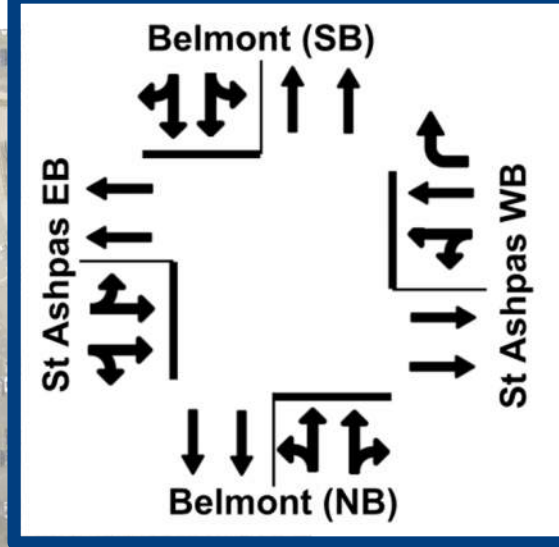
 Reduction
 Minimal Change
 Increase



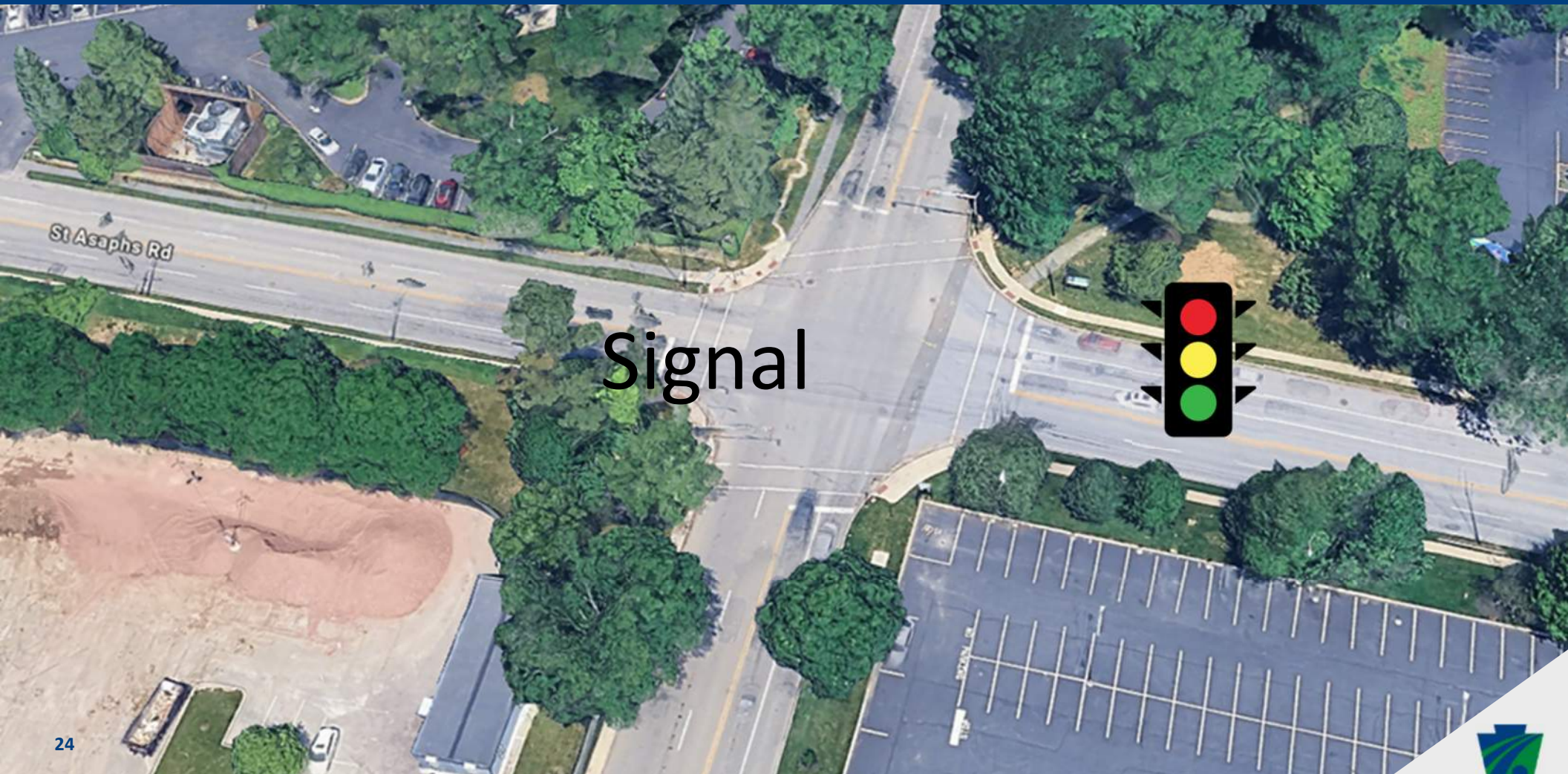
ALTERNATIVES DISCUSSION



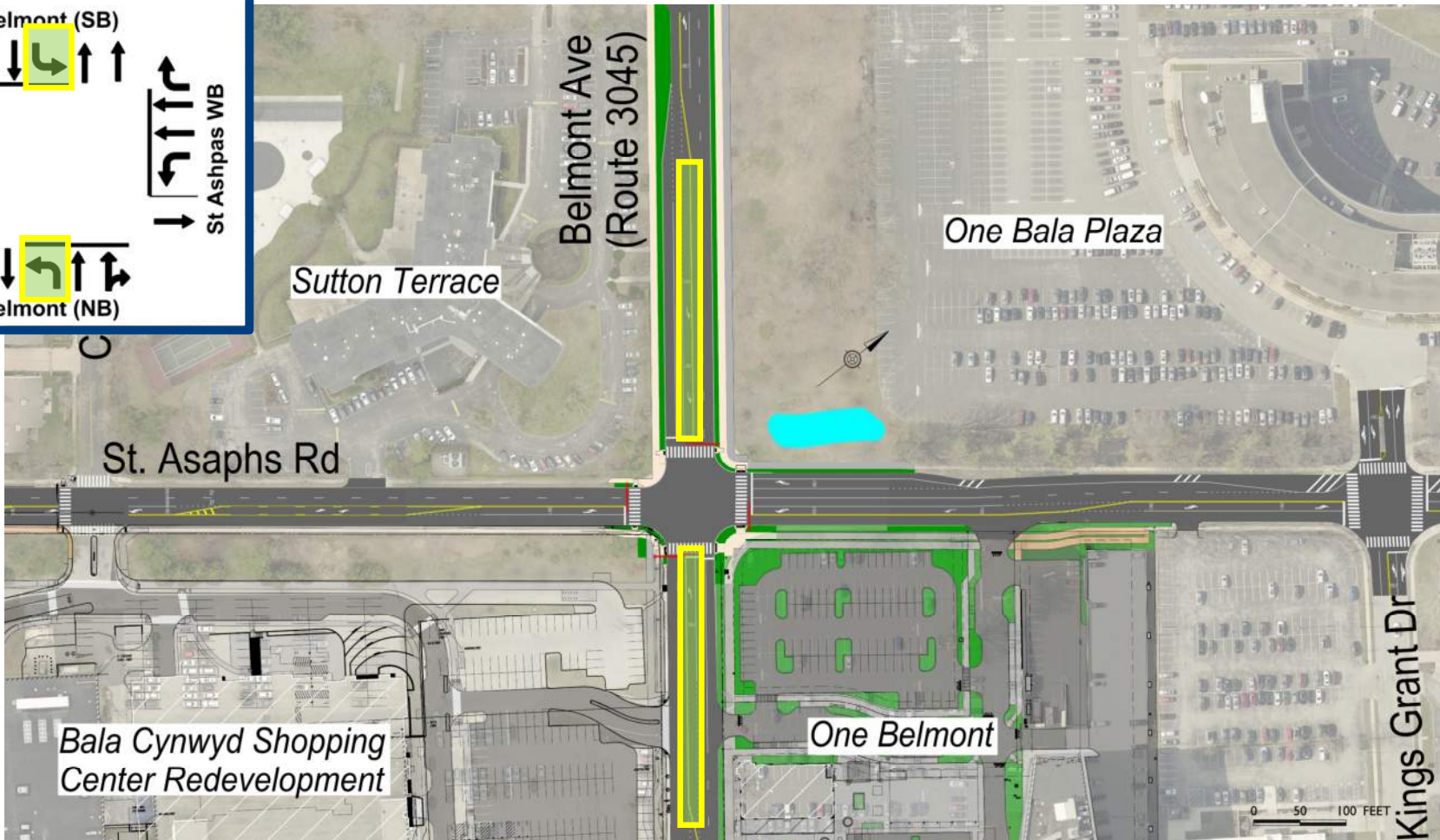
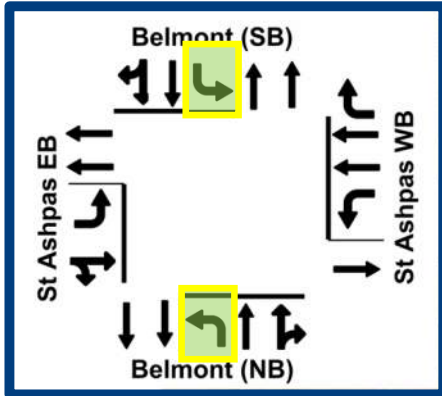
ALTERNATIVE 1 – NO BUILD



ALTERNATIVES



SIGNAL – OVERVIEW

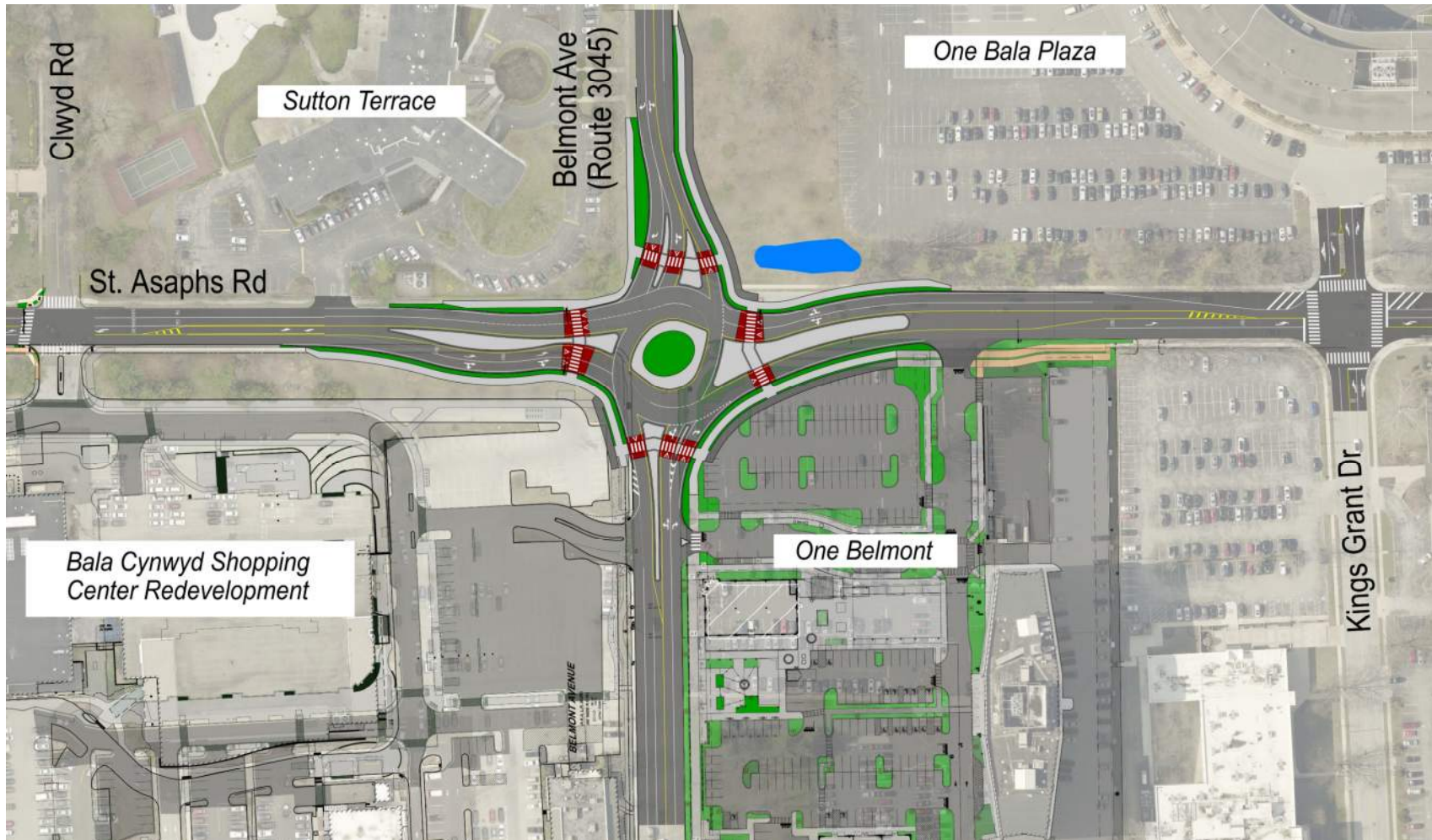


ALTERNATIVES

Roundabout (Hybrid)



ROUNDBABOUT – OVERVIEW



SAFETY – SOCIETAL BENEFIT

Summary of Predicted Crashes

	Alternative	Predicted Crash Change (%)			<u>Societal Benefit</u>
		Fatal/Injury	Property Damage Only	TOTAL	
	Roundabout*	-63% ↓	+125% ↑	+6% —	<u>\$13,000,000</u>
	Signal**	-34% ↓	-34% ↓	-34% ↓	<u>\$7,400,000</u>

* Countermeasure for safety improvements include
 - Convert intersection into a hybrid roundabout

**Countermeasure for safety improvements includes
 - providing four-left turn lanes
 - addition of retroreflective backplates

↓ Reduction
 — Minimal Change
 ↑ Increase



OPERATIONS – DELAY

Delay (seconds) results

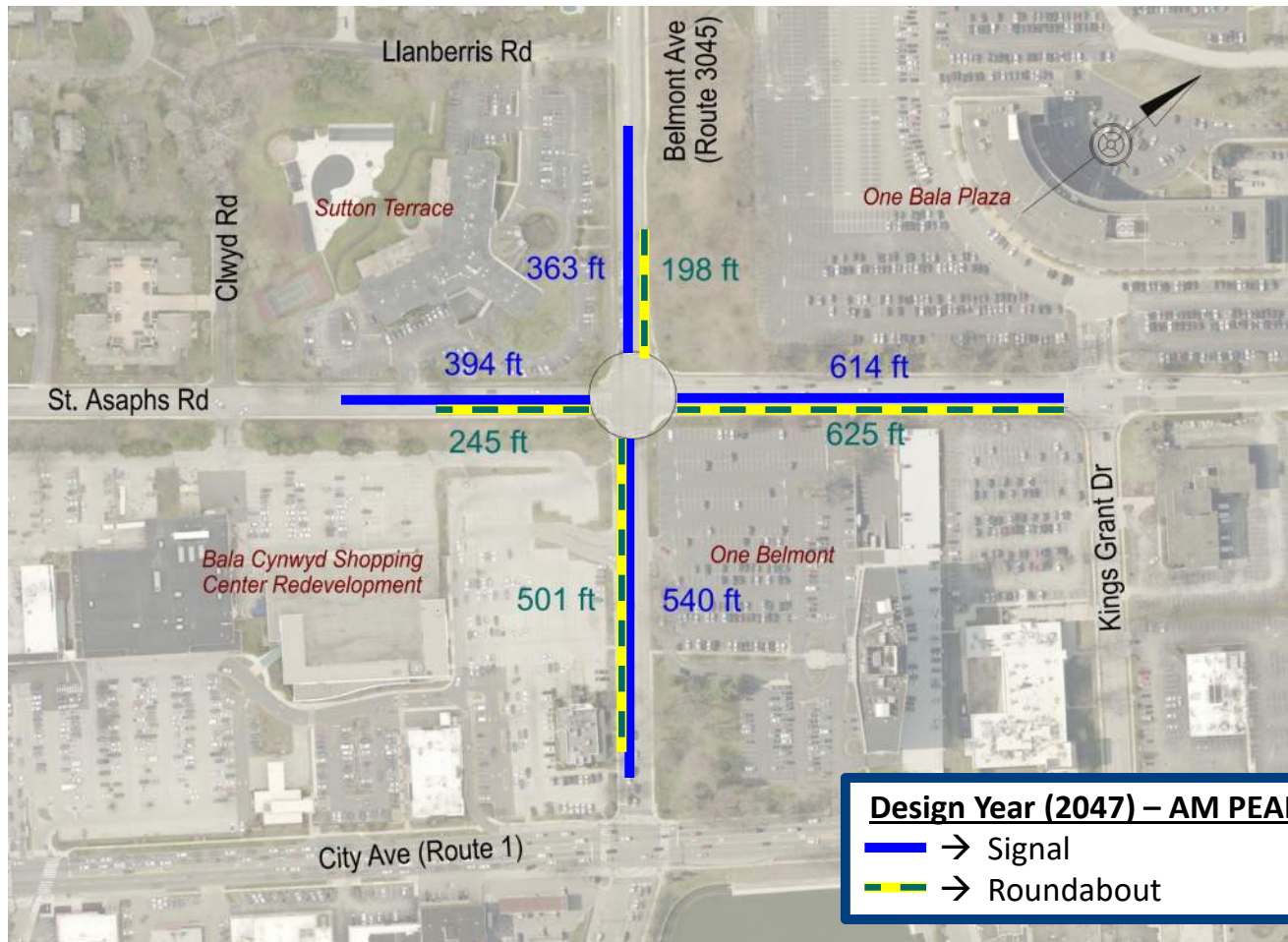
								
Approach	Existing (2024)**		No Build (2047)**		Roundabout (2047)*		Signal (2047)**	
	AM	PM	AM	PM	AM	PM	AM	PM
EB	38	24	33	24	12	10	28	16
WB	22	14	19	16	42	12	21	13
NB	28	54	46	68	25	9	48	46
SB	27	55	41	62	13	11	38	49
OVERALL	28	30	33	34	26	11	32	25

*Roundabout results are from SIDRA Standard (roundabout intersection)

**Existing and No Build results are from Synchro (signalized intersection)



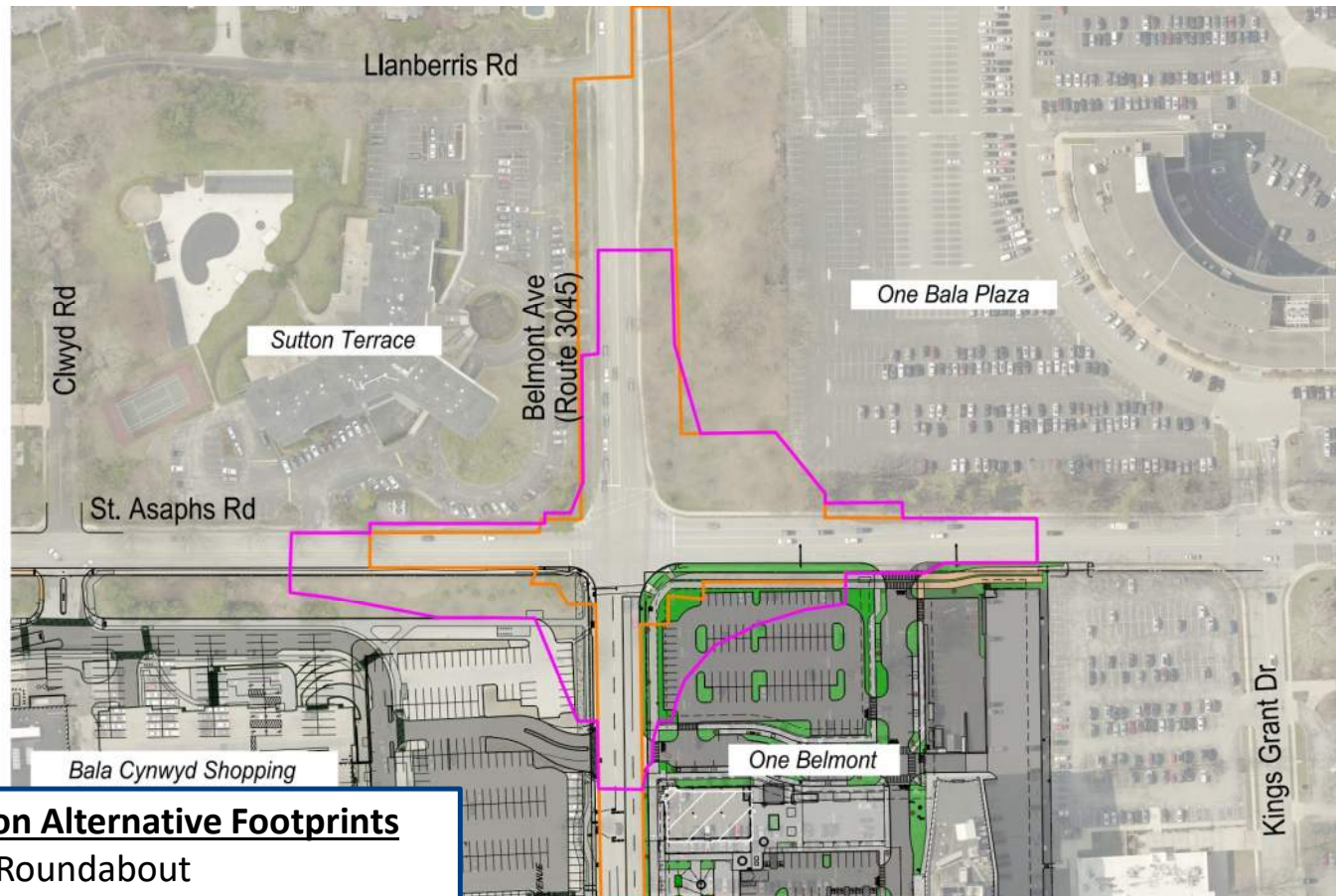
QUEUING – DESIGN YEAR 2047 AM PEAK



QUEUING – DESIGN YEAR 2047 PM PEAK



FOOTPRINT OF ALTERNATIVES

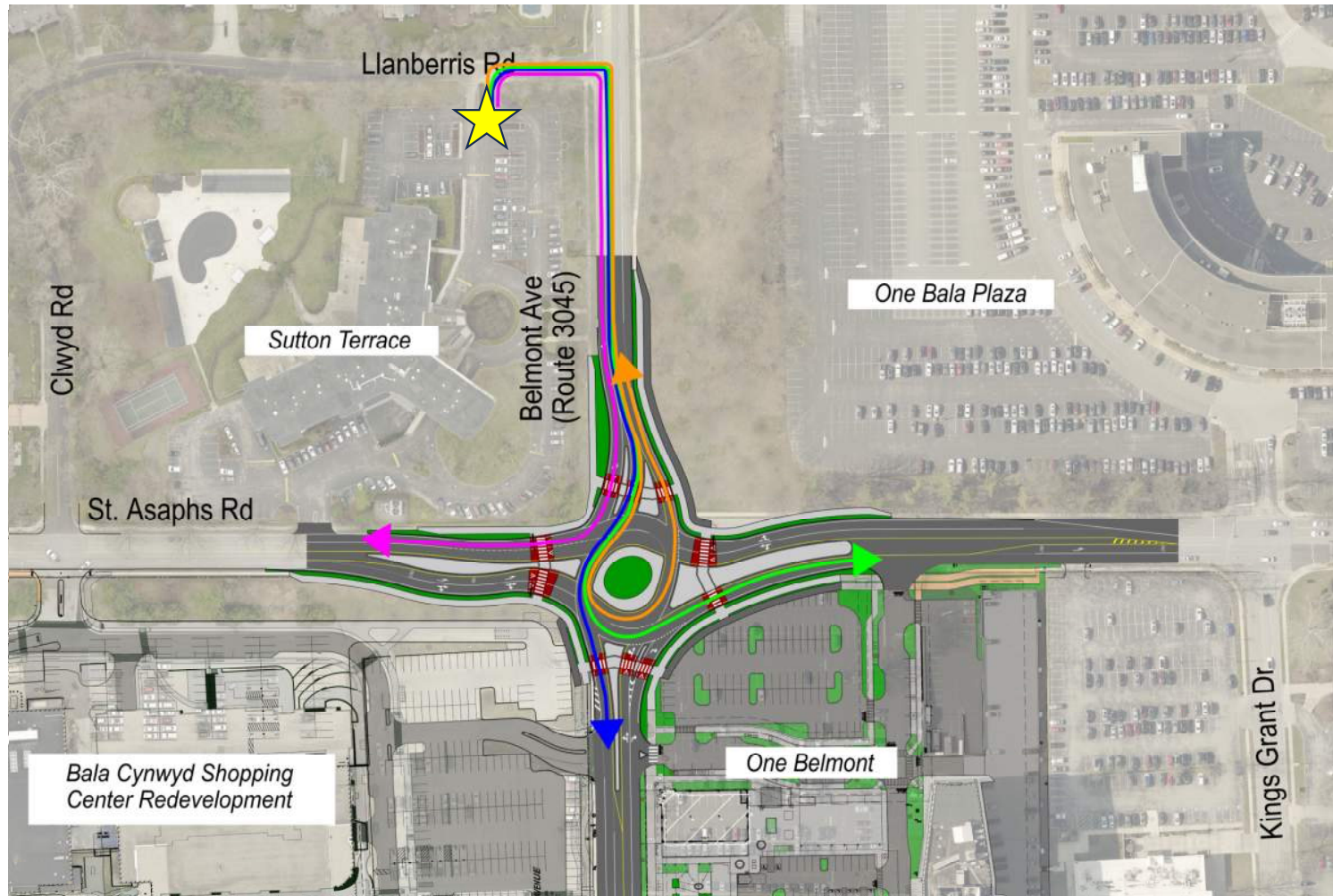


Intersection Alternative Footprints

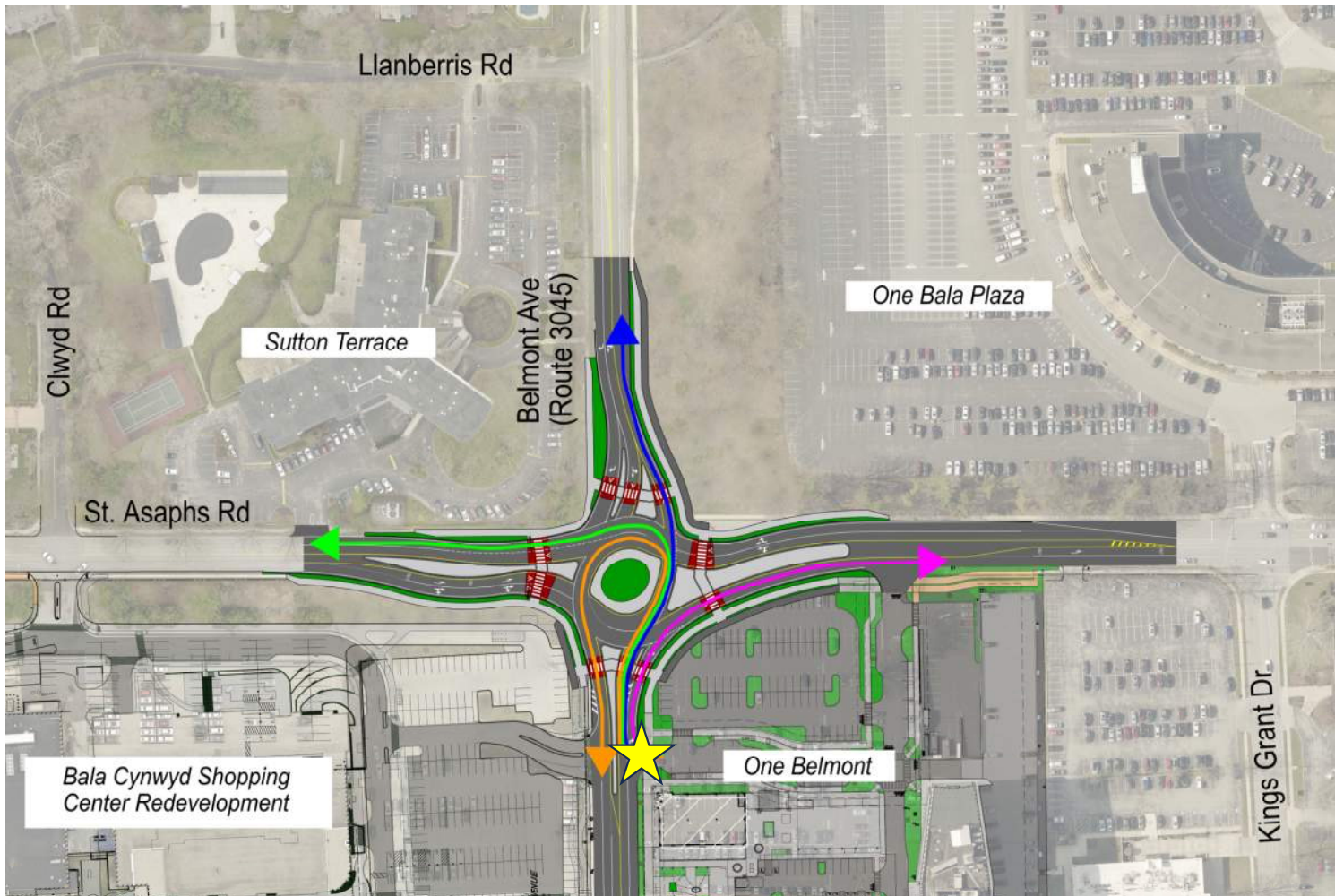
-  Roundabout
-  Signal



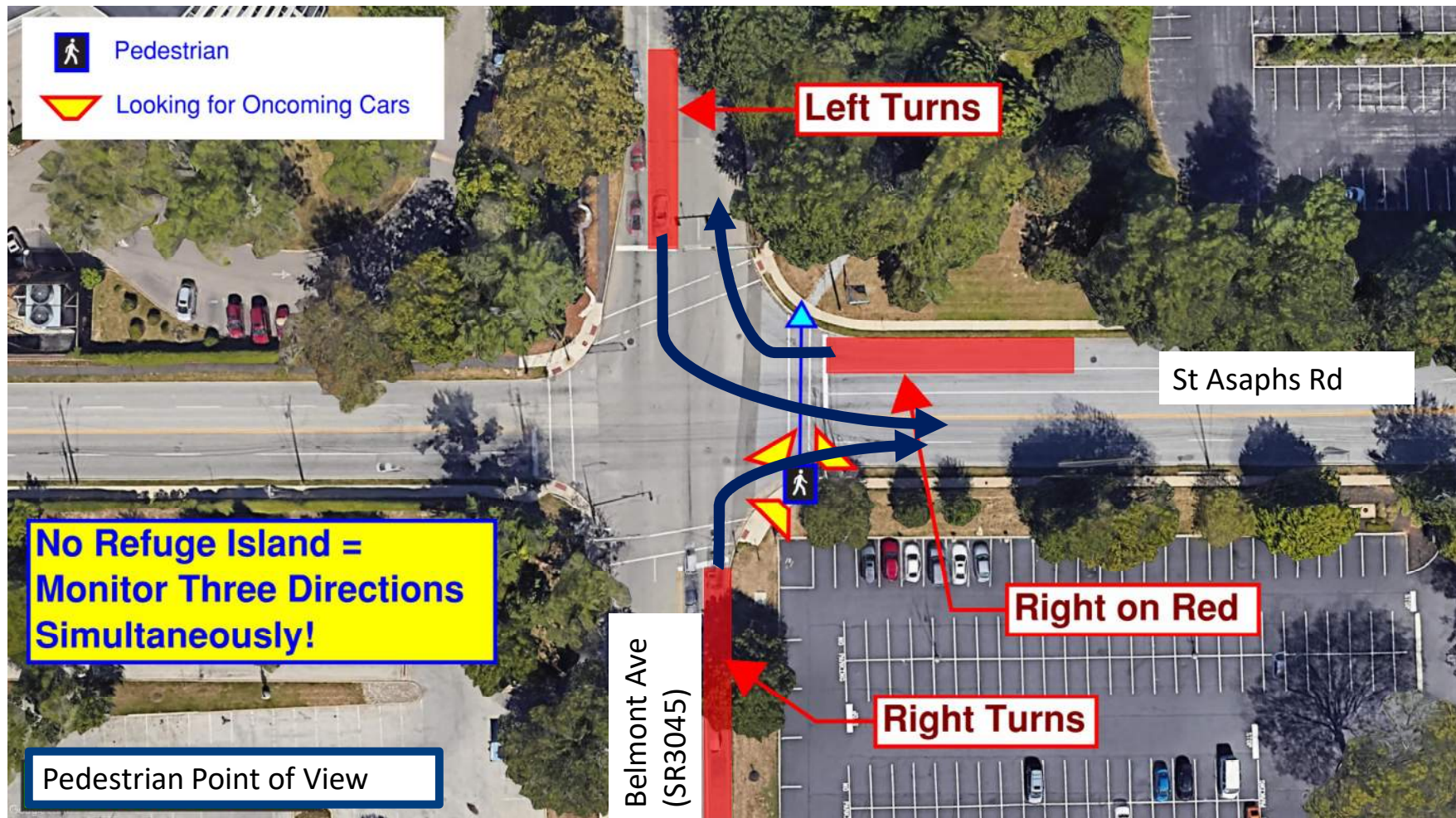
ROUNDBABOUT – ACCESS



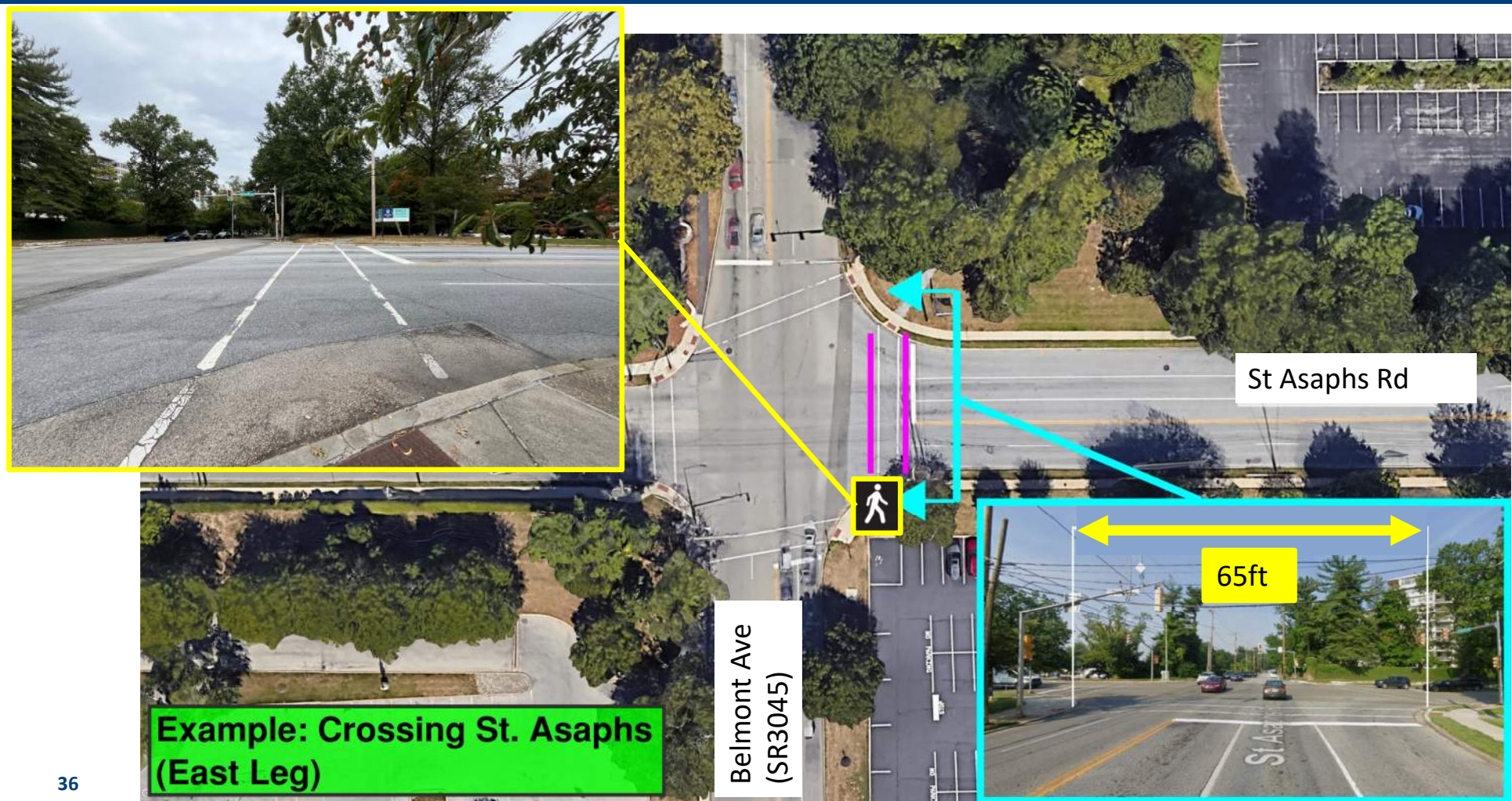
ROUNDBABOUT – ACCESS



PEDESTRIAN CROSSINGS – EXISTING



PEDESTRIAN CROSSINGS – EXISTING

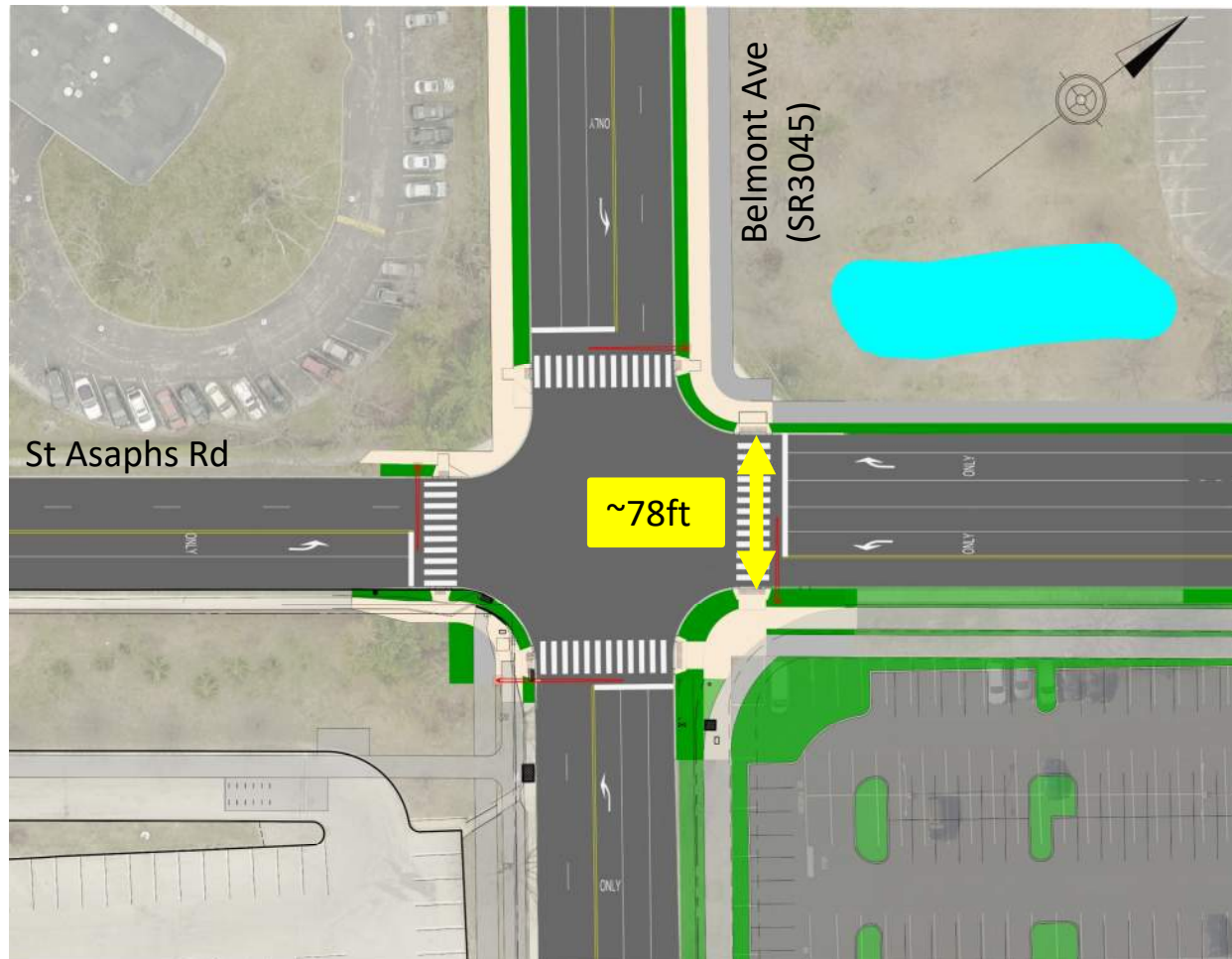


PEDESTRIAN CROSSINGS – ROUNDABOUT



Two stage crossing with refuge island

PEDESTRIAN CROSSINGS – SIGNAL



PEDESTRIAN CROSSINGS – COMPARISON

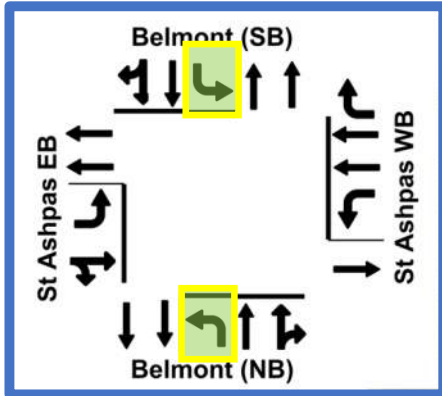
Alternative		Distance (Feet)	Time (Seconds)	Number of Conflicts
No Build		65ft	19sec	3
Roundabout		23ft + 23ft	7sec + 7sec	2
Signal		78ft	22sec	3

← Two stage crossing with refuge island

Roundabout = saving ~8 seconds of crossing time saved. **Every second counts!**

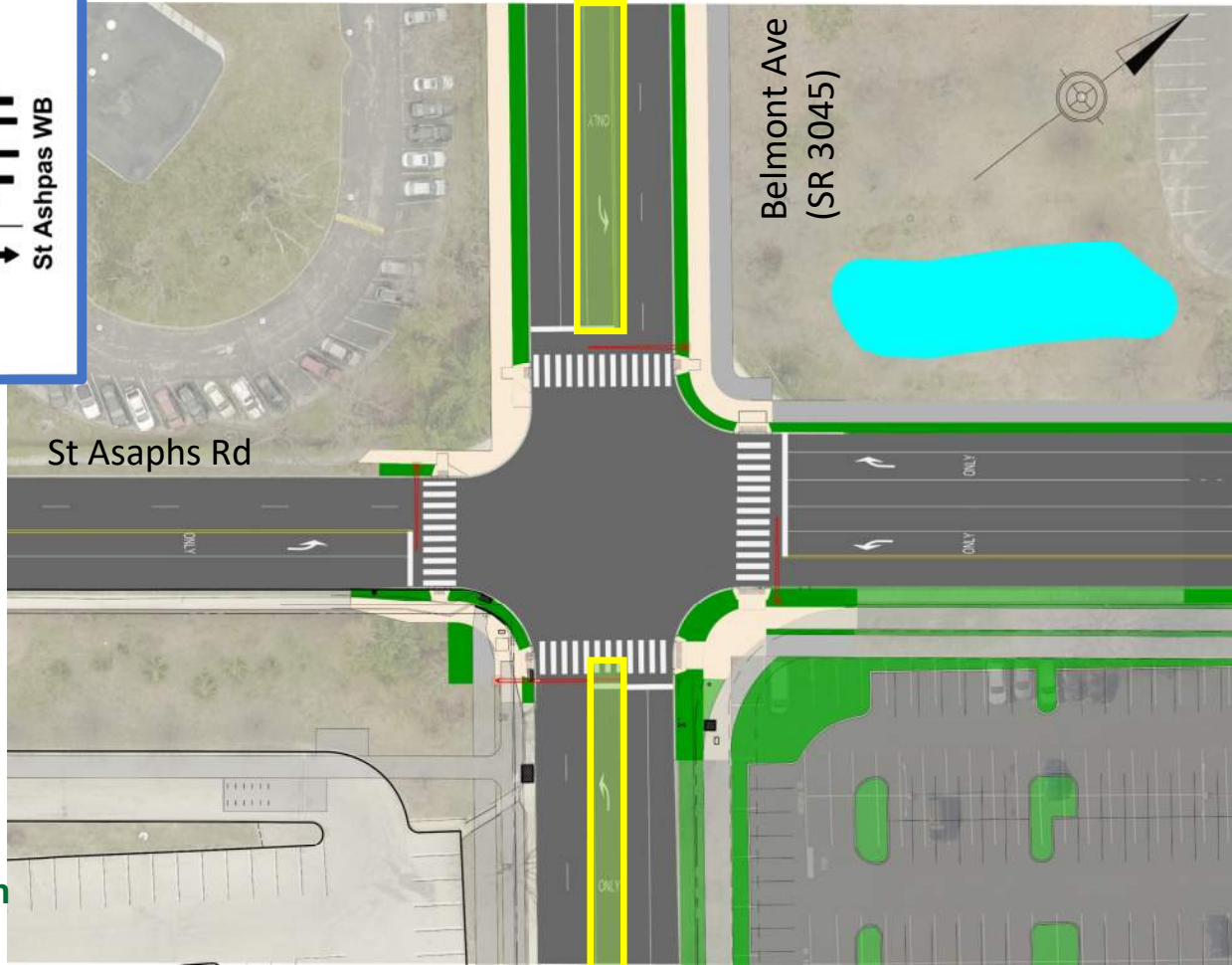


SIGNAL – ENLARGEMENT



Pedestrian Signal Push Button

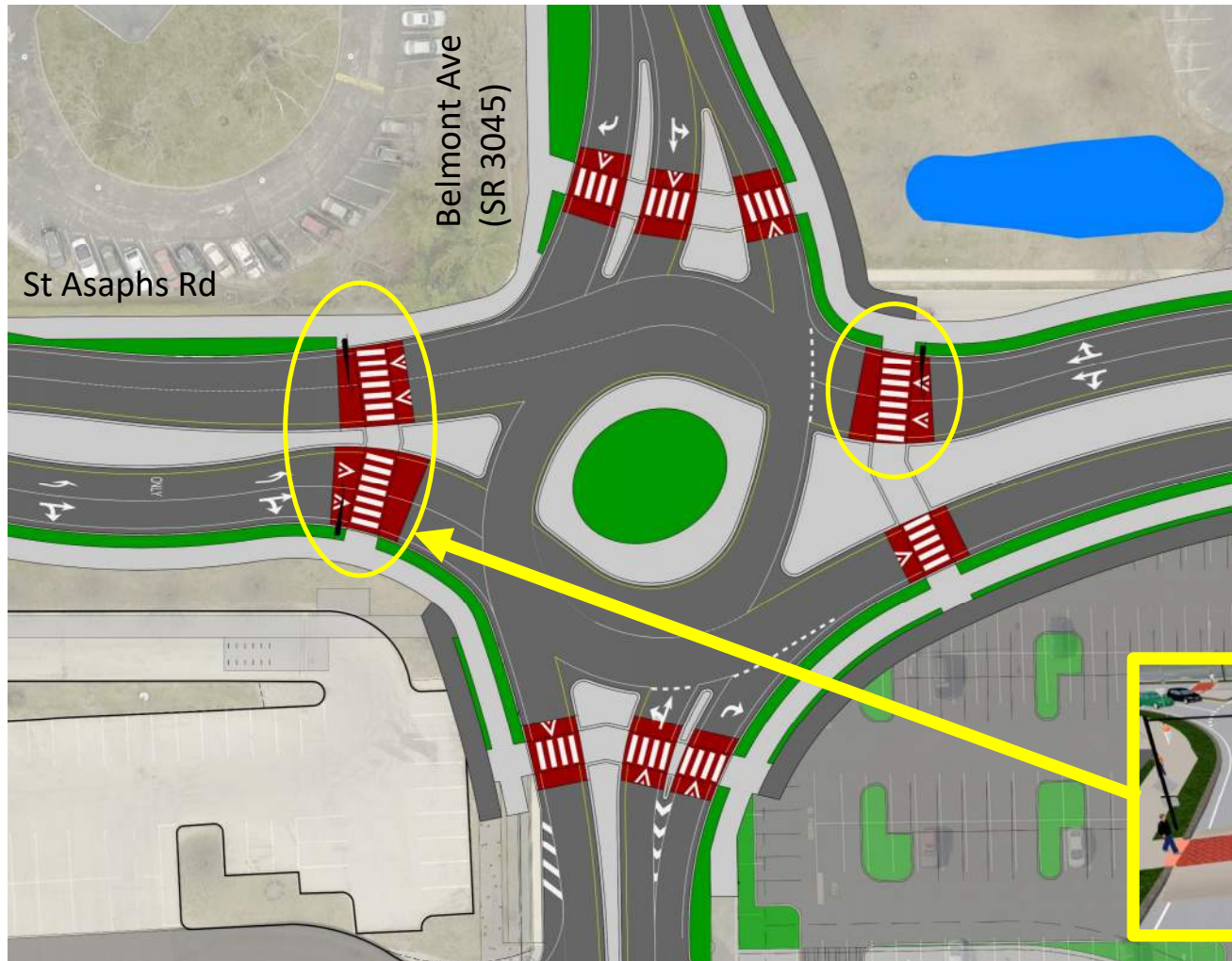
40



Pedestrian Countdown Timer



ROUNDBABOUT – ENLARGEMENT

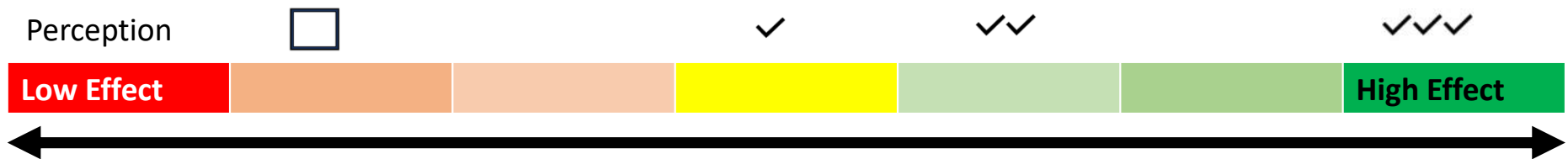


PERFORMANCE OF ALTERNATIVES

Alternative	Reduced Speeds	Safety	Societal Benefit	Operations	Pedestrian Mobility	Access	Public Input
No Build			\$0				TBD
Road Diet*	✓✓	✓✓✓	\$22,000,000	✓	✓✓✓	✓✓✓	TBD
Signal**		✓✓	\$7,400,000	✓✓✓	✓	✓✓	TBD
Roundabout**	✓✓✓	✓✓✓	\$13,000,000	✓✓✓	✓✓✓	✓✓✓	TBD

* Roadway segments (link) – Conshohocken State Road to Monument Road

** Intersection (node) – Belmont Ave and St Asaphs Road Intersection **ONLY**



NEXT STEPS

- Gather public input through comments (~2 weeks)
 - Refer to project webpage for more information - <https://bit.ly/BelmontStAsaphs>
- Review alternatives and public comments with PennDOT
- Alternative Analysis report
- A preferred alternative will be selected
- PennDOT will move into preliminary design

