

Liberty Avenue

Highway Safety Improvement Project

City of Pittsburgh
September 21, 2021

City of Pittsburgh **Welcome**

- **Welcome**
- **Project Team Introductions**
- **Project Background**
- **Design Alternatives**
- **Feedback / Questions**



City of Pittsburgh Introductions



Department of
Mobility and Infrastructure

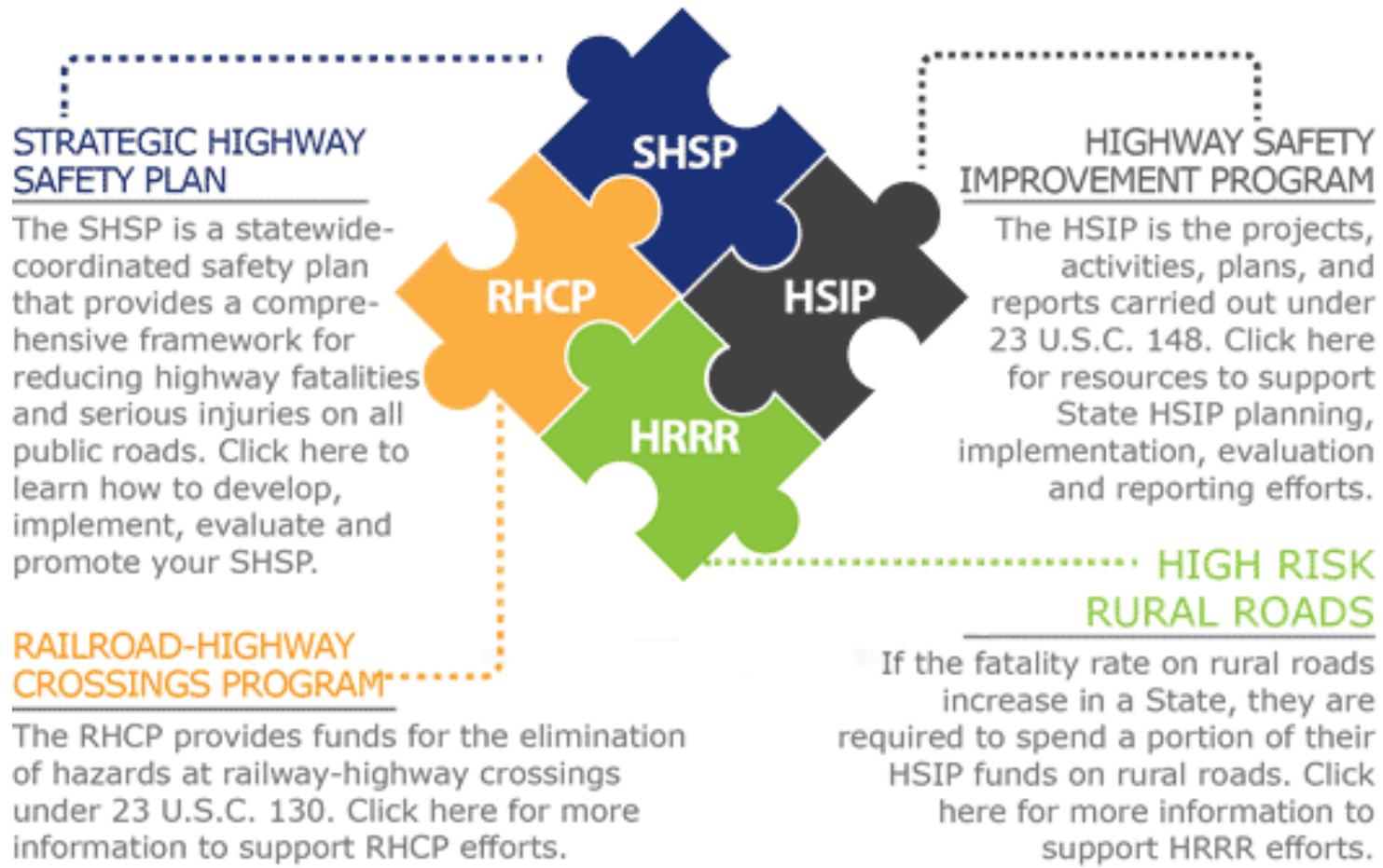


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Project Background



Highway Safety Improvement Program (HSIP)



Planning Context



Strip District Transportation and Land Use Plan
(2013)

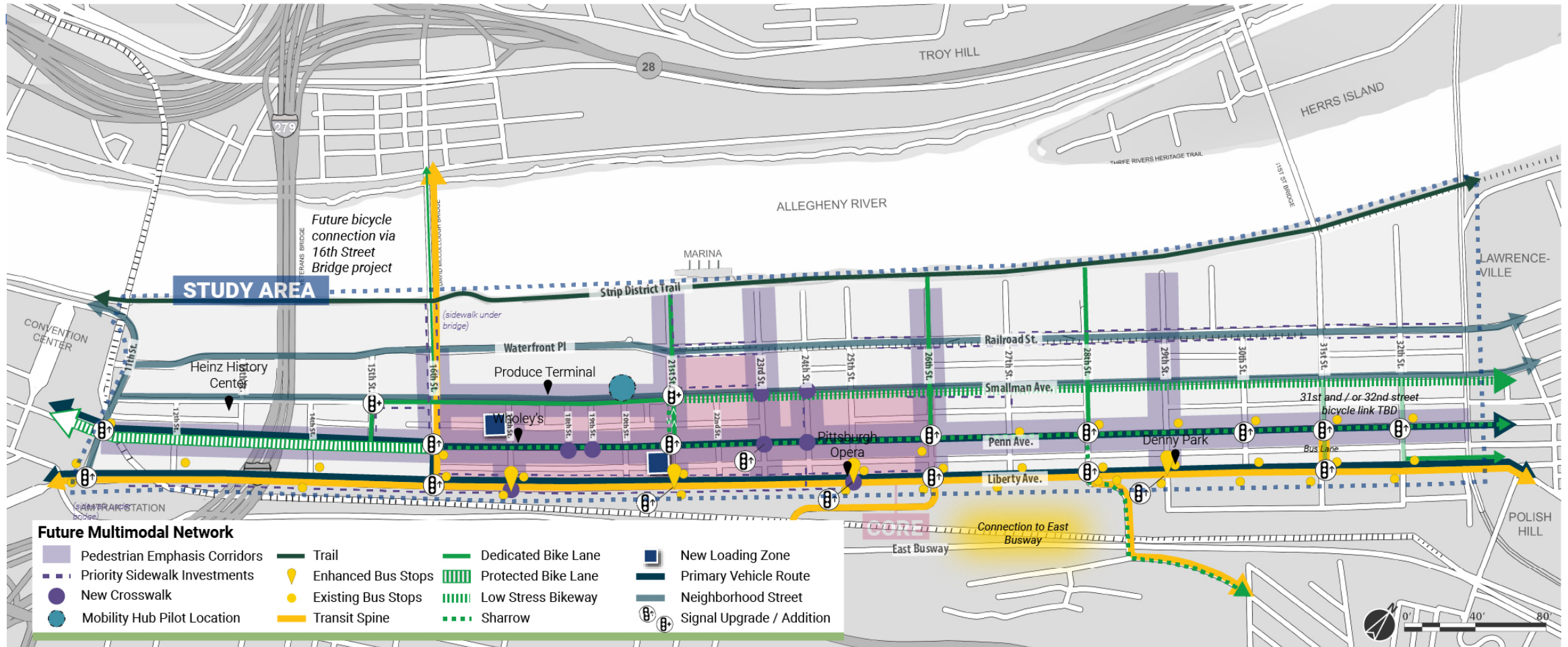


Pedestrian Safety Action Plan
(2020)

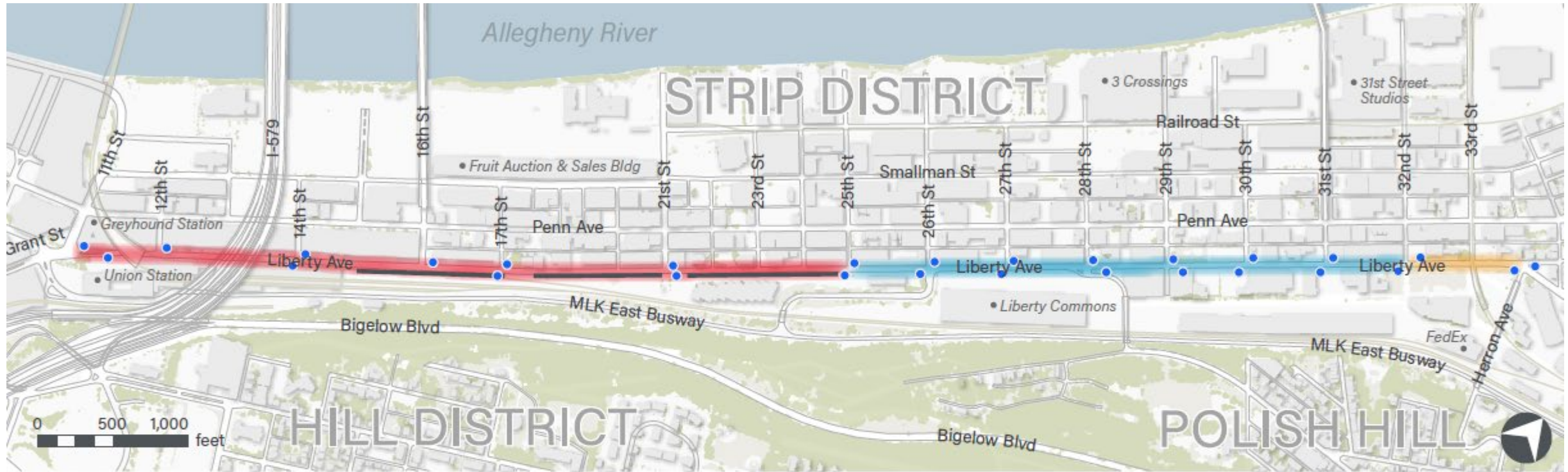


Strip District Mobility Plan
(2021)

Strip District Mobility Plan



Liberty Avenue Street segments



Curb-to-Curb Width

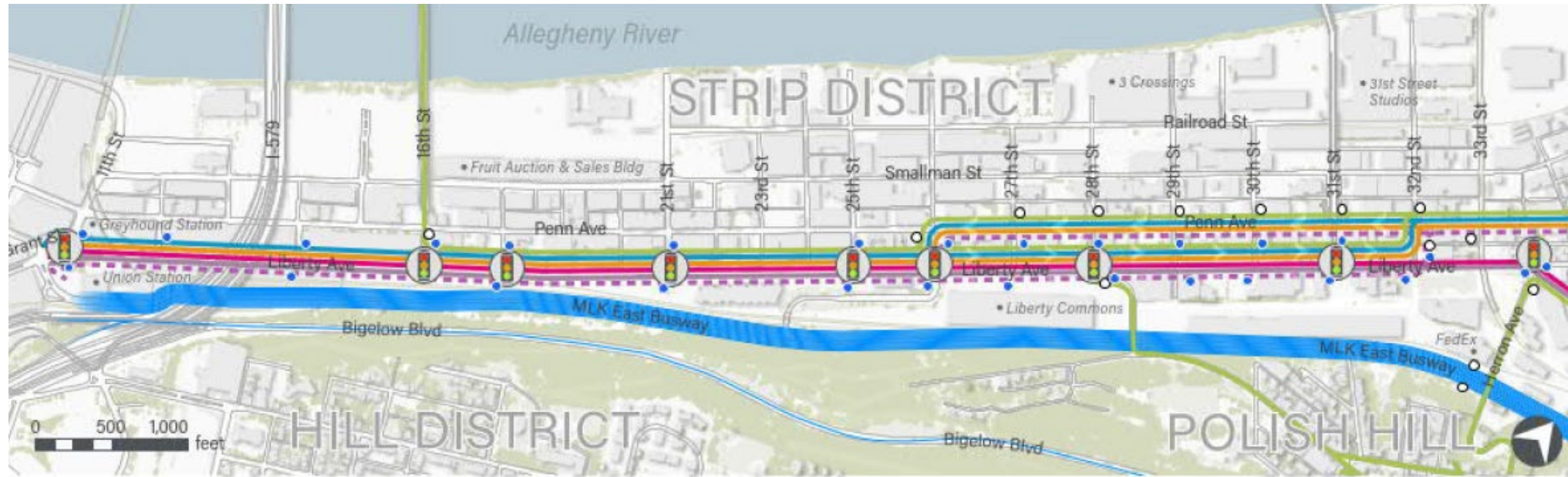
- Segment 1 - 38' with sidewalk on north side*
- Segment 2 - 38' with sidewalk on north and south side
- Segment 3 - 43'-49' transition area

* constrained areas (south side retaining wall)

• bus stops on Liberty Ave

- Curblines
- Buildings
- Trees & Open Space

Transit Service



Port Authority of Allegheny County (PAAC) Bus Routes Operating on Liberty Ave

--- Route 2
every 60 mins Sat & Sun

— Route 54
every 20 mins Mon-Fri
every 30 mins Sat
every 50 mins Sun

— Route 86
every 30 mins Mon-Fri
every 20 mins Sat
every 30 mins Sun

— Route 87
every 8-30 mins Mon-Fri
every 40 mins Sat
every 70 mins Sun

— Route 88
every 20 mins Mon-Fri
every 30 mins Sat
every 30 mins Sun

— Route 91
every 10-30 mins Mon-Fri
every 30 mins Sat
every 30 mins Sun

— other nearby routes

 signalized intersections

● bus stops on Liberty Ave
○ other bus stops

— Curblines
— Buildings
— Trees & Open Space

Transit Service

		Date	Sep 2019		Sep 2020	
		Day	Weekday		Weekday	
Stop ID	Stop Name	Dir.	Ons	Offs	Ons	Offs
Total			460	646	179	191
18607	LIBERTY AVE OPP 21ST ST FS	OB	63	53	34	25
2165	LIBERTY AVE AT 21ST ST	IB	50	91	21	30
2174	LIBERTY AVE OPP 17TH ST	OB	40	43	22	18
2166	LIBERTY AVE AT 17TH ST	IB	39	49	19	21
2180	LIBERTY AVE AT 29TH ST FS	OB	40	27	12	10
2177	LIBERTY AVE OPP 26TH ST	OB	36	31	15	5
2163	LIBERTY AVE AT 25TH ST	IB	45	36	5	8
2178	LIBERTY AVE OPP 27TH ST	OB	21	18	13	7
2182	LIBERTY AVE OPP 31ST ST	OB	15	26	3	10
2185	LIBERTY AVE AT HERRON AVE	OB	13	12	5	3
2156	LIBERTY AVE AT LIGONIER ST (HERRON AVE)	IB	14	15	4	5
2172	LIBERTY AVE OPP 14TH ST	OB	13	5	4	2
2410	32ND ST AT SPRING WAY	OB	8	12	7	8
2162	LIBERTY AVE AT 26TH ST	IB	11	20	2	7
2160	LIBERTY AVE AT 29TH ST	IB	10	46	2	6

Liberty Avenue Existing Conditions



Traffic Volumes

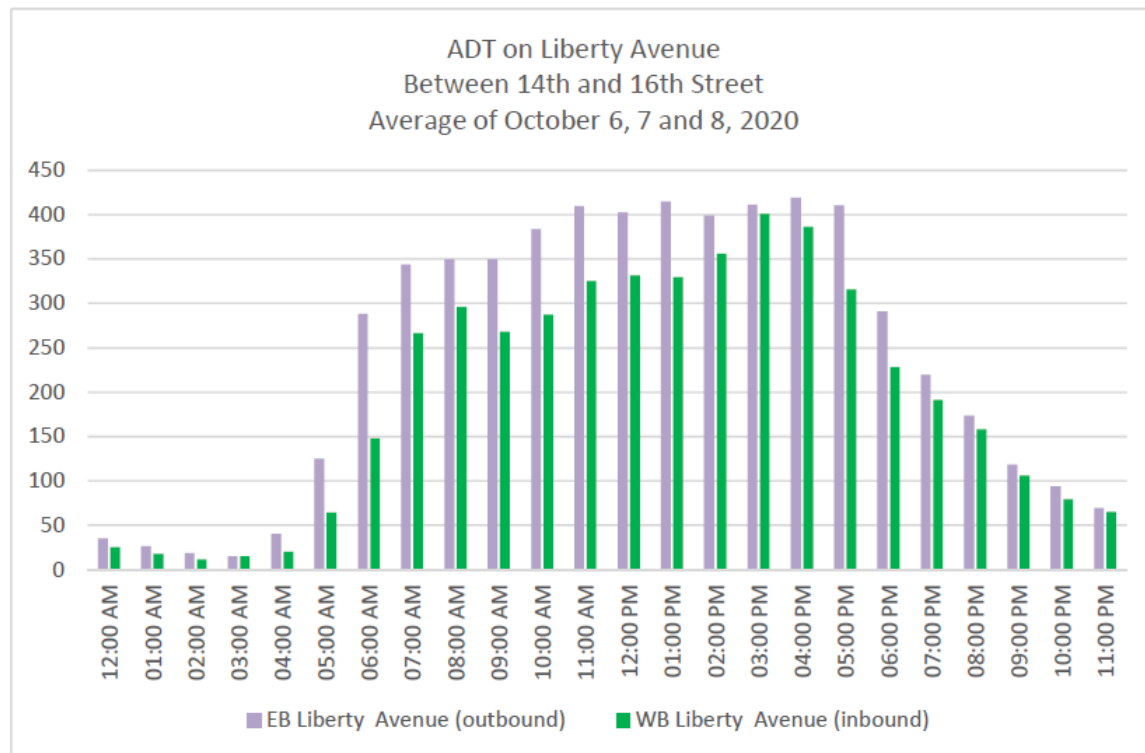


Figure 3 ADT Between 14th and 16th Street

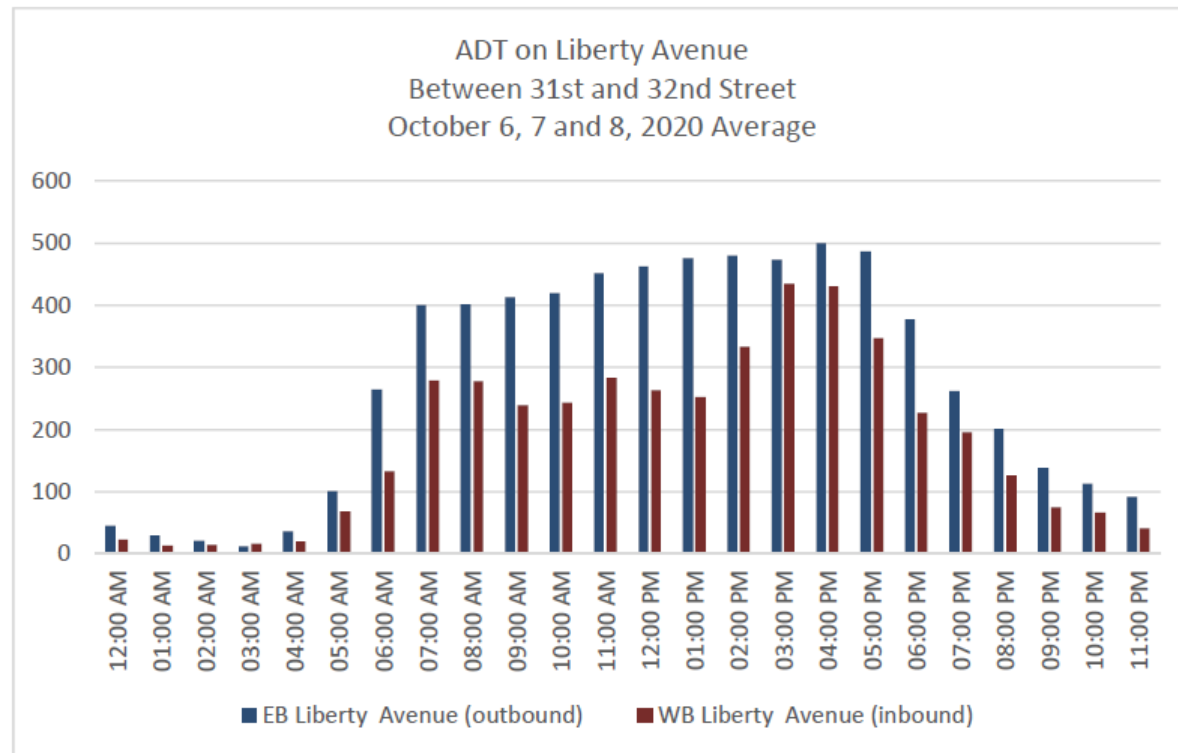
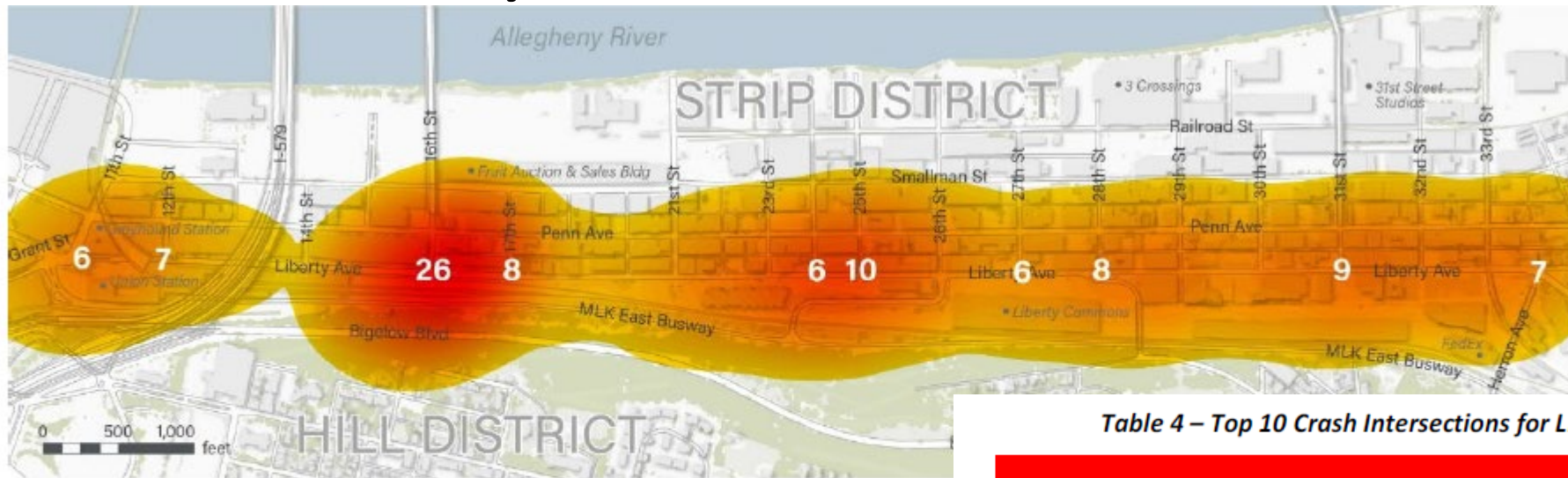


Figure 4 ADT Between 31st and 32nd Street

Liberty Ave Average Daily Traffic = 21,789

Crash History



Total Crashes


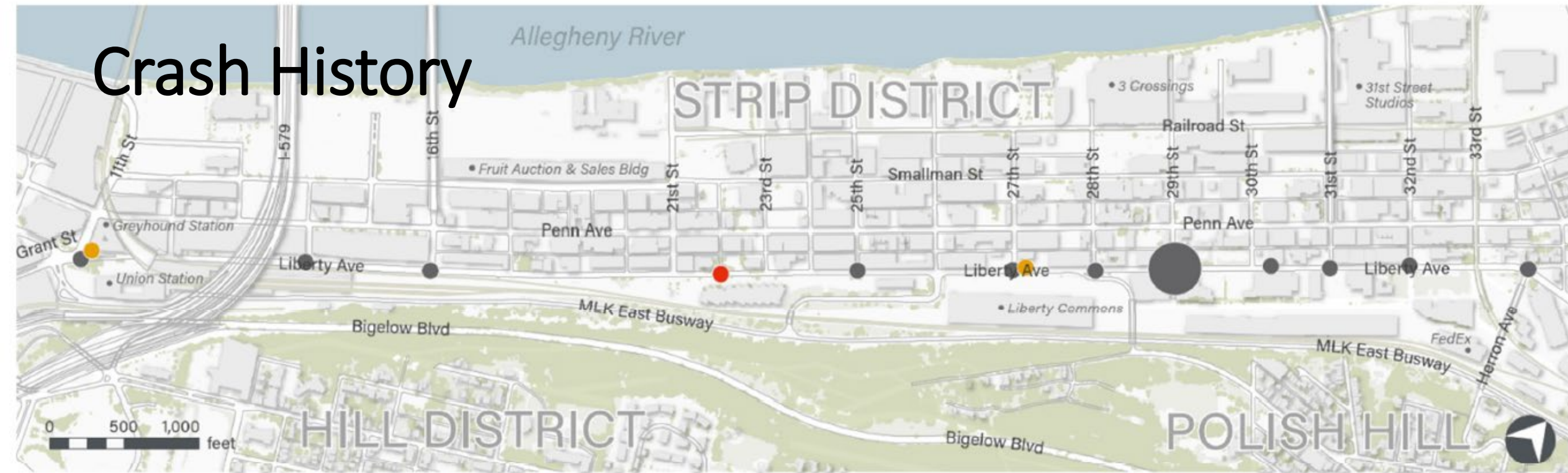
less crashes  more crashes
 7
 number of crashes at top ten locations

Table 4 – Top 10 Crash Intersections for Liberty Avenue (2017 – 2019)

Crash Location	Year			
Intersection	2017	2018	2019	Total
Liberty & 16 th	11	7	8	26
Liberty & 25 th	2	2	6	10
Liberty & 31 st	1	6	2	9
Liberty & 28 th	3	3	2	8
Liberty & 17 th	4	1	3	8
Liberty & 12 th	3	3	1	7
Liberty & Herron	1	1	5	7
Liberty & 11 th	2	1	3	6
Liberty & 27 th	2	3	1	6
Liberty & 24 th	4	0	2	6
Total	33	27	33	93

Crash History



Crashes Involving Bicyclists or Pedestrians (2017-2019)*

● no injury (13)

● 1 crash

● 3 crashes

● serious suspected injury (2)

● death (1)

* sole crash involving bicyclist shown at 32nd St, all others involve pedestrians

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Design Alternatives





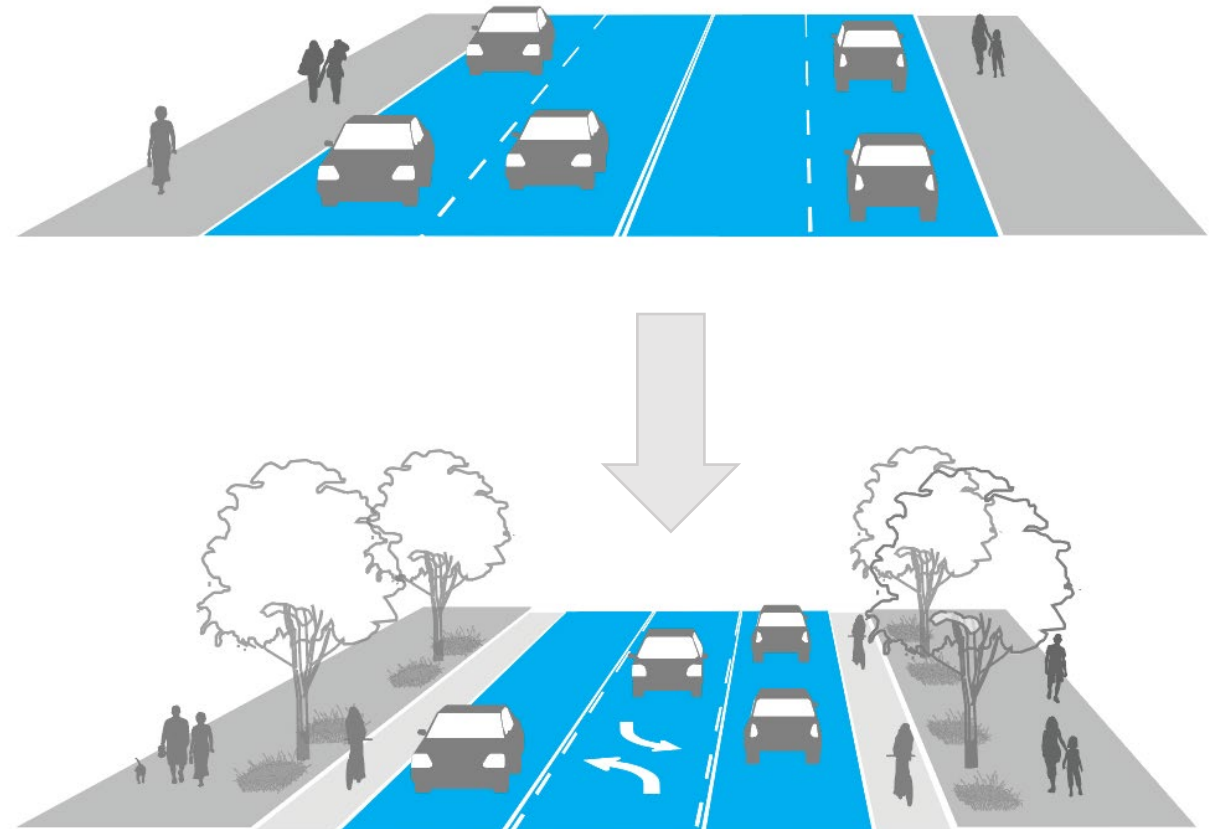
U.S. Department of Transportation
**Federal Highway
Administration**

Road Diet – A Road Diet typically involves converting an existing four-lane undivided roadway to a three-lane roadway consisting of two through lanes and a center left-turn lane.

Benefits of a Road Diet :

- Reduction total crashes of 19 to 47%
- Reduction in rear-end crashes and left-turn crashes due to dedicated left turn lane
- Reduction in right-angle crashes
- Fewer lanes for pedestrians to cross
- Opportunities for widened sidewalks, bike lanes, and crossing islands
- Traffic calming and more consistent speeds.

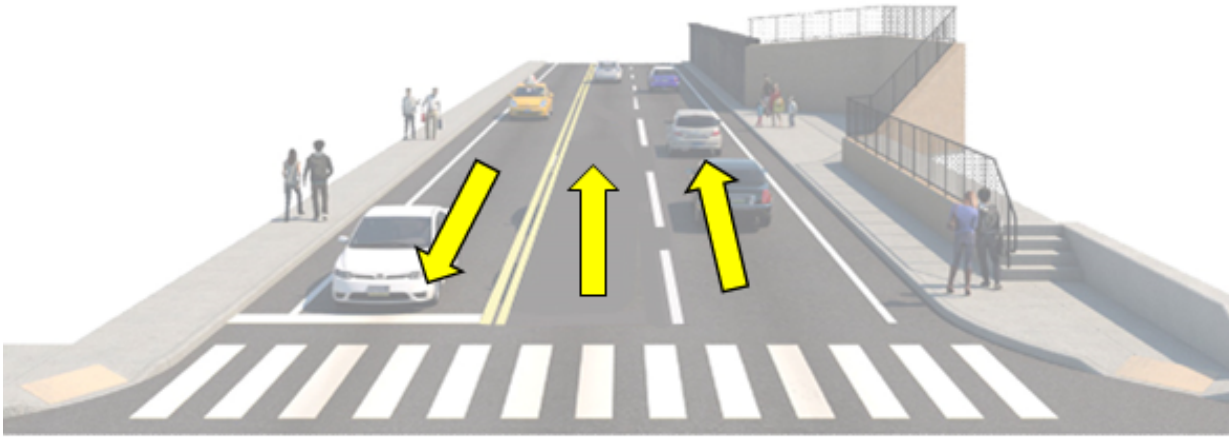
**Successful on streets under
25,000 vehicles per day**



Liberty Avenue



Two Scenarios



Scenario 1

- Two outbound lanes (away from Downtown)
- One inbound lane

Pros/Cons

- Reduced safety benefits
- Slightly faster travel time



Scenario 2

- One outbound lane (away from Downtown)
- One inbound lane
- Center lane used for left turns in both directions

Pros/Cons

- All the safety benefits of a road diet
- Opportunity for pedestrian crossing islands

Traffic Study Summary

Goal:

- Evaluate performance of proposed changes over time in order to understand *potential* impacts

Challenge:

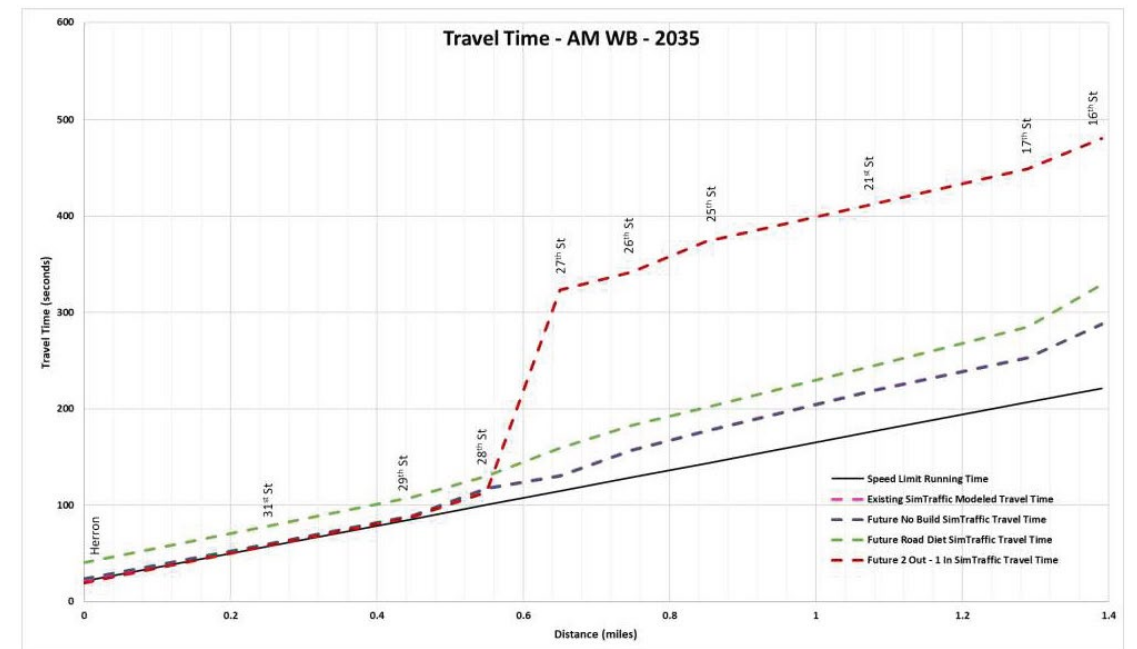
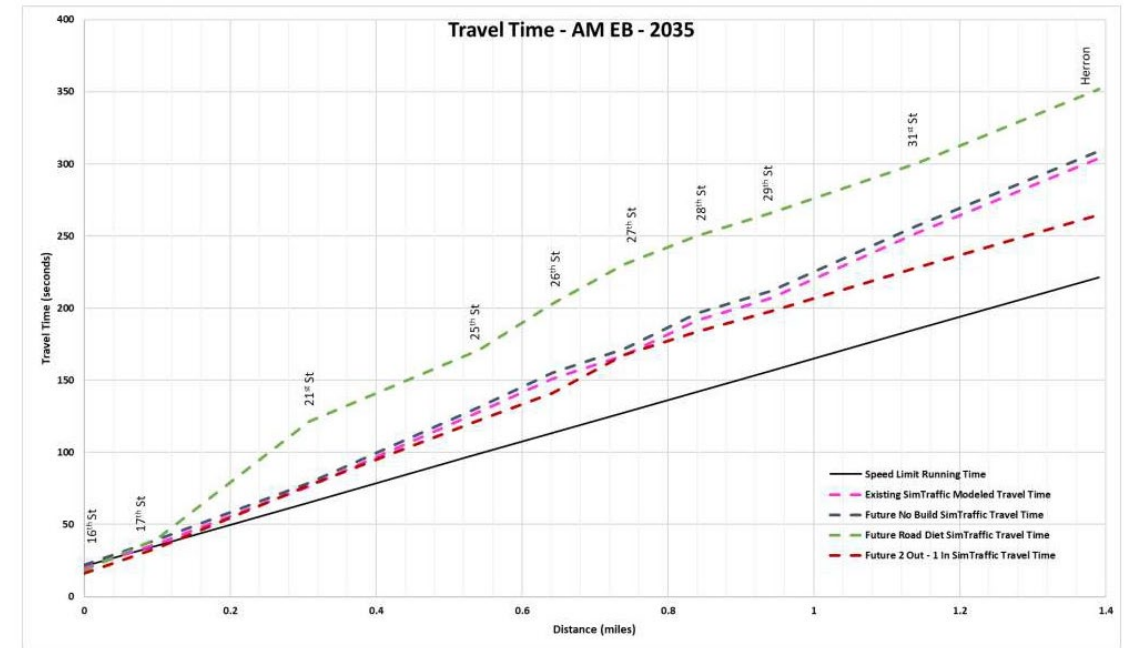
- Predicting future conditions in a time of extreme uncertainty

Solution:

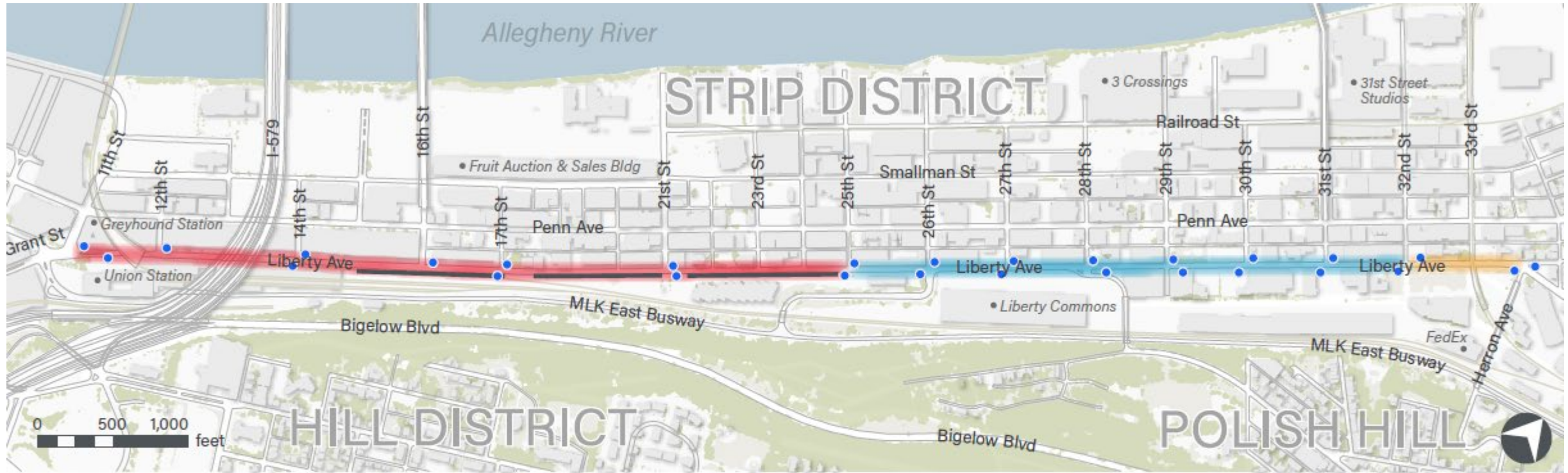
- "Stress Test" evaluation looking at worst-case and adjusting from there

Outcome:

- 2-lane street has enough capacity for future volume
- Delay expected to increase regardless of option
- Additional delay between two "build" options occurs at only two intersections, 21st and 28th



Liberty Avenue Street segments



Curb-to-Curb Width

- Segment 1 - 38' with sidewalk on north side*
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* constrained areas (south side retaining wall)

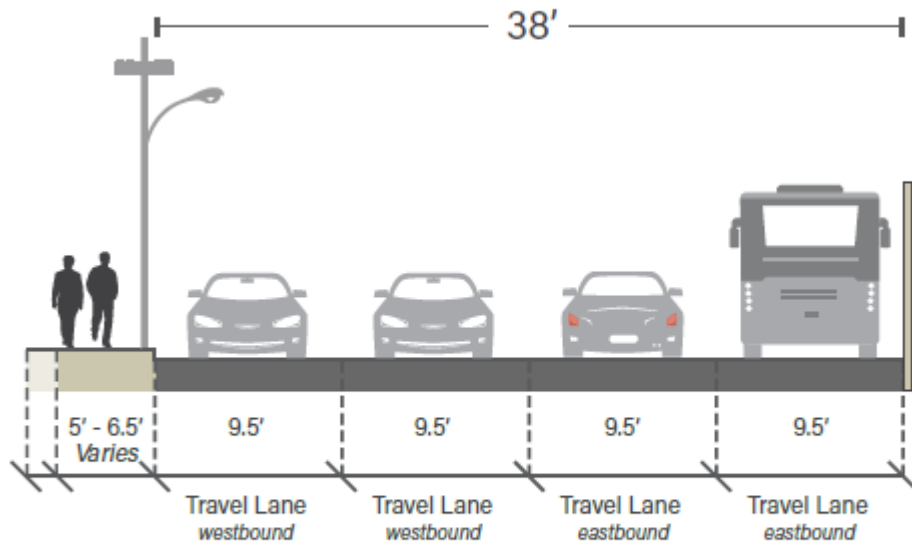
• bus stops on Liberty Ave

- Curblines
- Buildings
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Segment 1 *looking eastbound*

Liberty Avenue Safety Improvement Project

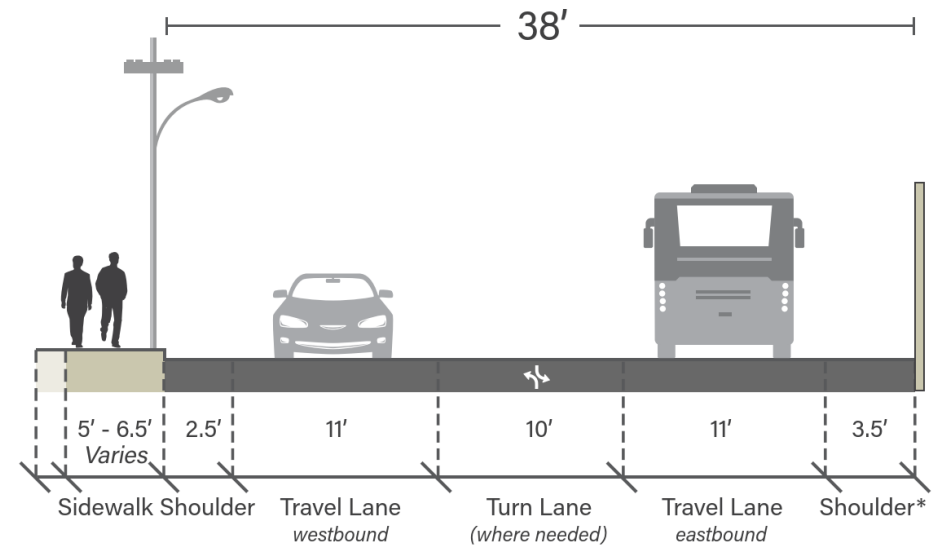
Existing*



11th Street to 25th Street

** existing cross section depicts the most constrained areas in this segment*

Preferred

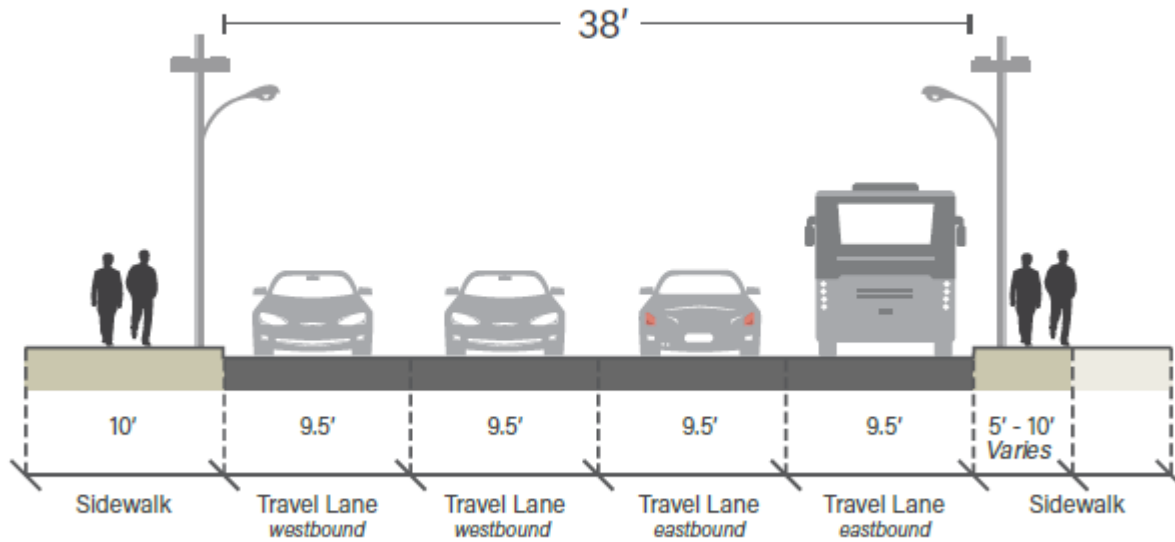


** shoulders can be converted to bump outs/transit accommodations at intersections*

Segment 2 *looking eastbound*

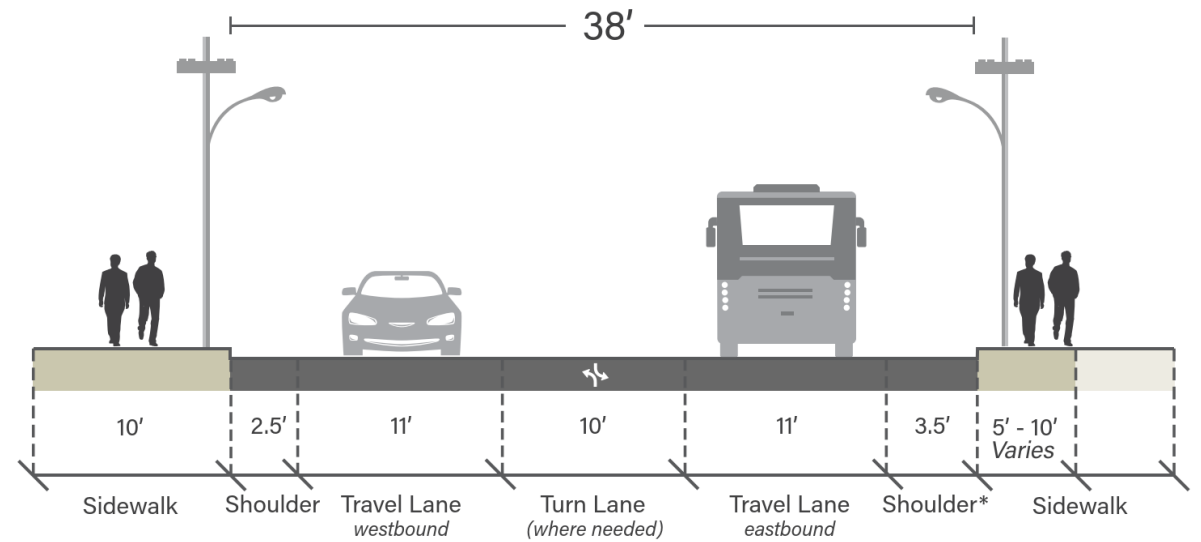
Liberty Avenue Safety Improvement Project

Existing*



25th Street to 32nd Street

Preferred

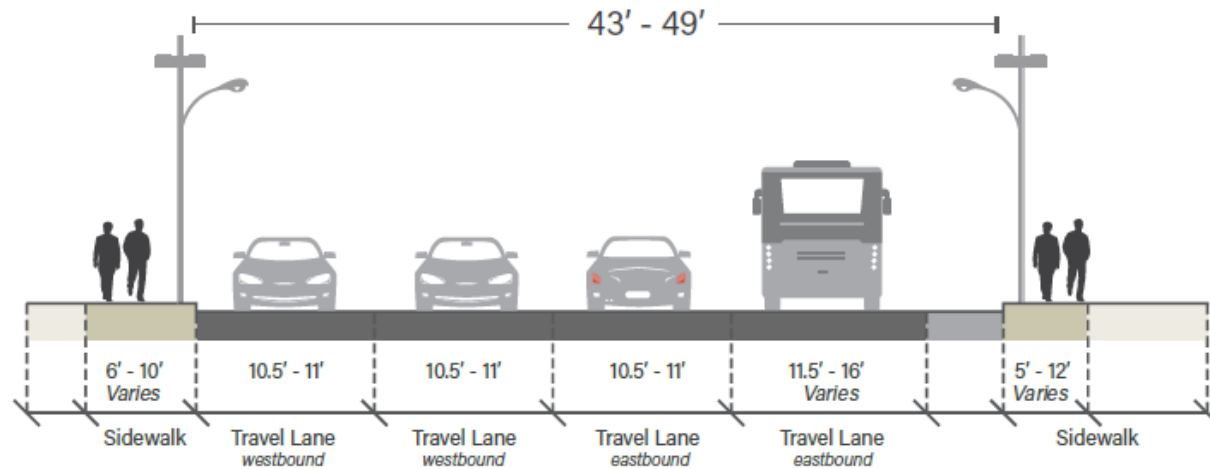


* shoulders can be converted to bump outs/transit accommodations at intersections

Segment 3 *looking eastbound*

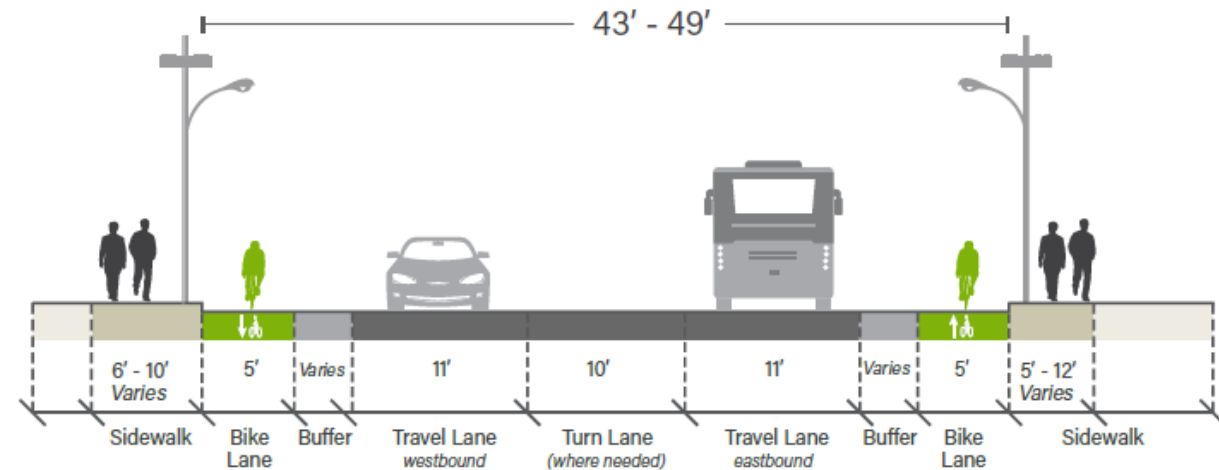
Liberty Avenue Safety Improvement Project

Existing*

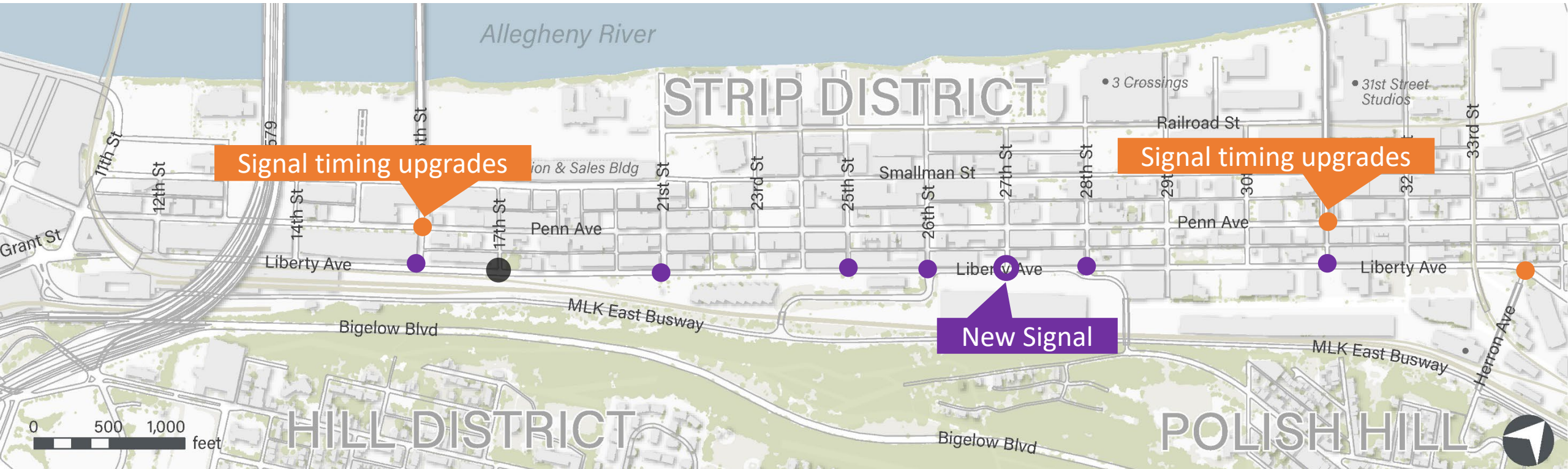


32nd Street to Herron Ave

Preferred



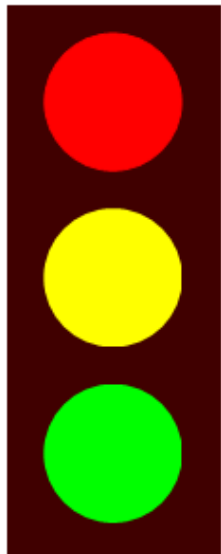
Signal Summary



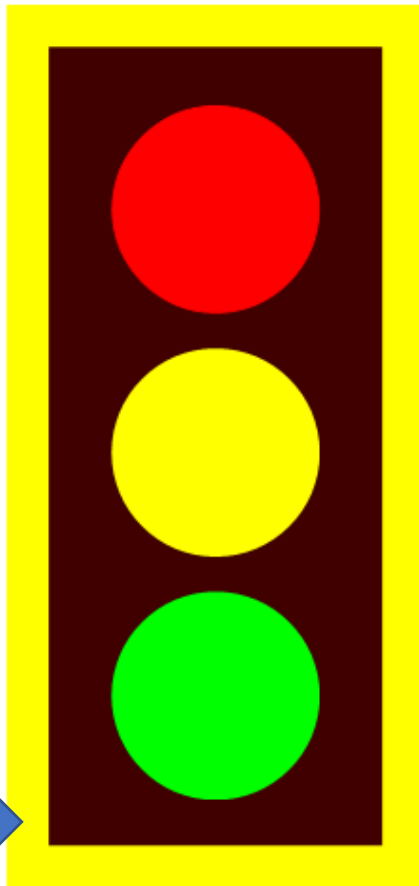
- Signal Upgrade
- New Signal
- Signal Timing Upgrade
- Signal Type Revision

Signal Upgrades

Existing 8"
Signal Head



Proposed 12"
Signal Head



Reflective
Border

Pedestrian
Countdown Signal



*Upgrading from 8"
Traffic Signal Heads to
12" can reduce
intersection crashes by
58%

Audible
Push Button



Smart Controller
and
Communications



17th Street and Liberty Avenue

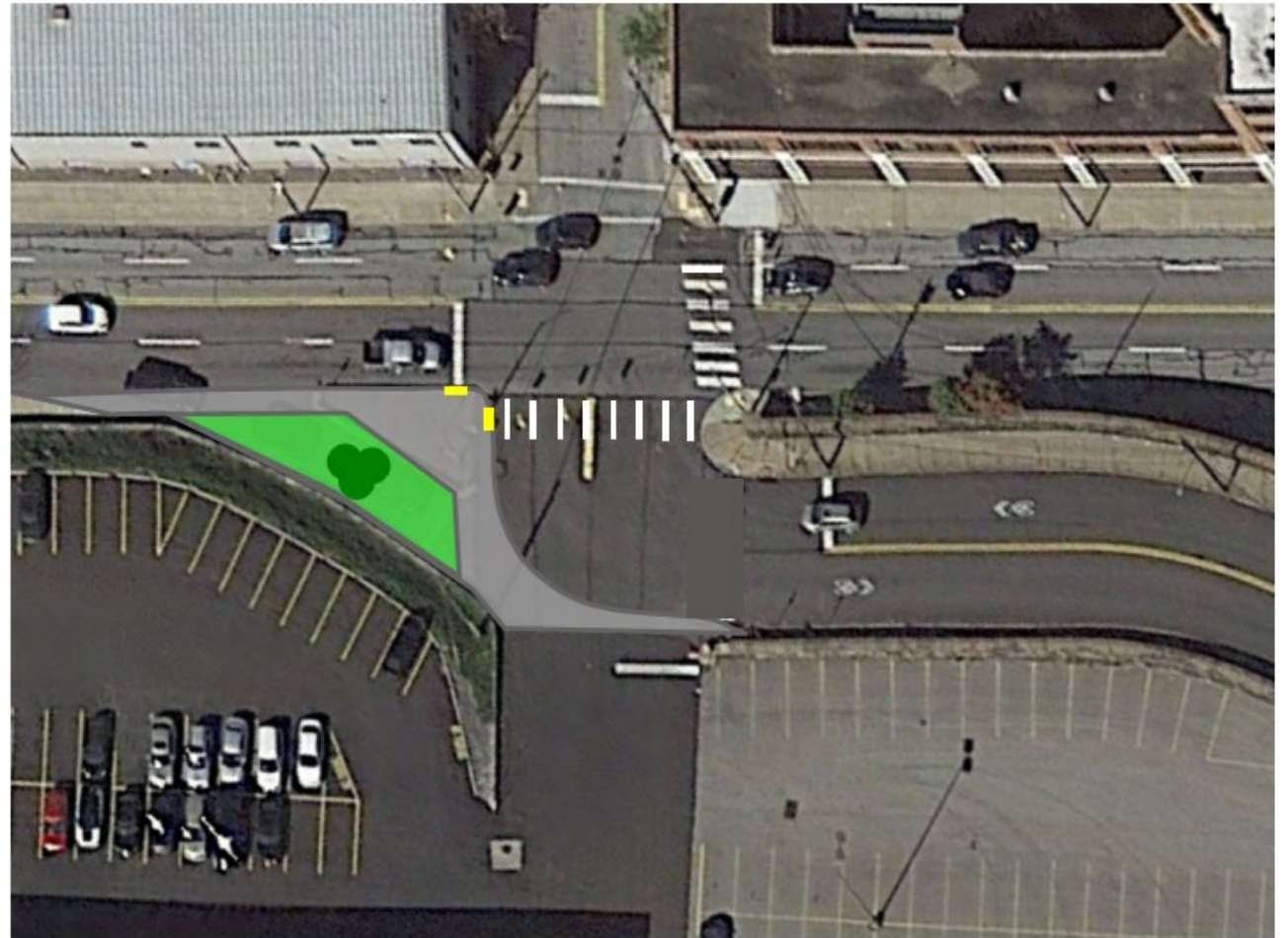
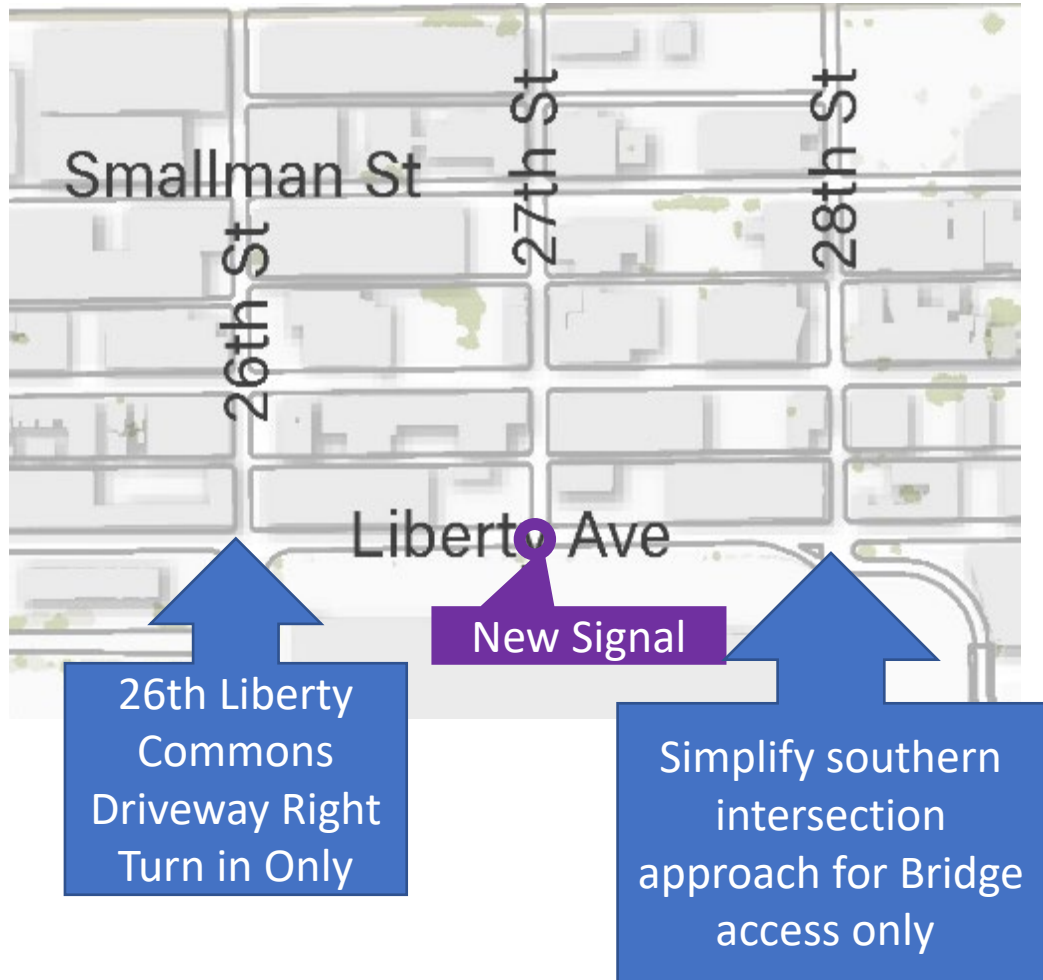


Existing Condition

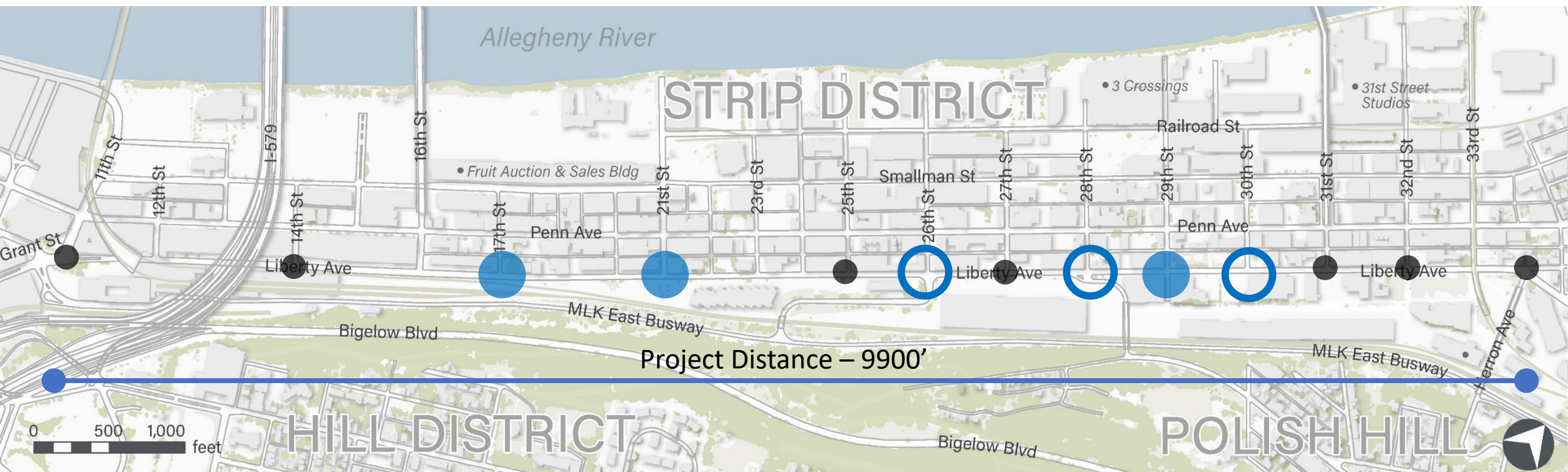


Proposed Pedestrian Refuge Island with Rectangular Rapid-Flashing Beacon (RRFB)

26th – 28th Streets and Liberty Avenue



Transit Summary

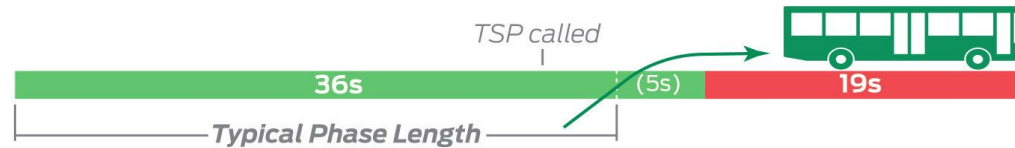


Bus Blockage Investigation

Road Diet projects on transit corridors must consider impact of transit vehicles stopping in-lane.

Liberty Ave Solutions:

- Modeling of worst-case scenario
- Bus Stop consolidation
- Safe passing zones
- Green Extension Transit Signalization



Options Evaluated by DOMI:

- Standard Bus Pullout
 - Insufficient right-of-way
- Modified Bus Pullout (chicane)
 - Introduces safety challenges
 - Increases intersection delay
 - Induces driver non-compliance
- Reversible Lane
 - No typical rush hour split
 - Introduces safety challenges
 - Adds significant cost

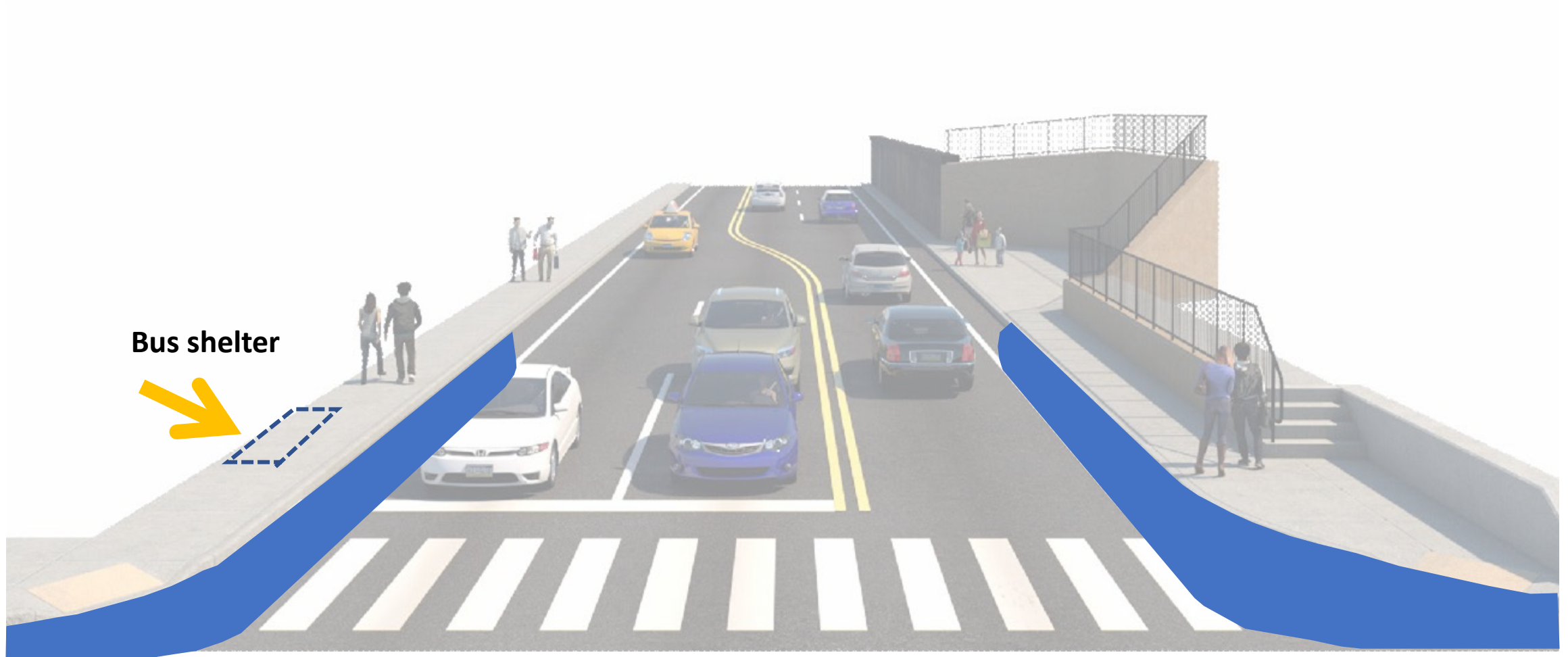
New Lighting



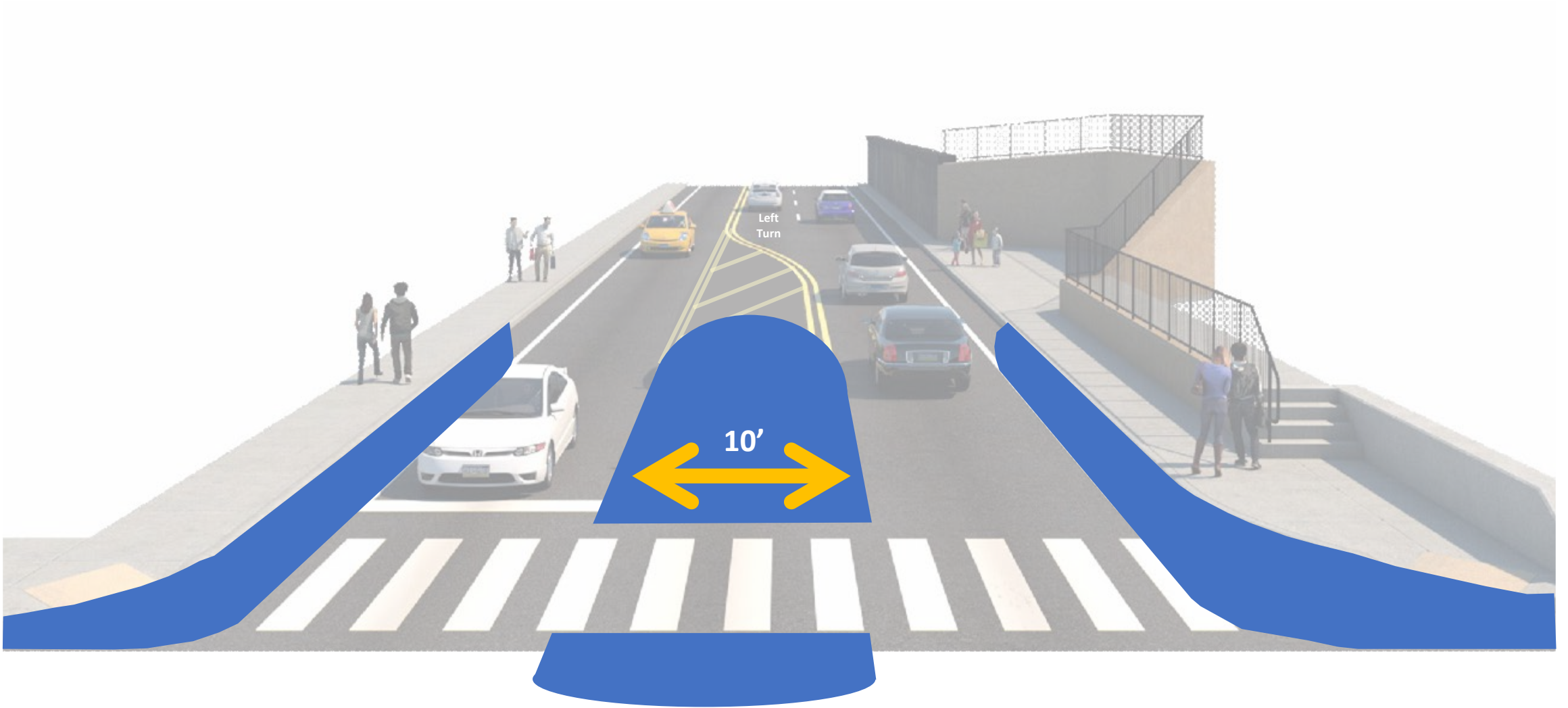
Sidewalk Widening



Bus Stop Upgrades



Crossing Island



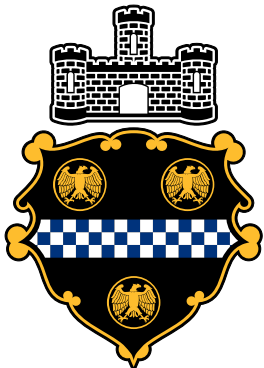
Next Steps

2021:

- **Collect and evaluate feedback**
- **Confirm/Adjust preferred alternative**
- **Present final design**

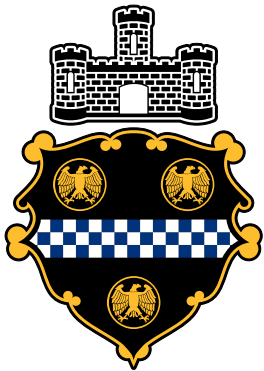
2022:

- **Final Engineering**
 - **Public involvement included**
- **Complete construction documents**



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Questions





Thank You!

WE APPRECIATE YOUR TIME