

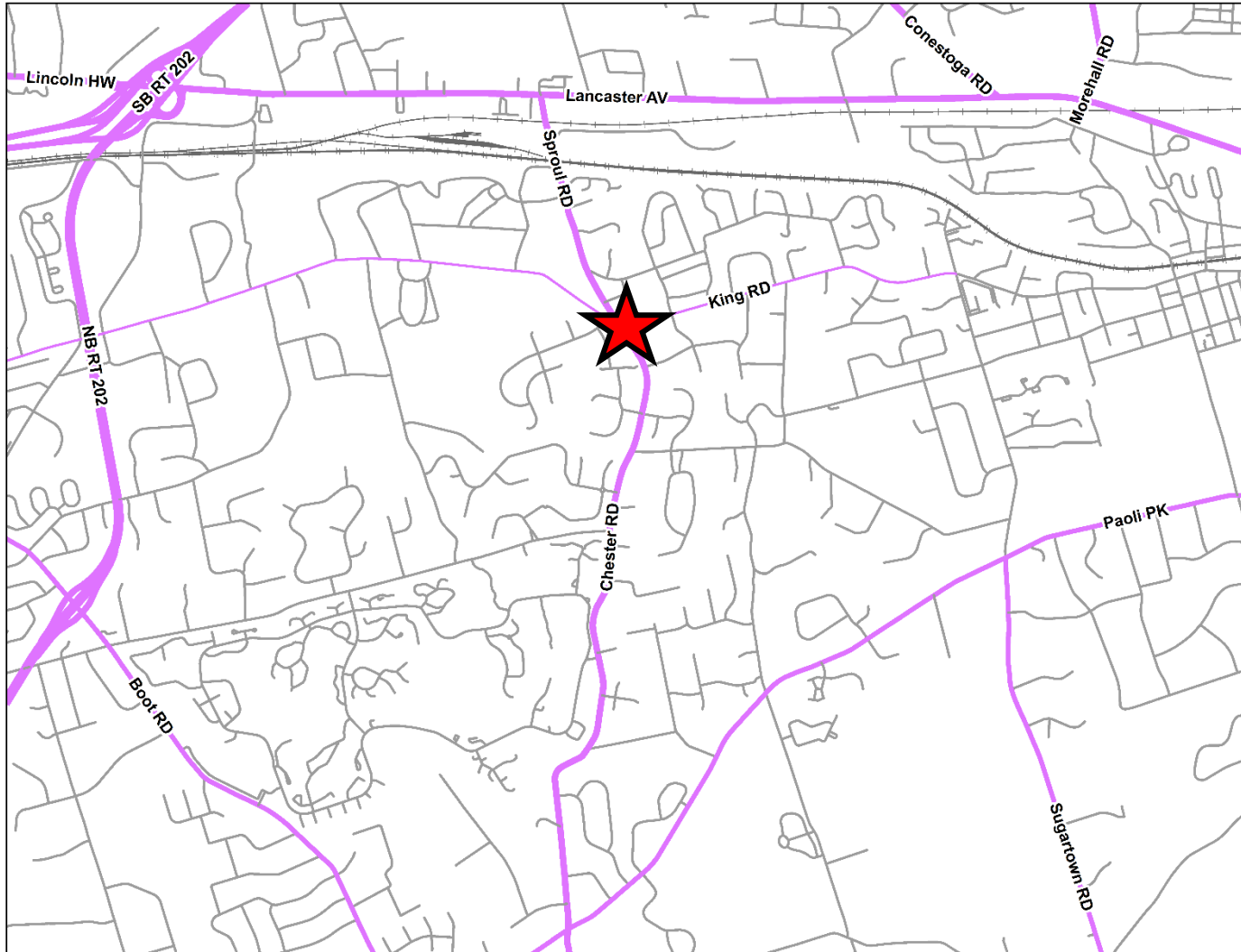
Transportation Improvements Informational Meeting



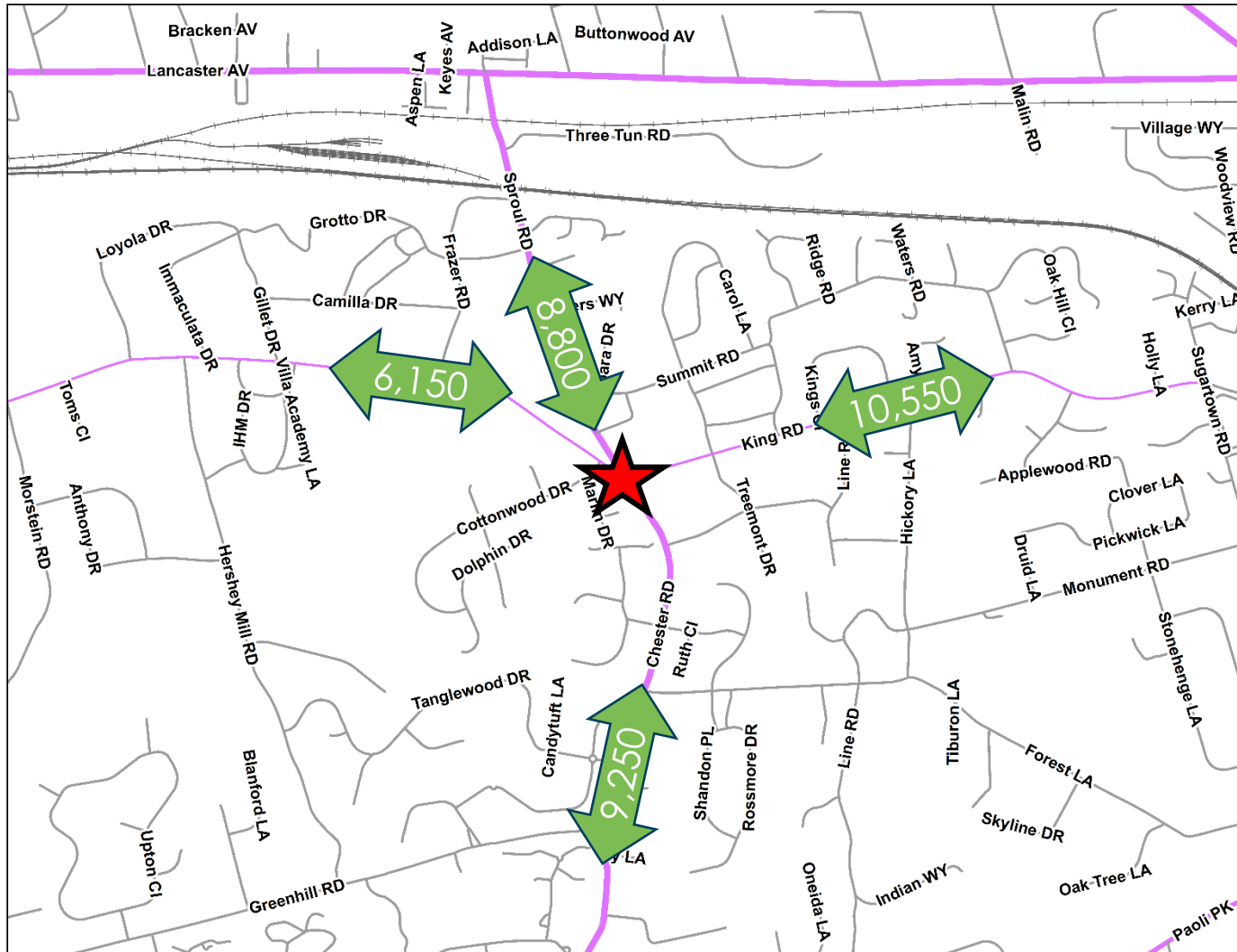
June 5, 2019

- Summarize current intersection conditions
- Present improvement options
- Discuss next steps
- Gain feedback from the community

Intersection Location



PA Route 352 and King Road



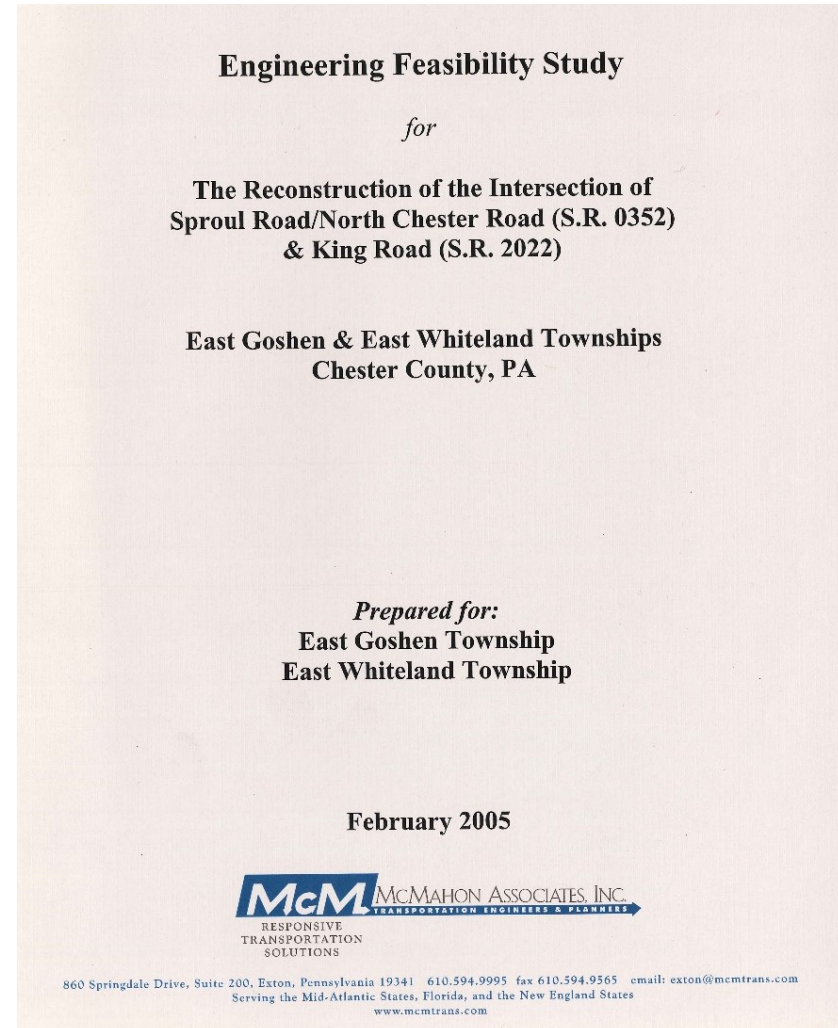
2019 Daily Traffic Volumes



**Source:
PennDOT**

Project Background

- Studied by both Townships in 2004 and 2005
- Evaluated improvements to improve intersection layout and add left-turn lanes
- Improvements included on the Chester County Transportation Improvement Inventory
- Project has not moved forward due to funding



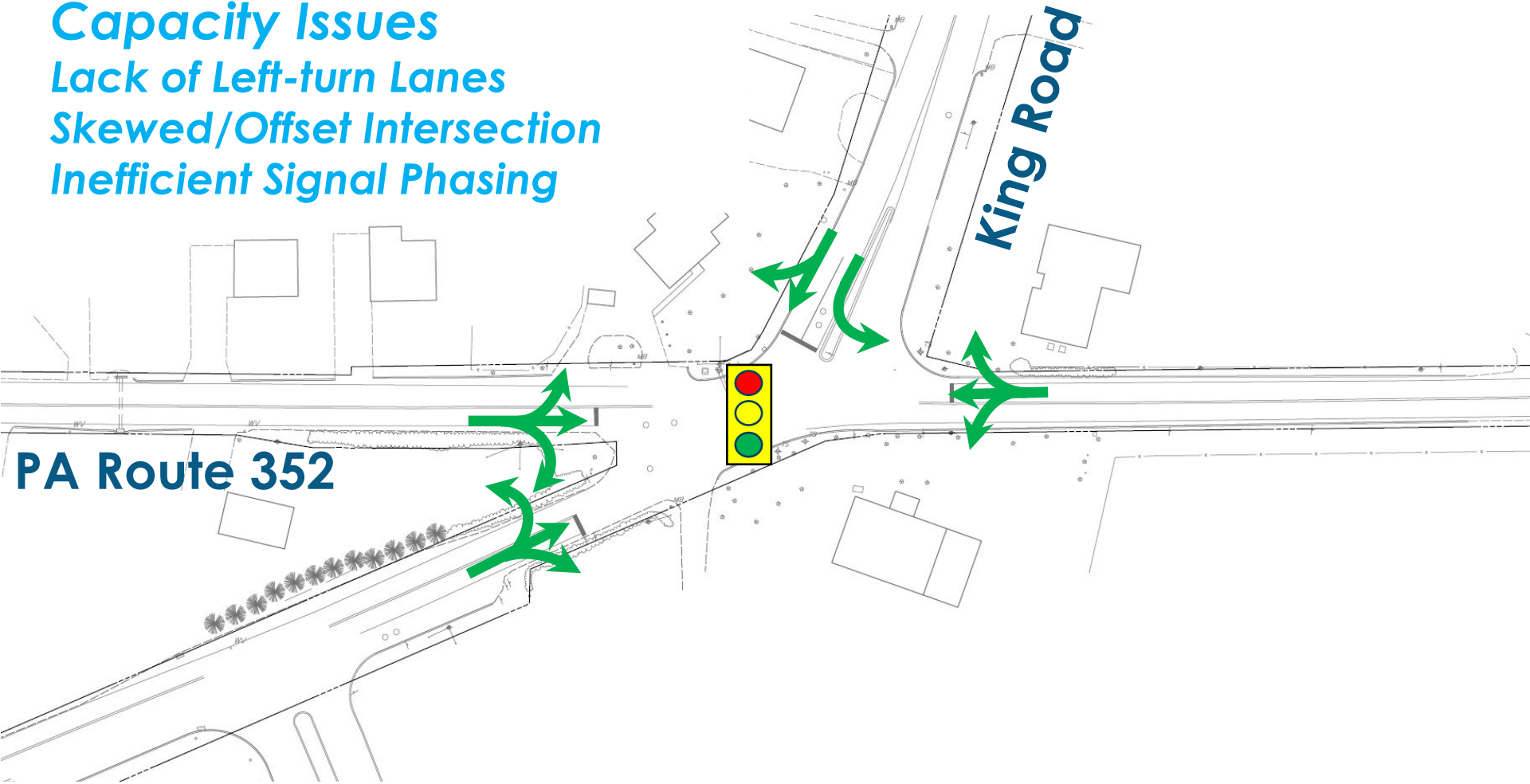
- Evaluated improvement options to improve traffic conditions
- Developed conceptual improvement plans only
- Consultation with PennDOT
- No decisions have been made

Capacity Issues

Lack of Left-turn Lanes

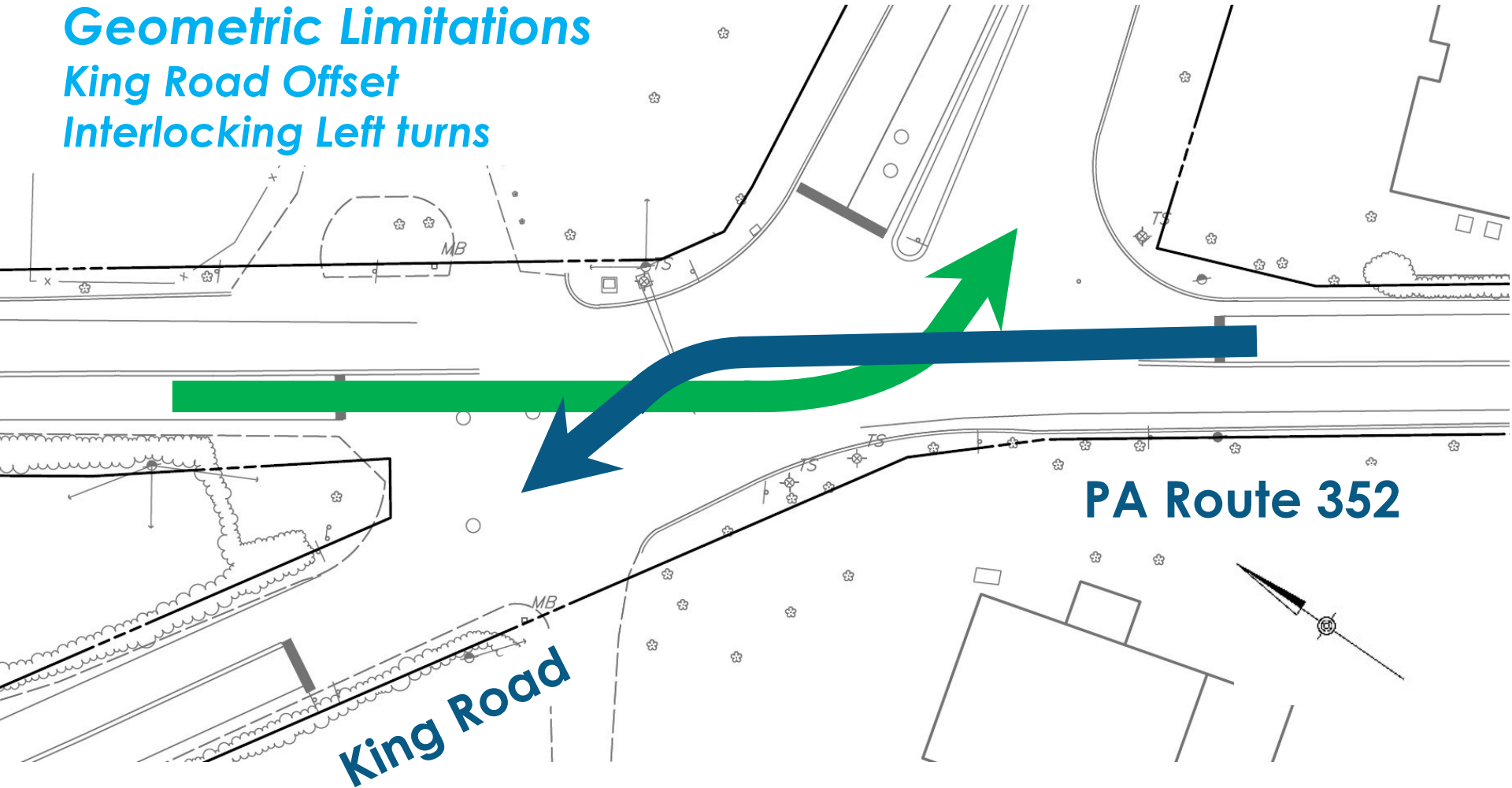
Skewed/Offset Intersection

Inefficient Signal Phasing



Current Conditions

Geometric Limitations
King Road Offset
Interlocking Left turns



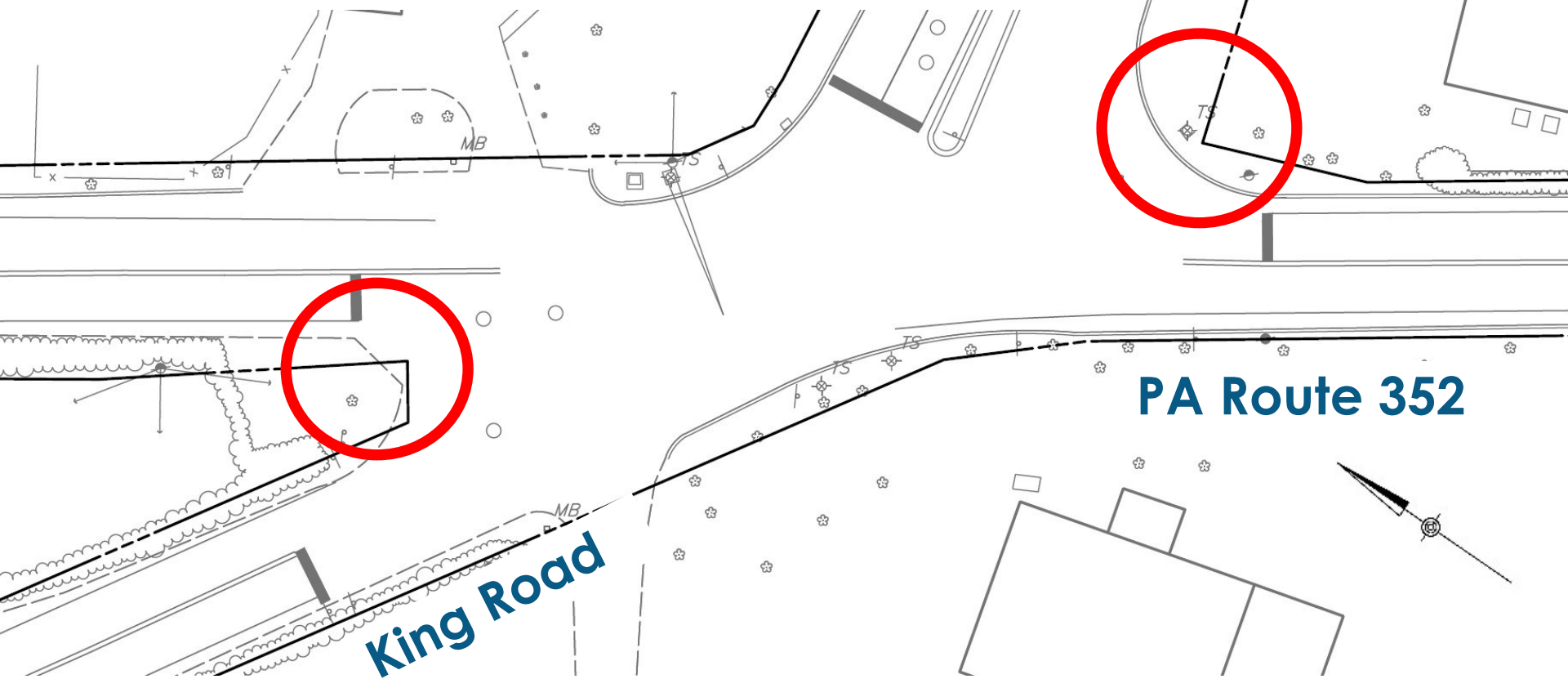
PA Route 352

King Road

Geometric Limitations

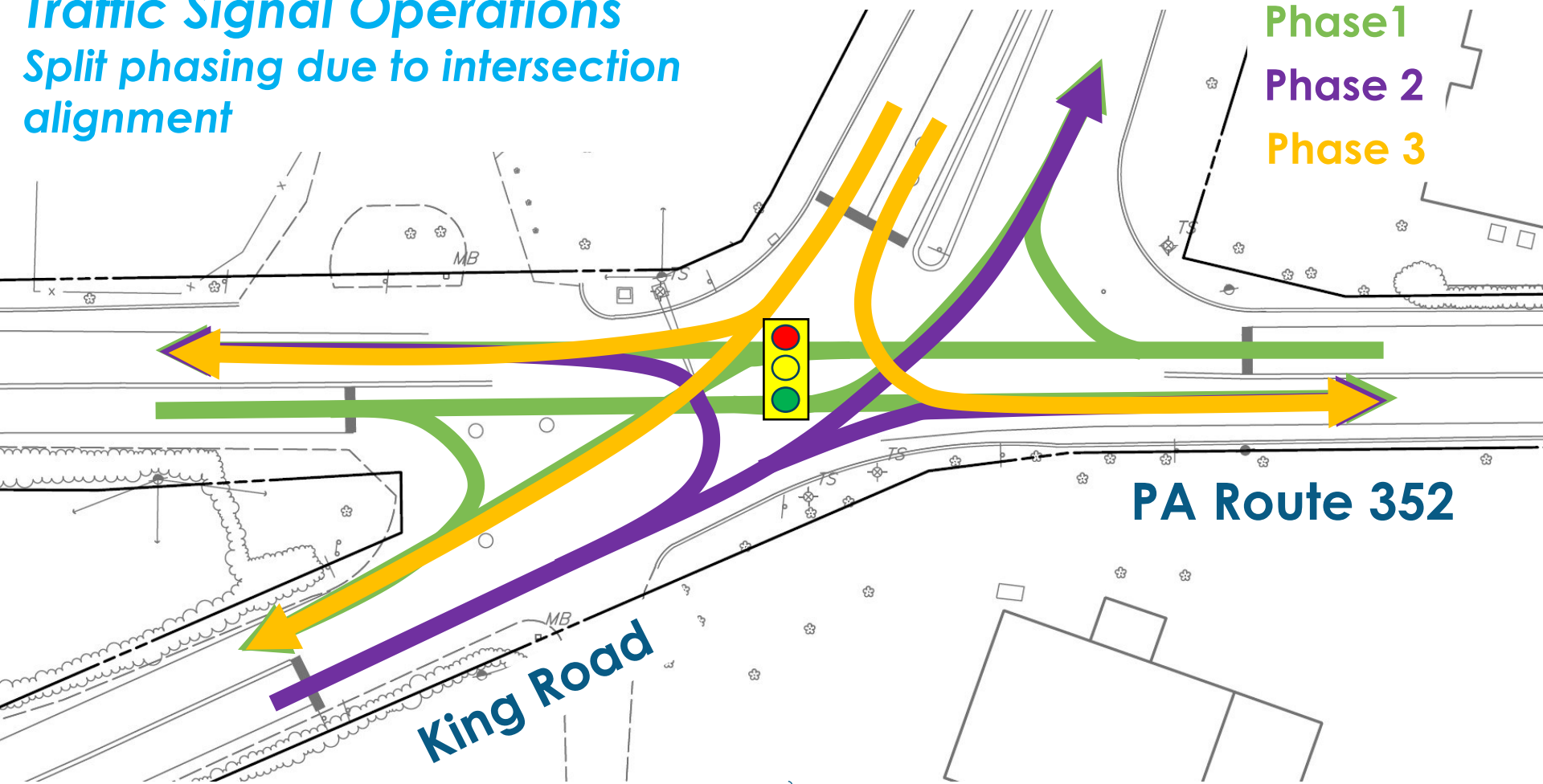
Inefficient Turning Radii due to Skewed Intersection

Obstructed Views due to Vegetation and Grades



Current Conditions

Traffic Signal Operations Split phasing due to intersection alignment



Current Conditions



Crash History (2013 to 2018)

- 32 Total Crashes
- Average of 5 Per Year

- Crash Type
 - 13 Rear End
 - 13 Angle
 - 5 Hit Fixed Object
 - 1 Side Swipe

- Crash Severity
 - 25 Property Damage
 - 4 Injury Crashes
 - 3 Unknown Severity

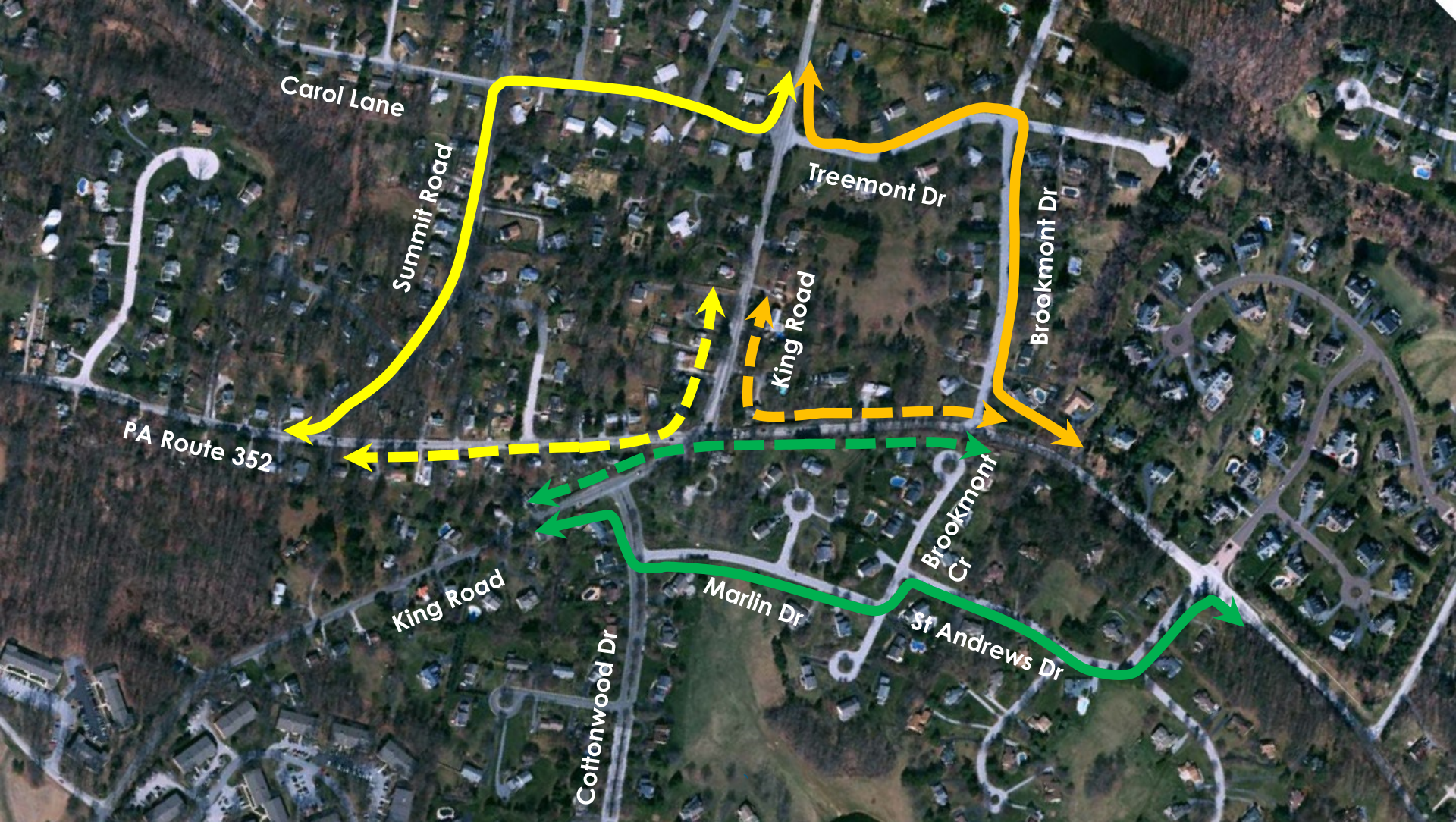
- Delay = Level of Service
 - Intersection Report Card
 - Weekday AM and PM Commuter Peak Hours
 - LOS A through D = 0 to 55 seconds
 - Acceptable
 - LOS E = 55 to 80 seconds
 - Approaching Capacity Conditions
 - **LOS F = more than 80 seconds**
 - **Operations Exceed Intersection Capacity**
 - **Improvements Are Needed**
- Queues
 - Weekday Commuter Peak Hour Vehicle Stacking

84 Level of Service F

Delay and Queues



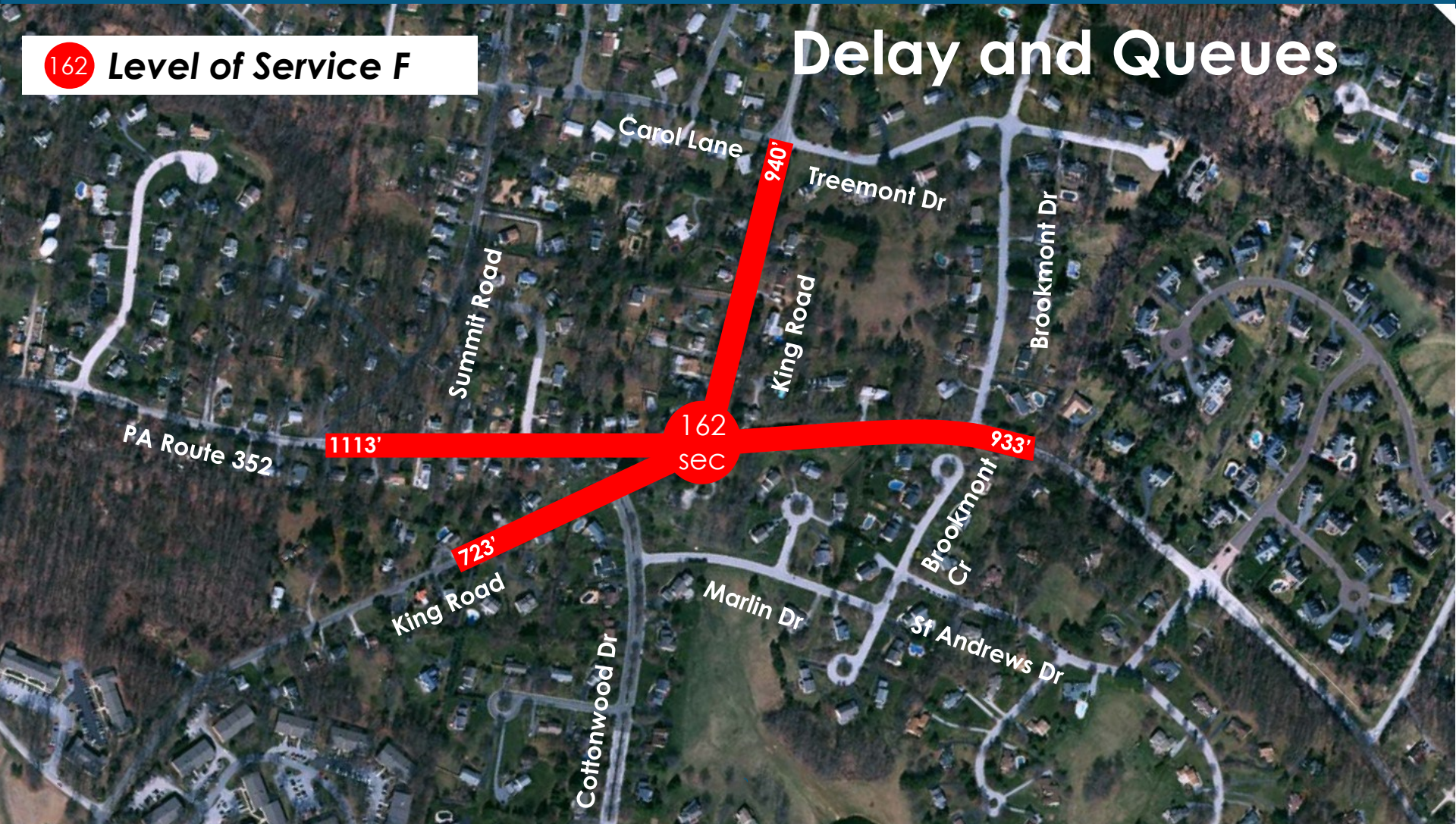
Neighborhood Cut-through



Future – If No Improvements

162 Level of Service F

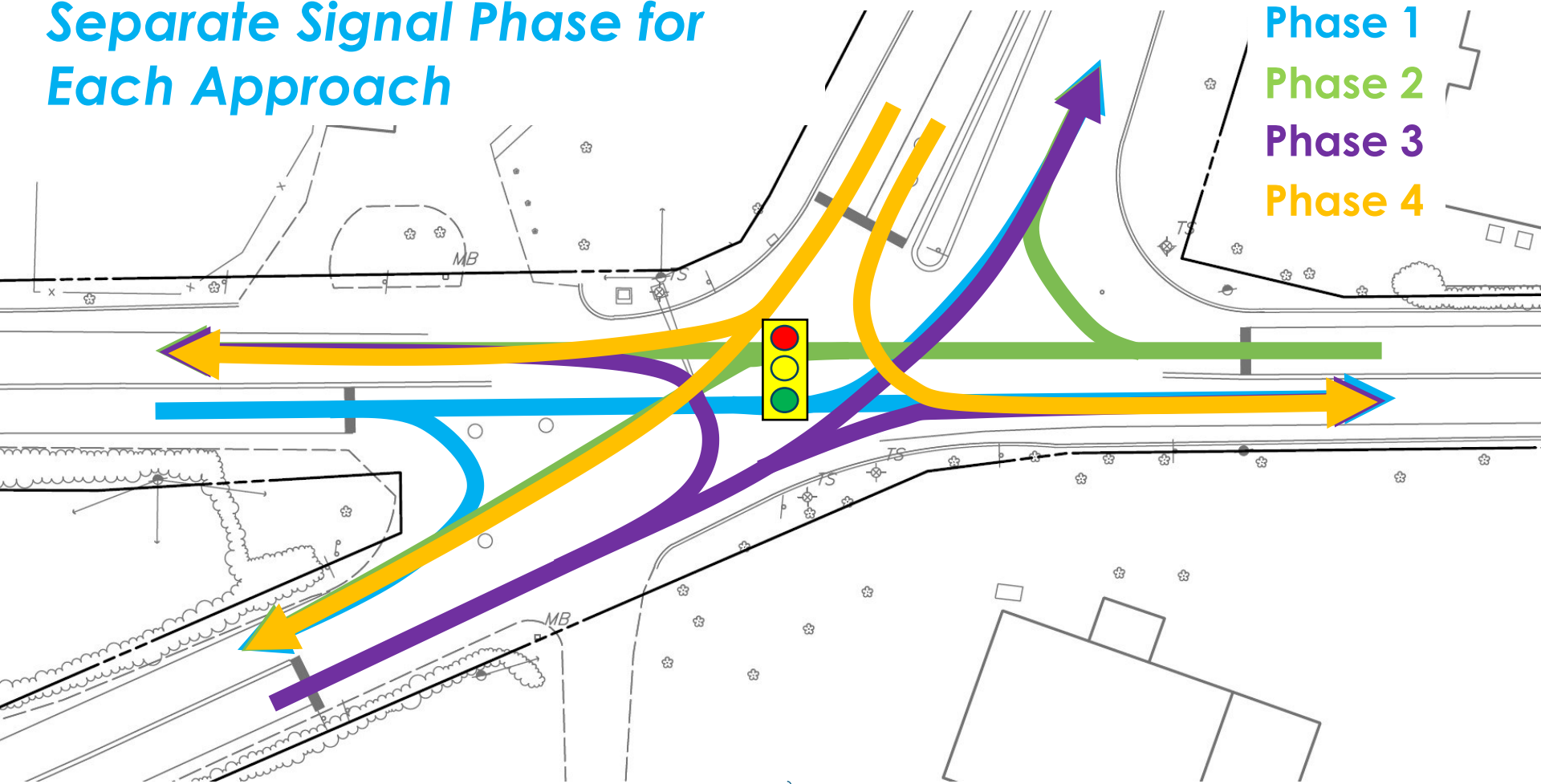
Delay and Queues



- Today
 - Intersection layout problems
 - Traffic flow problems = delays and queuing
 - Neighborhood cut-throughs
- In the future, if we do nothing...
 - Worse traffic flow = greater delays and queues
- **Conclusion = Improvements Needed**

Improvement Option 1A – Signal Phasing

Separate Signal Phase for Each Approach



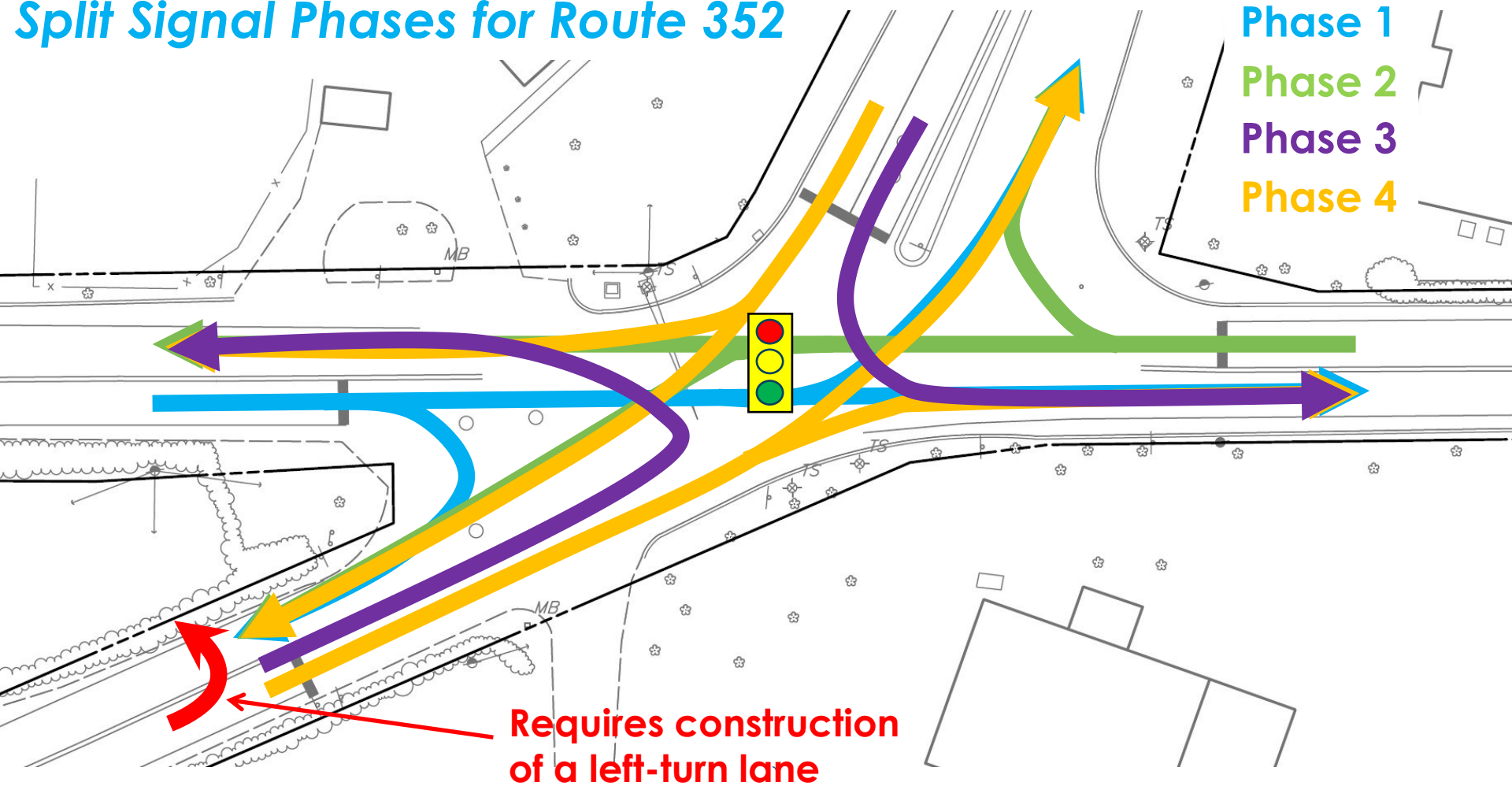
Improvement Option 1A – Signal Phasing

370 LOS F Option 1A Separate Phases
162 LOS F No Improvements

LOS and Queues



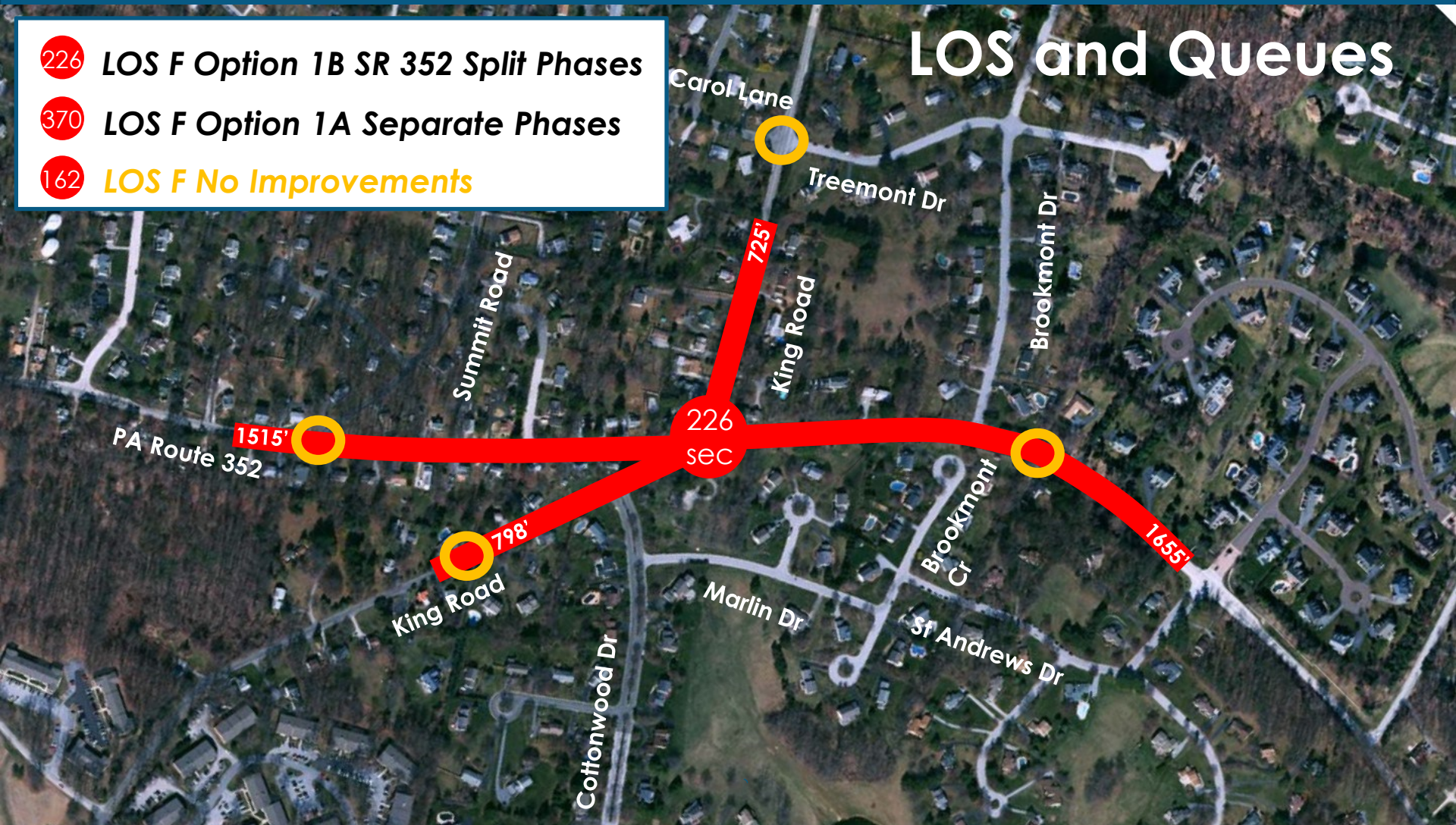
Split Signal Phases for Route 352



Improvement Option 1B – Signal Phasing

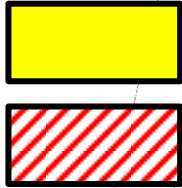
- 226 LOS F Option 1B SR 352 Split Phases
- 370 LOS F Option 1A Separate Phases
- 162 LOS F No Improvements

LOS and Queues



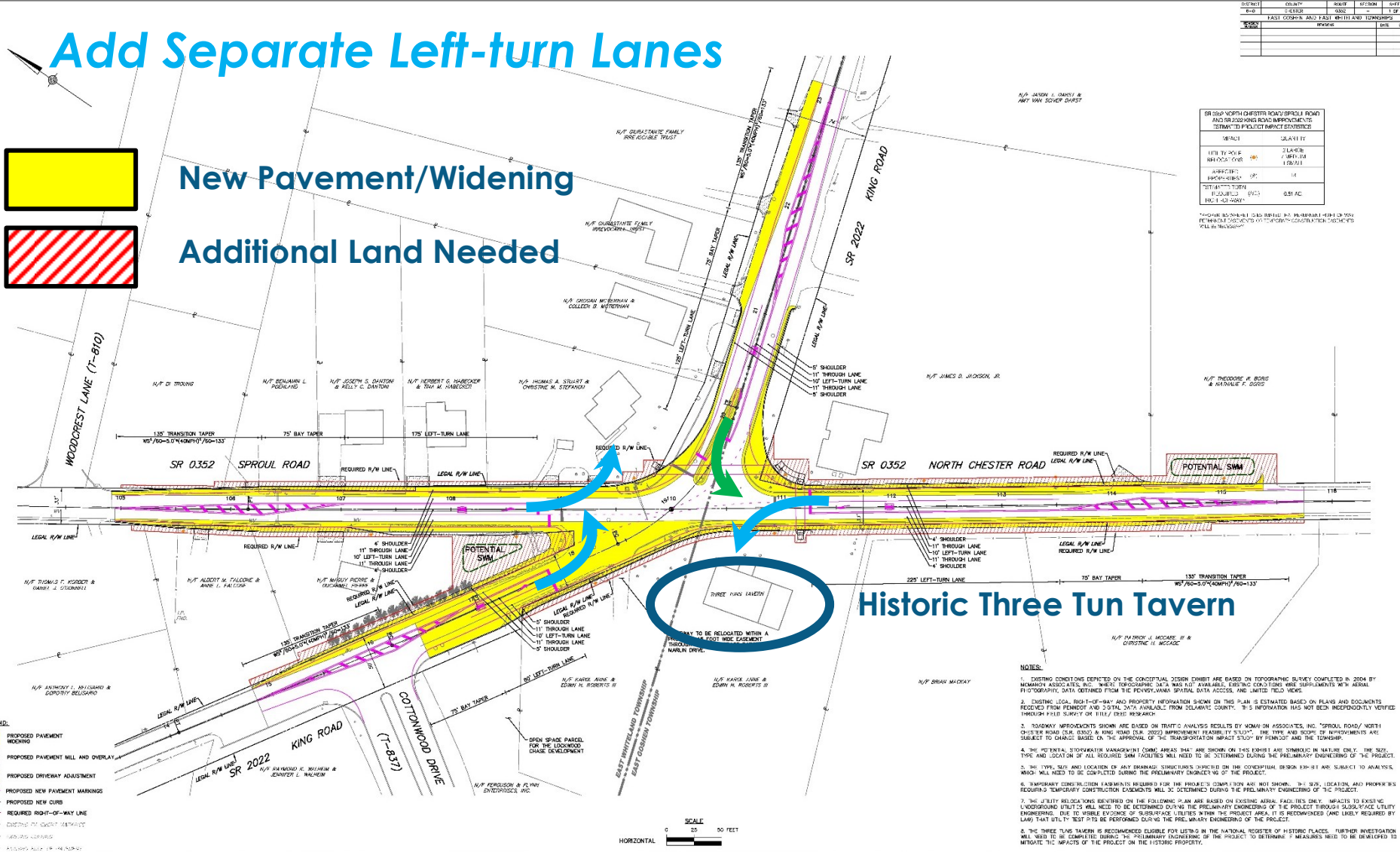
Improvement Option 2 – Left-turn Lanes

Add Separate Left-turn Lanes



New Pavement/Widening

Additional Land Needed



DISTRICT	COUNTY	ROUTE	SECTION	OFFSET
0-0	0-00	0-00	0-00	1 OF 1
EAST GOSHEN AND EAST WHITLAND TOWNSHIPS				
PROJECT	PROJECT NO.	DATE	BY	DATE

SR 0352 NORTH CHESTER ROAD/SPROUL ROAD AND PROPOSED ROAD IMPROVEMENTS		TOTAL PROJECT IMPROVEMENTS	
SECTION	LENGTH BY	SECTION	LENGTH BY
LEFT TURN	1.00	THROUGH	7.00
RIGHT TURN	0.00	LEFT TURN	1.00
SHOULDER	0.00	SHOULDER	1.00
TOTAL PROJECT IMPROVEMENTS	1.00	TOTAL PROJECT IMPROVEMENTS	9.00

Historic Three Tun Tavern

- NOTES:
- EXISTING CONDITIONS DEPICTED ON THE CONCEPTUAL DESIGN EXHIBIT ARE BASED ON TOPOGRAPHIC SURVEY COMPLETED IN 2004 BY HANSON ASSOCIATES, INC. ANY CHANGES TO THE EXISTING CONDITIONS ARE SUBJECT TO FIELD VERIFICATION.
 - EXISTING LEGAL RIGHT-OF-WAY AND PROPERTY INFORMATION SHOWN ON THIS PLAN IS ESTIMATED BASED ON PLANS AND DOCUMENTS RECEIVED FROM PERMITTEE AND STATE DATA AVAILABLE FROM DELAWARE COUNTY. THIS INFORMATION HAS NOT BEEN INDEPENDENTLY VERIFIED THROUGH A FIELD SURVEY OR TITLE RESEARCH.
 - ROADWAY IMPROVEMENTS SHOWN ARE BASED ON TRAFFIC ANALYSIS RESULTS BY HANSON ASSOCIATES, INC. "SPROUT ROAD/NORTH CHESTER ROAD (SR 0352) & KING ROAD (SR 2022) IMPROVEMENT FEASIBILITY STUDY". THE TYPE AND SCOPE OF IMPROVEMENTS ARE SUBJECT TO CHANGE BASED ON THE APPROVAL OF THE TRANSPORTATION IMPACT STUDY BY PERMITTEE AND THE TOWNSHIP.
 - THE POTENTIAL STOPPING/STORAGE MANAGEMENT AREAS SHOWN ON THIS EXHIBIT ARE SIMULATED IN NATURE ONLY. THE SIZE, TYPE AND LOCATION OF ALL REQUIRED SIGN FACILITIES WILL NEED TO BE DETERMINED DURING THE PRELIMINARY ENGINEERING OF THE PROJECT.
 - THE TYPE, SIZE AND LOCATION OF ANY DRAINAGE STRUCTURES SHOWN ON THE CONCEPTUAL DESIGN EXHIBIT ARE SUBJECT TO ANALYSIS, WHICH WILL NEED TO BE COMPLETED DURING THE PRELIMINARY ENGINEERING OF THE PROJECT.
 - TEMPORARY CONSTRUCTION FACILITIES REQUIRED FOR THE PROJECT'S CONSTRUCTION ARE NOT SHOWN. THE SIZE, LOCATION AND PROPERLY REQUIRED TEMPORARY CONSTRUCTION FACILITIES WILL BE DETERMINED DURING THE PRELIMINARY ENGINEERING OF THE PROJECT.
 - THE UTILITY RELOCATIONS IDENTIFIED ON THE FOLLOWING PLAN ARE BASED ON EXISTING AERIAL FACILITIES ONLY. IMPACTS TO EXISTING UNDERGROUND UTILITIES WILL NEED TO BE DETERMINED DURING THE PRELIMINARY ENGINEERING OF THE PROJECT THROUGH A SUBSURFACE UTILITY ENGINEERING. DUE TO LIMITED EVIDENCE OF SUBSURFACE UTILITIES WITHIN THE PROJECT AREA, IT IS RECOMMENDED LAND OWNERS BE REQUIRED BY LAW THAT UTILITY TEST PITS BE PERFORMED DURING THE PRELIMINARY ENGINEERING OF THE PROJECT.
 - THE THREE TUN TAVERN IS RECOMMENDED ELIGIBLE FOR LISTING IN THE NATIONAL REGISTER OF HISTORIC PLACES. FURTHER INVESTIGATION WILL NEED TO BE COMPLETED DURING THE PRELIMINARY ENGINEERING OF THE PROJECT TO DETERMINE IF MEASURES NEED TO BE DEVELOPED TO MITIGATE THE IMPACTS OF THE PROJECT ON THE HISTORIC PROPERTY.

Improvement Option 2 – Left-turn Lanes

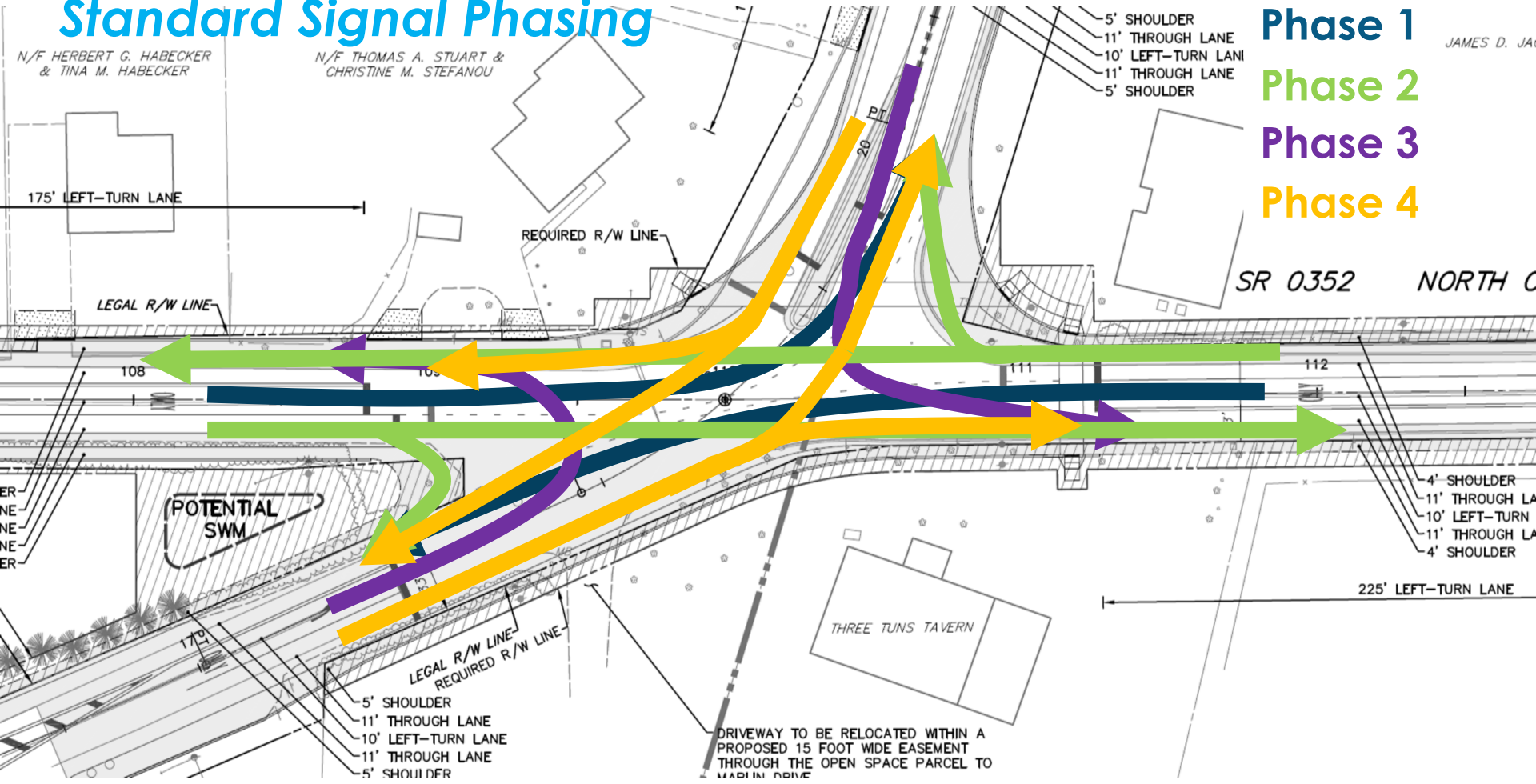
Standard Signal Phasing

- Phase 1
- Phase 2
- Phase 3
- Phase 4

N/F HERBERT G. HABECKER & TINA M. HABECKER

N/F THOMAS A. STUART & CHRISTINE M. STEFANO

JAMES D. JAMES



Improvement Option 2 – Left-turn Lanes

- 34 LOS C Option 2 Left-turn Lanes
- 226 LOS F Option 1B SR 352 Split Phases
- 370 LOS F Option 1A Separate Phases
- 162 LOS F No Improvements

LOS and Queues

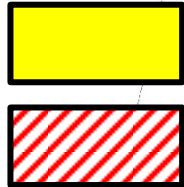
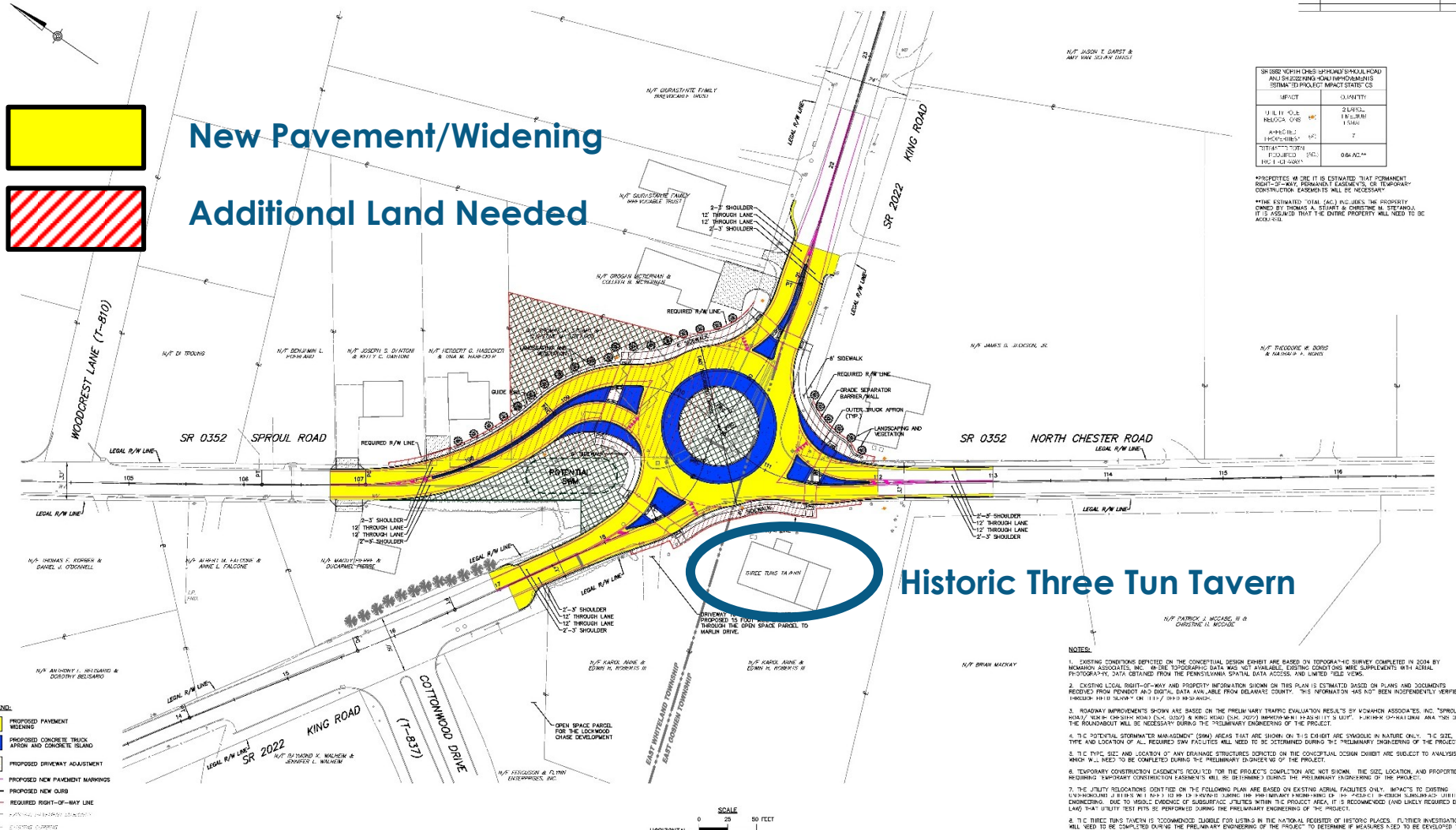


Improvement Option 3 – Roundabout

DISTRICT	COUNTY	SHEET	TOTAL SHEETS
SR 0352	DELAWARE	107	107

ITEM	QUANTITY	UNIT PRICE	TOTAL COST
1.00	1.00	1.00	1.00
2.00	1.00	1.00	1.00
3.00	1.00	1.00	1.00
4.00	1.00	1.00	1.00
5.00	1.00	1.00	1.00
6.00	1.00	1.00	1.00
7.00	1.00	1.00	1.00
8.00	1.00	1.00	1.00
9.00	1.00	1.00	1.00
10.00	1.00	1.00	1.00
11.00	1.00	1.00	1.00
12.00	1.00	1.00	1.00
13.00	1.00	1.00	1.00
14.00	1.00	1.00	1.00
15.00	1.00	1.00	1.00
16.00	1.00	1.00	1.00
17.00	1.00	1.00	1.00
18.00	1.00	1.00	1.00
19.00	1.00	1.00	1.00
20.00	1.00	1.00	1.00
21.00	1.00	1.00	1.00
22.00	1.00	1.00	1.00
23.00	1.00	1.00	1.00
24.00	1.00	1.00	1.00
25.00	1.00	1.00	1.00
26.00	1.00	1.00	1.00
27.00	1.00	1.00	1.00
28.00	1.00	1.00	1.00
29.00	1.00	1.00	1.00
30.00	1.00	1.00	1.00
31.00	1.00	1.00	1.00
32.00	1.00	1.00	1.00
33.00	1.00	1.00	1.00
34.00	1.00	1.00	1.00
35.00	1.00	1.00	1.00
36.00	1.00	1.00	1.00
37.00	1.00	1.00	1.00
38.00	1.00	1.00	1.00
39.00	1.00	1.00	1.00
40.00	1.00	1.00	1.00
41.00	1.00	1.00	1.00
42.00	1.00	1.00	1.00
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44.00	1.00	1.00	1.00
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46.00	1.00	1.00	1.00
47.00	1.00	1.00	1.00
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53.00	1.00	1.00	1.00
54.00	1.00	1.00	1.00
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56.00	1.00	1.00	1.00
57.00	1.00	1.00	1.00
58.00	1.00	1.00	1.00
59.00	1.00	1.00	1.00
60.00	1.00	1.00	1.00
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63.00	1.00	1.00	1.00
64.00	1.00	1.00	1.00
65.00	1.00	1.00	1.00
66.00	1.00	1.00	1.00
67.00	1.00	1.00	1.00
68.00	1.00	1.00	1.00
69.00	1.00	1.00	1.00
70.00	1.00	1.00	1.00
71.00	1.00	1.00	1.00
72.00	1.00	1.00	1.00
73.00	1.00	1.00	1.00
74.00	1.00	1.00	1.00
75.00	1.00	1.00	1.00
76.00	1.00	1.00	1.00
77.00	1.00	1.00	1.00
78.00	1.00	1.00	1.00
79.00	1.00	1.00	1.00
80.00	1.00	1.00	1.00
81.00	1.00	1.00	1.00
82.00	1.00	1.00	1.00
83.00	1.00	1.00	1.00
84.00	1.00	1.00	1.00
85.00	1.00	1.00	1.00
86.00	1.00	1.00	1.00
87.00	1.00	1.00	1.00
88.00	1.00	1.00	1.00
89.00	1.00	1.00	1.00
90.00	1.00	1.00	1.00
91.00	1.00	1.00	1.00
92.00	1.00	1.00	1.00
93.00	1.00	1.00	1.00
94.00	1.00	1.00	1.00
95.00	1.00	1.00	1.00
96.00	1.00	1.00	1.00
97.00	1.00	1.00	1.00
98.00	1.00	1.00	1.00
99.00	1.00	1.00	1.00
100.00	1.00	1.00	1.00

*PROPERTIES IN USE IT IS ESTIMATED THAT PERMANENT RIGHT-OF-WAY PERMANENT EASEMENTS OR TEMPORARY CONSTRUCTION EASEMENTS WILL BE NECESSARY.
 **THE ESTIMATED TOTAL ACRES INCLUDES THE PROPERTY OWNED BY THOMAS A. STUMPF & CHRISTINE M. STEFANELLO. IT IS ASSUMED THAT THE ENTIRE PROPERTY WILL BE ACQUIRED.



New Pavement/Widening
Additional Land Needed

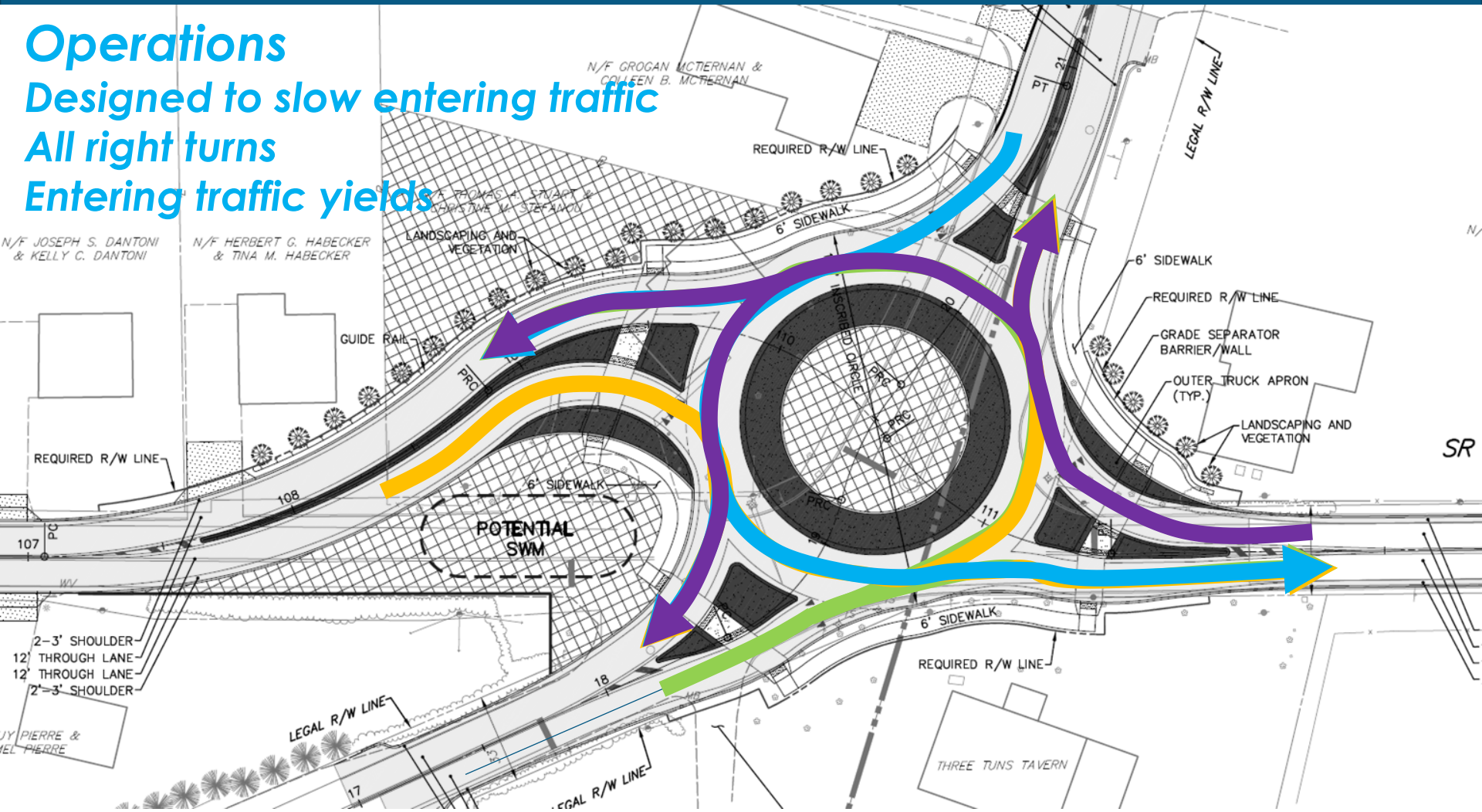
Historic Three Tun Tavern

- LEGEND:**
- PROPOSED PAVEMENT WIDENING
 - PROPOSED CONCRETE TRUCK APRON AND CONCRETE ISLAND
 - PROPOSED DRIVEWAY ADJUSTMENT
 - PROPOSED NEW PAVEMENT MARKINGS
 - PROPOSED NEW CURB
 - REQUIRED RIGHT-OF-WAY LINE
 - EXISTING RIGHT-OF-WAY LINE
 - EXISTING DRIVEWAY
 - EXISTING CURBLINE

- NOTES:**
- EXISTING CONDITIONS DEPICTED ON THE CONCEPTUAL DESIGN EXHIBIT ARE BASED ON TOPOGRAPHIC SURVEY COMPLETED IN 2004 BY MCMAHON ASSOCIATES, INC. IN-SITE TOPOGRAPHIC DATA WAS NOT AVAILABLE. EXISTING CONDITIONS WERE SUPPLEMENTED WITH AERIAL PHOTOGRAPHY DATA OBTAINED FROM THE PENNSYLVANIA SPATIAL DATA ACCESS AND LIMITED FIELD VIEWS.
 - EXISTING LOCAL RIGHT-OF-WAY AND PROPERTY INFORMATION SHOWN ON THIS PLAN IS ESTIMATED BASED ON PLANS AND DOCUMENTS PROVIDED FROM PROPERTY OWNERS. DATA AVAILABLE FROM DELAWARE COUNTY. THIS INFORMATION HAS NOT BEEN INDEPENDENTLY VERIFIED THROUGH FIELD SURVEY OR 1:10' OR 1:20' SCALE PLANS.
 - ROADWAY IMPROVEMENTS SHOWN ARE BASED ON THE PRELIMINARY TRAFFIC EVALUATION RESULTS BY MCMAHON ASSOCIATES, INC. "SPRROLL ROAD" (SR 2022) AND "KING ROAD" (SR 0352) IMPROVEMENTS WILL BE DETERMINED DURING THE PRELIMINARY ENGINEERING OF THE PROJECT.
 - POTENTIAL STORMWATER MANAGEMENT (SWM) AREAS THAT ARE SHOWN ON THIS EXHIBIT ARE SYMBOLIC IN NATURE ONLY. THE SIZE, TYPE AND LOCATION OF ALL REQUIRED SWM FACILITIES WILL NEED TO BE DETERMINED DURING THE PRELIMINARY ENGINEERING OF THE PROJECT.
 - THE TYPE, SIZE AND LOCATION OF ANY DRAINAGE STRUCTURES DEPICTED ON THE CONCEPTUAL DESIGN EXHIBIT ARE SUBJECT TO ANALYSIS, WHICH WILL NEED TO BE COMPLETED DURING THE PRELIMINARY ENGINEERING OF THE PROJECT.
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 - THE THREE TUN TAVERN IS ZONED "C-2" (COMMERCIAL) AND IS LISTED IN THE NATIONAL REGISTER OF HISTORIC PLACES. FURTHER INVESTIGATION WILL NEED TO BE COMPLETED DURING THE PRELIMINARY ENGINEERING OF THE PROJECT TO DETERMINE IF MEASURES NEED TO BE DEVELOPED TO MITIGATE THE IMPACTS OF THE PROJECT ON THE HISTORIC PROPERTY.

Improvement Option 3 – Roundabout

Operations
Designed to slow entering traffic
All right turns
Entering traffic yields



Improvement Option 3 – Roundabout

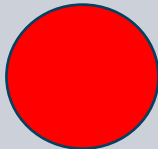
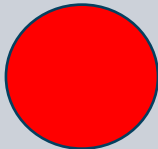


- 15 LOS B Option 3 Roundabout
- 34 LOS C Option 2 Left-turn Lanes
- 226 LOS F Option 1B SR 352 Split Phases
- 370 LOS F Option 1A Separate Phases
- 162 LOS F No Improvements

LOS and Queues



- Balance Intersection Performance with Construction Impacts
- Property/Land Impacts
- Utilities
- Costs
- Historic Structure

Intersection Performance Criteria

Category	No Improvements	Option 1A – Separate Phases	Option 2 - Left-Turn Lanes	Option 3 - Roundabout
Level-of-Service	F 	F 	C 	B 
Longest Approach Queue	1,113 feet	1,775 feet	410 feet	150 feet
Rank	3rd	4th	2nd	1st

Construction Considerations

Category	Option 2 – Left-Turn Lanes	Option 3 - Roundabout
Properties Affected	13 Properties	7 Properties
Total Property Acquisition	0 Properties	1 Property
Land Required	0.51 Acres	0.64 Acres
Utility Pole Relocations	9 Poles	5 Poles
Estimated Cost	\$2,525,503	\$3,127,098

- Both Townships will decide whether to pursue an improvement and select a preferred solution
- If an improvement is selected, then...
 - pursue grant funding
 - detailed engineering (scope will be refined)
 - construction (at least three years from now)

Thank You

Questions?

email comments to:

kingsprould@eastwhiteland.org

rsmith@eastgoshen.org