NAVARRO & WRIGHT
CONSULTING ENGINEERS, INC.

Corporate Office
151 Reno Avenue
New Cumberland, PA 17070
P: (717) 441-2216
F: (717) 441-2218
www.navarrowright.com

AIR QUALITY TECHNICAL MEMORANDUM
S.R. 0001 SECTION RC3
BUCKS COUNTY, PA
OCTOBER 21, 2025

Navarro & Wright Consulting Engineers, Inc. has prepared this air quality assessment to address National Environmental Policy Act (NEPA) requirements for the proposed S.R. 0001 Section RC3 Project located in Middletown Township, Langhorne, and Langhorne Manor Boroughs in Bucks County, Pennsylvania. A Project Location Map has been provided in the Attachments to this Memorandum. The assessment has been performed following guidelines provided in the Pennsylvania Department of Transportation's *Publication 321: Project-Level Air Quality Handbook*, October 2017 (Publication 321).

The project includes approximately 2.6 miles of roadway reconstruction and widening from just north of the Lincoln Highway (SR 0001) bridge over Business Route 1 (SR 2037) and CSX and SEPTA to approximately 0.2 miles north of the Corn Crib Lane (SR 2197) bridge over Lincoln Highway (SR 0001). This part includes the 2-mile segment of the northbound and southbound service (frontage) roads. A Project Location Map is provided as an Attachment to this Memorandum.

The proposed project includes the construction of two Lincoln Highway (SR 0001) mainline interchanges:

- The first Lincoln Highway (SR 0001) interchange will be in the area of the bridge carrying Lincoln Highway (SR 0001) over Highland Avenue (SR 2008) near the southern end of the project. This interchange will connect Lincoln Highway (SR 0001) with Old Lincoln Highway (SR 2045) west of Lincoln Highway (SR 0001) and Lincoln Highway (SR 0001) with Highland Avenue (SR 2008) east of Lincoln Highway (SR 0001).

- The second Lincoln Highway (SR 0001) interchange will be in the area of the Pine Street (SR 0413) bridge over Lincoln Highway (SR 0001) near the northern end of the project. This interchange will connect Lincoln Highway (SR 0001) with Pine Street (SR 0413). Gillam Avenue and Woods Drive will be realigned to tie into the interchange ramp locations with Pine Street (SR 0413).

Due to the interchanges, access between the northbound and southbound frontage roads and Lincoln Highway (SR 0001) will be removed. After construction, the northbound and southbound frontage roads will only provide access to the local road network for adjacent properties along the frontage roads in certain areas. In the other areas, sections of the frontage roads will be removed and side roads will be terminated with cul-de-sacs.

Additionally, the project includes improvements at three intersections within the project corridor where roundabouts will be constructed.

- Roundabout intersection locations:
    - Northbound Lincoln Highway (SR 0001) ramps (to be constructed) and Highland Avenue (SR 2008)
    - Pine Street (SR 0413), Bellevue Avenue (SR 2049), and West Highland Avenue
    - Bellevue Avenue (SR 2049) and Gillam Avenue

The following two intersections will be signalized:

- Northbound Lincoln Highway (SR 0001) ramps (to be constructed) and Pine Street (SR 0413)
- Southbound Lincoln Highway (SR 0001) ramps (to be constructed) and Pine Street (SR 0413)

The following existing signalized intersection will have minor realignments to the approaches:

- Highland Avenue (SR 2008), Old Lincoln Highway (SR 2045) and Fairhill Avenue

Traffic calming improvements are being assessed for the project at the following locations:

- Pine Street (SR 0413) between Flowers Avenue and Maple Avenue (SR 0213)
    - Improvements being assessed include curb bulb-outs, median islands/refuges, and flashing beacons.
- Gillam Avenue between Bellevue Avenue (SR 2049) and Pine Street (SR 0413)
    - Improvements being assessed include a mini-roundabout, curb bulb-outs, median islands/refuges, flashing beacons, and raised crosswalk/speed table.

Stormwater management facilities will also be constructed for the project.

The level of analysis required for specific criteria pollutants is based on several factors, including the air quality attainment status of the area in which the project is located, the magnitude and scope of the proposed project, future traffic volumes in the corridor, the overall efficiency of existing and future signalized intersections in the project corridor, and the presence of air quality sensitive receptors adjacent to the project corridor. In consideration of these factors, air quality has been assessed qualitatively for this project.

Currently, Bucks County is in attainment for all criteria pollutants, with the exception of Ozone and PM 2.5. Bucks County is classified as a non-attainment area relative to the 2008 and 2015 Ozone standards. Bucks County has been designated as a maintenance area relative to the 2006 PM 2.5 standard. Pennsylvania non-attainment and maintenance areas are required to undergo regional macro-scale modeling, often called regional conformity analysis. A regional conformity analysis is ultimately a way to ensure that federal funding and approval are only given to those

transportation activities that are consistent with the air quality goals established by a State Implementation Plan (SIP).

Annual Average Daily Traffic volumes in the project area are not expected to vary between the future (2050) no build and build conditions, and there will be no change in anticipated truck percentages. AADT is predicted to be 74,748 in the existing year (2024), and 77,920 under both the No Build and Build alternatives in the design year of the project (2050). Level of Service (LOS – a measure of traffic congestion) at project area intersections would likely degrade under the No Build alternative, in comparison to the Build alternative.

Carbon Monoxide (CO)

The project does not include or directly affect any roadways for which the 20-year forecasted daily traffic volume will exceed the established threshold level of 125,000 vehicles per day. It can therefore be concluded that the project will have no adverse impact on air quality as a result of CO emissions.

Ozone and Particulate Matter (PM2.5 and PM10)

Because the SR 0001 RC3 project is included in the DVRPC 2025-2028 TIP and was found to meet applicable Air Quality Conformity requirements and conforms to the SIP, detailed ozone studies were not required.

The proposed project is located in a county which has been designated as a maintenance area for PM 2.5. The project is not exempt; however, it is not considered to be of air quality concern according to the thresholds provided in PennDOT Publication 321. These thresholds were agreed upon by an interagency consultation group considering 40 CFR 93.123(b)(1)(i-v) and Appendix B of the November 2015 EPA Guidance (EPA-420-B-15-084) entitled "*Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM 2.5 and PM 10 Nonattainment and Maintenance Areas.*"

Mobile Source Air Toxics (MSATs)

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*, found at:

https://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/methodology/methodology00.cfm.

For each alternative in this EA, the amount of mobile source air toxics (MSAT) emitted would be proportional to the vehicle miles traveled (VMT), assuming that other variables such as fleet mix are the same for each alternative. Because the VMT estimated for the No Build Alternative is the same as the Build Alternative, higher levels of MSAT are not expected from the Build Alternative compared to the No Build. Refer to the traffic data provided in the Attachments to this Memorandum. Also, regardless of the alternative chosen, emissions will likely be lower than

present levels in the design year as a result of the Environmental Protection Agency's (EPA) national control programs that are projected to reduce annual MSAT emissions by over 76 percent from 2020 to 2060 (*Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*, Federal Highway Administration, January 18, 2023). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in virtually all locations.

Under each alternative there may be localized areas where VMT would increase, and other areas where VMT would decrease. Therefore, it is possible that localized increases and decreases in MSAT emissions may occur. The localized increases in MSAT emissions would likely be most pronounced along the new roadway sections that would be built at the proposed S.R. 0001 NB off-ramp at Highland Avenue and the proposed partial cloverleaf interchange at S.R. 0001 and S.R. 0413 (Pine Street), with associated road tie-in and turning lane improvements. However, even if these increases do occur, they too will be substantially reduced in the future due to implementation of EPA's vehicle and fuel regulations.

In sum, under the Build Alternative in the design year it is expected there would be reduced MSAT emissions in the immediate area of the project relative to the No Build Alternative, due to the reduced VMT associated with more direct routing and due to EPA's MSAT reduction programs.

Regional Conformity

40 CFR Parts 51 and 93 (Final Conformity Rule) requires air quality conformity determinations for transportation plans, programs and projects in non-attainment or maintenance areas. Areas previously designated as non-attainment, but subsequently re-designated to "in-attainment" (because they no longer violate the National Ambient Air Quality Standards - NAAQS) are reclassified as maintenance areas and are subject to maintenance plans to be developed and included in the SIP. Bucks County is currently designated as a non-attainment area for the 2008 and 2015 Ozone standard and is designated as a maintenance area for the 2006 PM 2.5 standard, and therefore are subject to transportation conformity requirements.

Conformity to the SIP is determined through regional air quality analyses of the Transportation Improvement Program (TIP), in this case by the Delaware Valley Regional Planning Commission (DVRPC). The TIP represents projects planned in the first four-year period of the 12-year transportation plan for the region. Regional emissions for all projects included in the TIP must comply with emissions budgets established by the SIP, to ensure stability or continued improvement to regional air quality. The DVRPC is the designated Metropolitan Planning Organization for the project area. Inclusion within the TIP indicates that the project has been considered and included as part of an approved Regional Conformity Analysis.

The 2025-2028 TIP was adopted by the DVRPC on July 25, 2024, and is in full force and effect as of that date. This project is referenced as Project 93446 on the approved TIP, and the current TIP listing is provided in the Attachments to this Memorandum. However, the project description in

the current TIP listing does not align with the updated project description or conformity status provided herein.

To resolve this discrepancy, PennDOT has been in coordination with the DVRPC regarding the project's exemption status and inclusion in regional conformity modeling. Relevant correspondence is included with the TIP listing in the Attachments. The project's current attributes have been included in the regional conformity models and are included in the DVRPC's Conformity Document that was adopted by the DVRPC Board on September 25, 2025.

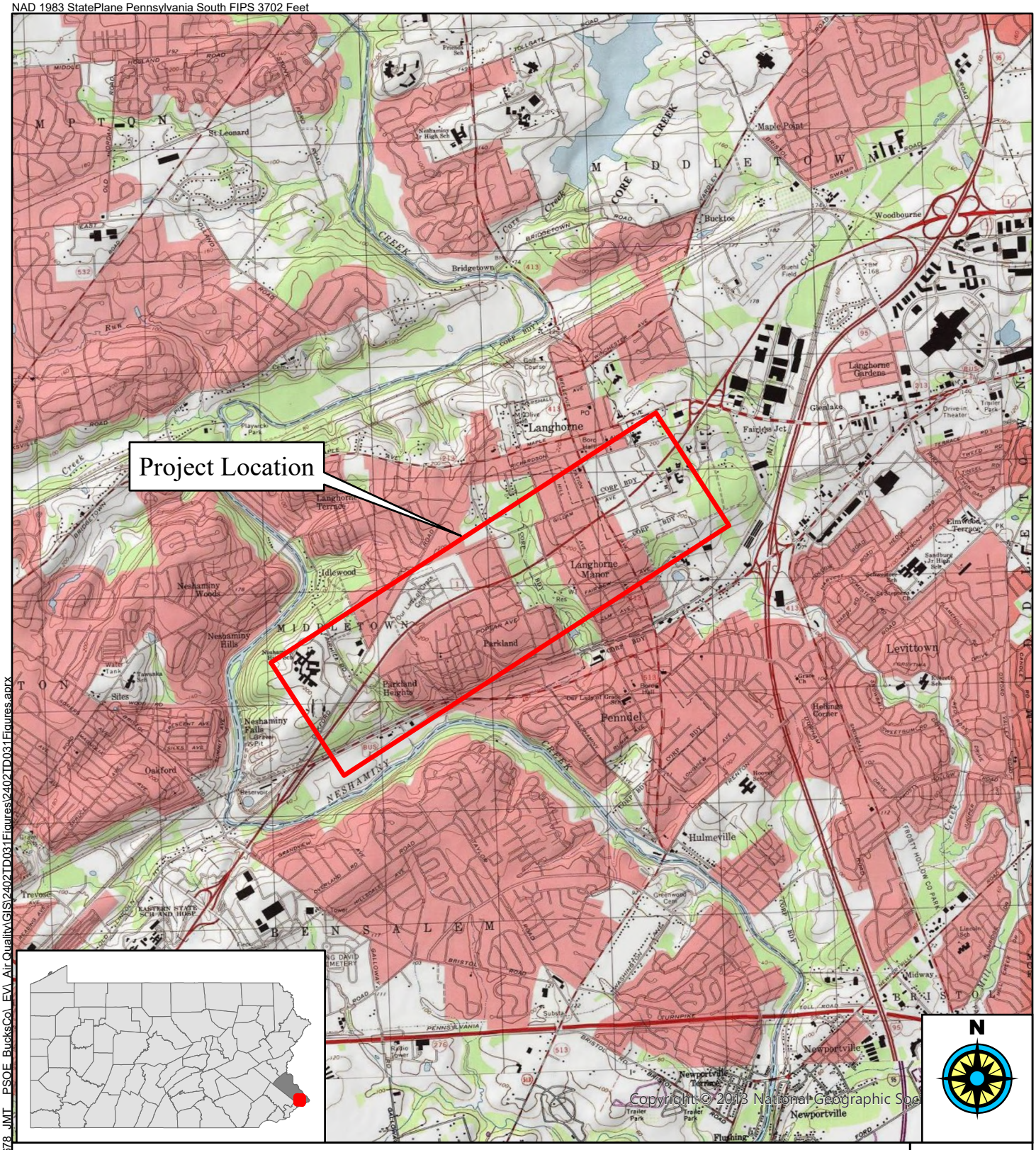
Within the Transportation Conformity Document, the project is referenced in the TIP section (MPMS# 93446) with a note specifying that its emissions analysis is included in the project modeling for the related Long Range Plan project (PAR004).

It is anticipated that the DVRPC Board will approve the TIP Amendment to reflect the updated RC3 project description and conformity status at their October Board Meeting on October 23, 2025. Once the DVRPC receives federal approval on the Transportation Conformity Document, then the Board-approved TIP amendment will be electronically submitted for federal approval to formally amend the regional TIP.

ATTACHMENTS

PROJECT LOCATION MAP

NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Project Location Map

S.R. 0001, Group 03S, Section RC3 Project
Middletown Township, Langhorne Manor Borough,
and Langhorne Borough, Bucks County, Pennsylvania

Figure: 1

Source: USGS 2019 Everett East 7.5 Minute Series Quadrangle. ESRI Basemap USA Topo Maps Base Layer.

Scale: 1:48,000

NAVARRO & WRIGHT CONSULTING ENGINEERS, INC.

Navarro & Wright Consulting Engineers, Inc.
151 Reno Avenue, New Cumberland, PA 17070
(717) 441-2216 (Telephone) (717) 441-2218 (Fax)

Date: 4/15/2025

Drawn by: RDL

Document Path: N:\2024\2402TD031_E05678_JMT_PSOE_BucksCo_EVA_Air Quality\GIS\2402TD031Figures\2402TD031Figures.aprx

TRAFFIC DATA

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Nathaniel,

See below and attached. Let me know if this covers what you are looking for.

Thanks!

Johnson, Mirmiran & Thompson, Inc.
An Employee-Owned Company

James (Bo) Smith IV, P.E.
Senior Associate
Section Head – York Traffic
D. 717-741-6274

Please consider the environment before printing this e-mail

From: Nathaniel Weinstock <nweinstock@navarrowright.com>
Sent: Monday, April 14, 2025 12:58 PM
To: Yerges, Kenneth <KYerges@jmt.com>; rkolmansberger@navarrowright.com; Kenawell, Michael <MKenawell@jmt.com>
Cc: Patrick, Jared <JPatrick@jmt.com>; Altimare, Amy <AAltimare@jmt.com>; Smith, Bo <BSmith2@jmt.com>
Subject: [EXTERNAL] RE: [External] FW: SR1 RC3 Noise - PE Design Refinements

Cyber Security Reminder: Please use caution - message originated outside JMT.

Hello team,

We've reviewed the provided (attached) traffic data and have identified additional information required to complete the Air Quality analysis.

Specifically, we'll need:

- Mainline AADT and Truck percentages in the 2024 Existing, 2050 No- Build, and 2050 Build conditions
  See below. The truck percentage is 8% Northbound and 10% Southbound. We are not expecting major ADT differences between build an no-build on Route 1 so we can use the same ADT for each.

SR 0001 ADT Growth						
Intersection	Start Segment	2016 ADT[1]	2024 ADT	2024 Total ADT	2050 ADT	2050 Total ADT
Route 1 Northbound	-	36787	37261	74748	38842	77920
Route 1 Southbound	-	37011	37487		39078	
Notes: 1. Data collected from TIRe. 2. Growth factors from 8/2023 to 7/2024						

- Mainline Level of Service (LOS) data for the Existing, No Build, and Build conditions - both AM and PM peak periods
  See the last page of attached Appendix C from our traffic report.
- LOS data for project-area intersections for the Existing, No Build, and Build conditions - both AM and PM peak periods (whatever you can provide will be useful, recognizing that you may not have comprehensive data for these intersections)
- See attached Appendix C from our traffic report for LOS of intersections that were analyzed.

Thank you,
Nat

Nathaniel Weinstock | Air Quality and Acoustical Group Leader
Navarro & Wright Consulting Engineers, Inc.
(717) 441-2216 [Tel] | (717) 441-2218 [Fax]
151 Reno Avenue | New Cumberland, PA 17070
nweinstock@navarrowright.com

Appendix C

Traffic Operations

TABLE 2 - SR 0001 RC3 Interchange Study HCM 6th Edition LOS and Delay Results									
Scenario	**AM**								
	2024 Existing			**2050 No Build**			**2050 Build ParCLO Interchange**		
Intersection	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**
SR 213 (Maple Avenue) & Bellevue Avenue*	**B**	**16.1**		**B**	**19.1**		**B**	**13.7**	
NB - Bellevue	D	46.3	0.51	D	51.1	0.63	D	41.9	0.33
SB - Bellevue	D	45.8	0.52	D	47.1	0.58	D	46.1	0.57
EB - Maple	B	12.5	0.73	B	15.4	0.80	B	12.0	0.78
WB - Maple	A	7.0	0.47	A	8.7	0.52	A	2.6	0.46
SR 213 (Maple Avenue) & SR 413 (Pine Street)	**C**	**30.5**		**C**	**32.4**		**D**	**39.1**	
NBL - Pine	D	42.4	0.15	D	43.2	0.18	C	32.2	0.53
NBTR - Pine	E	58.1	0.91	E	60.0	0.92	D	44.8	0.81
NB - Pine	E	57.3		E	59.0		D	42.9	
SBL - Pine	D	43.0	0.78	D	46.1	0.81	C	33.6	0.69
SBTR - Pine	C	27.4	0.82	C	27.5	0.83	E	68.5	1.00
SB - Pine	C	31.1		C	31.9		E	60.3	
EBL - Maple	C	21.7	0.12	C	23.2	0.16	C	22.5	0.15
EBTR - Maple	A	4.9	0.65	A	6.2	0.70	A	6.2	0.69
EB - Maple	A	5.8		A	7.1		A	7.1	
WBL - Maple	C	22.1	0.07	C	24.2	0.09	C	24.1	0.09
WBTR - Maple	C	34.8	0.70	D	39.2	0.77	D	39.5	0.77
WB - Maple	C	34.1		D	38.4		D	38.6	
SR 413 (Pine Street) & Gillam Avenue / SR 1 SB Off Ramps							**B**	**14.2**	
NBL - Pine	a	9.5	0.05	a	9.8	0.06	B	13.9	0.09
NBT - Pine							A	4.1	0.38
NB - Pine							A	4.6	
SBL - Pine							C	28.3	0.76
SBT - Pine							B	14.3	0.40
SBR - Pine							B	11.5	0.01
SB - Pine							B	18.7	
EB - Gillam	b	13.6	0.17	b	14.2	0.19	C	23.3	0.34
WBL - SR 1 SB Ramps							C	26.0	0.29
WBT - SR 1 SB Ramps							C	21.9	0.09
WB - SR 1 SB Ramps							C	24.9	
SR 413 (Pine Street) & Woods Drive / SR 1 NB Ramps							**B**	**14.6**	
NBL - Pine							C	30.4	0.71
NBT - Pine							B	16.1	0.30
NBR - Pine							B	15.9	0.21
NB - Pine							C	20.1	
SBL - Pine	a	9.0	0.04	a	9.2	0.05	B	14.0	0.11
SBT - Pine							A	5.1	0.43
SB - Pine							A	5.7	
EBL - NB Ramps							C	24.3	0.60
WBL - Woods	c	19.3	0.15	c	22.2	0.21	B	18.5	0.05
SR 413 (Pine Street) / Highland & SR 2049 (Bellevue Avenue)							**a**	**9.0**	
NB (NBL) - SR 413 (Bellevue)	a	8.6	0.03	a	8.8	0.04	a	8.0	0.46
SB (WB) - Bellevue	f	110.2	1.01	f	183.9	1.22	a	6.0	0.00
EB (EB) - Highland	c	21.8	0.20	c	23.8	0.25	a	8.4	0.22
WB (SB) - SR 413 (Pine)							a	9.9	0.60

TABLE 2 - SR 0001 RC3 Interchange Study HCM 6th Edition LOS and Delay Results									
Scenario	**AM**								
	2024 Existing			**2050 No Build**			**2050 Build ParCLO Interchange**		
Intersection	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**
SR 413 (Pine Street) & Richardson Avenue									
NBL - Pine	a	9.4	0.01	a	9.6	0.02	a	9.5	0.02
EB - Richardson	c	18.0	0.10	c	18.7	0.12	c	18.3	0.12
WB - Richardson	c	23.1	0.07	d	25.4	0.08	d	25.5	0.08
SR 413 (Pine Street) & Flowers Avenue									
NBL - Pine	a	9.5	0.02	a	9.7	0.03	a	9.6	0.03
SBL - Pine	a	8.6	0.01	a	8.7	0.01	a	8.9	0.01
EB - Flowers	c	24.0	0.10	c	24.5	0.13	c	24.3	0.13
WB - Flowers	d	29.2	0.10	e	37.5	0.16	e	37.8	0.16
Bellevue Avenue & Gillam Avenue							**a**	**4.1**	
NBL/NB - Bellevue	a	7.3	0.01	a	7.3	0.01	a	0.0	0.00
SBL/SB - Bellevue	a	7.5	0.02	a	7.5	0.02	a	3.5	0.06
EB - Gillam	b	10.2	0.08	b	10.4	0.09	a	4.3	0.18
WB - Gillam	b	12.9	0.39	b	14.0	0.45	a	3.8	0.05
Highland Avenue & Park Avenue							**a**	**6.0**	
NB - Highland	a	8.2	0.12	a	8.3	0.13	a	5.8	0.30
SB - Highland							a	6.4	0.33
EB - Park	b	11.7	0.24	b	12.6	0.29	a	5.4	0.21
Old Lincoln Highway & Orchard Avenue									
NBL - Old Lincoln	a	8.6	0.01	a	8.7	0.01	a	9.3	0.01
EB - Orchard	b	14.5	0.04	c	15.3	0.04	b	14.3	0.04
Old Lincoln Highway & Fairhill Avenue	**C**	**30.4**		**C**	**34.1**		**D**	**35.1**	
NBLT - Old Lincoln							B	16.2	0.39
NBR - Old Lincoln							B	15.1	0.38
NB - Old Lincoln	B	18.2	0.59	C	21.4	0.65	B	15.7	
SBL - Old Lincoln							C	20.5	0.09
SBTR - Old Lincoln							C	21.5	0.65
SB - Old Lincoln	B	15.3	0.46	B	17.5	0.52	C	21.5	
EB - Fairhill	E	79.0	0.82	F	88.7	0.85	F	121.7	0.96
WBLT - Fairhill	E	59.3	0.89	E	63.8	0.91	E	71.9	0.94
WBR - Fairhill	D	36.9	0.16	D	36.9	0.16	D	38.0	0.21
WB - Fairhill	E	56.5		E	60.2		E	66.4	
Old Lincoln Highway & Arbutus Avenue									
NBL - Old Lincoln	a	8.3	0.02	a	8.4	0.03	a	8.7	0.03
SBL - Old Lincoln	a	8.3	0.07	a	8.4	0.08	a	8.5	0.03
EB - Arbutus	c	20.1	0.37	d	25.3	0.47	d	28.0	0.50
WB - Gillam	d	27.7	0.27	e	41.7	0.46	f	260.7	1.27
SR 213 (Maple Avenue) & SR 2045 (Old Lincoln Highway) / Golf Club Drive	**C**	**27.6**		**D**	**36.6**		**D**	**35.1**	
NB - Old Lincoln	D	54.3	0.91	F	85.4	1.03	F	83.2	1.03
SBL - Golf Club	C	24.5	0.09	C	25.5	0.11	C	24.5	0.11
SBTR - Golf Club	C	23.8	0.08	C	24.7	0.11	C	24.0	0.10
SB - Golf Club	C	24.1		C	25.0		C	24.2	
EBL - Maple	B	11.4	0.01	B	11.3	0.01	B	10.7	0.01
EBTR - Maple	C	24.1	0.81	C	26.0	0.84	C	24.3	0.82
EB - Maple	C	24.0		C	25.9		C	24.2	
WBL - Maple	B	16.9	0.44	B	18.3	0.48	B	16.6	0.44
WBT - Maple	A	8.1	0.32	A	8.1	0.34	A	7.6	0.32
WB - Maple	B	10.5		B	10.9		B	10.1	

TABLE 2 - SR 0001 RC3 Interchange Study HCM 6th Edition LOS and Delay Results									
Scenario	**AM**								
	2024 Existing			**2050 No Build**			**2050 Build ParCLO Interchange**		
Intersection	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**
SR 213 (Maple Avenue) & SR 1 SB Ramps / N Flowers Mill Road	**C**	**29.9**		**C**	**34.6**		**D**	**37.9**	
NB - N Flowers Mill	D	50.2	0.61	D	49.9	0.63	D	51.5	0.66
SBL - Rt 1 SB	D	40.2	0.76	D	43.1	0.81	C	32.8	0.71
SBT - Rt 1 SB	C	26.0	0.30	C	25.6	0.32	C	22.3	0.29
SBR - Rt 1 SB	C	23.9	0.10	C	23.4	0.11	C	20.3	0.09
SB - Rt 1 SB	C	34.7		D	36.2		C	28.6	
EBL - Maple	C	21.3	0.20	C	22.3	0.23	C	23.6	0.23
EBT - Maple	C	29.6	0.53	C	31.6	0.58	D	35.1	0.65
EB - Maple	C	28.9		C	30.8		C	34.2	
WBL - Maple	C	20.7	0.65	C	24.1	0.71	C	27.9	0.73
WBT - Maple	C	20.4	0.31	C	27.2	0.33	D	35.0	0.35
WBR - Maple	C	33.1	0.79	D	45.2	0.85	E	58.3	0.90
WB - Maple	C	25.9		C	34.2		D	43.4	
SR 213 (Maple Avenue) & SR 1 NB Ramps / Woods Drive*	**E**	**56.4**		**E**	**65.3**		**C**	**33.5**	
NB - Woods	D	50.5	0.18	D	51.0	0.23	D	49.7	0.20
SBL - Rt 1 NB Ramps	F	201.5	1.24	F	241.1	1.34	F	97.9	0.94
SBLT - Rt 1 NB Ramps	F	149.8	1.10	F	187.9	1.21	F	107.8	1.00
SBR - Rt 1 NB Ramps	A	0.2	0.17	A	0.3	0.18	A	0.3	0.18
SB - Rt 1 NB Ramps	F	102.4		F	125.2		E	60.4	
EBL - Maple	F	224.0	1.34	F	255.2	1.41	E	76.4	1.05
EBTR - Maple	C	30.7	0.79	C	31.2	0.83	C	24.9	0.81
EB - Maple	E	79.8		F	88.2		D	38.8	
WBL - Maple	D	54.6	0.15	E	55.2	0.17	D	52.2	0.18
WBTR - Maple	A	5.5	0.75	A	6.1	0.78	A	9.6	0.86
WB - Maple	A	8.2		A	9.1		B	12.3	
SR 213 (Maple Avenue) & S Flowers Mill Road / Dunkin Donuts*	**C**	**24.9**		**C**	**27.0**		**C**	**32.8**	
NBL - S Flowers Mill	E	62.1	0.87	E	71.5	0.93	F	85.8	0.99
NBTR - S Flowers Mill	D	40.7	0.12	D	41.0	0.15	D	42.0	0.16
NB - S Flowers Mill	E	58.1		E	65.4		E	77.0	
SBR - Dunkin Donuts	D	39.8	0.04	D	39.8	0.04	D	40.6	0.04
EBT - Maple	A	0.3	0.43	A	0.3	0.45	A	0.2	0.43
EBR - Maple	A	0.1	0.23	A	0.1	0.25	A	0.1	0.25
EB - Maple	A	0.2		A	0.2		A	0.2	
WBL - Maple	E	56.8	0.49	E	61.2	0.56	D	54.7	0.46
WBTR - Maple	D	40.2	0.70	D	41.3	0.73	D	54.3	0.88
WB - Maple	D	41.0		D	42.4		D	54.3	
Old Lincoln Highway & Neshaminy HS Entrance									
NBL - Old Lincoln	c	16.2	0.58	c	19.4	0.66	d	33.7	0.83
SBL - Old Lincoln	a	8.5	0.01	a	8.6	0.01	a	0.0	0.00
WB - Connector Rd	f	100.5	0.63	f	187.1	0.94	a	0.0	0.00
Hulmeville Avenue & Gillam Avenue	**a**	**7.8**		**a**	**7.9**		**a**	**8.3**	
NB - Hulmeville	a	7.6	0.06	a	7.7	0.06	a	7.5	0.00
SB - Hulmeville	a	7.0	0.03	a	7.2	0.04	a	7.4	0.04
EB - Gillam	a	7.6	0.09	a	7.8	0.11	a	8.6	0.24
WB - Gillam	a	9.1	0.06	a	9.2	0.07	a	7.4	0.05
Hulmeville Avenue & Highland Avenue									
NB - Hulmeville	a	7.4	0.06	a	7.4	0.06	a	7.4	0.06
SB - Hulmeville	a	7.8	0.01	a	7.9	0.01	a	0.0	0.00
EB - Highland	b	12.0	0.36	b	13.7	0.45	b	11.1	0.30
WB - Highland	b	12.5	0.09	b	13.4	0.13	b	13.2	0.20
SB Frontage Road & Hulmeville Avenue									
SB - Hulmeville	a	9.2	0.03	a	9.4	0.04			
WB - Frontage									

TABLE 2 - SR 0001 RC3 Interchange Study HCM 6th Edition LOS and Delay Results									
Scenario	**AM**								
	2024 Existing			**2050 No Build**			**2050 Build ParCLO Interchange**		
Intersection	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**
SR 213 (Maple Avenue) & Green Street									
NB - Green	d	30.1	0.14	e	35.8	0.20	d	34.5	0.19
SB - Green	d	25.8	0.12	d	25.8	0.14	d	25.0	0.14
EB - Maple	a	8.5	0.02	a	8.6	0.03	a	8.5	0.03
WB - Maple	a	9.8	0.01	a	9.9	0.01	a	9.8	0.01
NB Frontage Road & Park Avenue									
NB - Park	a	9.8	0.18	b	10.0	0.20			
EB - Frontage									
SB Frontage Road & Connector Road									
SB - Connector	b	12.2	0.02	b	12.6	0.02			
WB - Frontage									
Hill Avenue & Gillam Avenue	**a**	**7.2**		**a**	**7.3**		**a**	**8.3**	
NB - Hill	a	7.1	0.03	a	7.2	0.04	a	7.6	0.00
SB - Hill	a	7.2	0.03	a	7.3	0.04	a	7.8	0.04
EB - Gillam	a	7.3	0.07	a	7.4	0.07	a	8.5	0.27
WB - Gillam	a	7.2	0.04	a	7.3	0.05	a	7.6	0.07
SB Frontage Road & Hill Avenue									
SB - Hill	a	8.9		a	9.0	0.03			
WB - Frontage									
Old Lincoln Highway & SB SR 0001 On/Off Ramps									
NB - Old Lincoln	c	16.2	0.04	c	16.8	0.07			
SB - Old Lincoln	a	0.0	0.16	a	0.0	0.17	a	8.3	0.31
WB - SR 0001 Off Ramp	a	0.0	0.00	a	0.0	0.00	c	15.4	0.67
Old Lincoln Highway & Neshaminy HS Exit									
NB - Old Lincoln									
SB - Old Lincoln									
EBL - HS Exit	f	153.6	1.24	f	235.5	1.44	f	618.5	2.28
EBR - HS Exit	a	9.6	0.15	a	9.7	0.15	b	11.2	0.19
Hulmeville Road & Gillam Avenue	**a**	**8.9**		**a**	**9.1**		**a**	**8.7**	
NB - Hulmeville	a	8.3	0.08	a	8.4	0.08	a	8.4	0.02
SB - Hulmeville	a	9.1	0.22	a	9.3	0.23	a	9.0	0.21
EB - Gillam	a	9.5	0.17	a	9.8	0.20	a	9.4	0.17
WB - Gillam	a	8.2	0.14	a	8.4	0.17	a	7.9	0.15
Hill Avenue & Highland Avenue	**a**	**7.3**		**a**	**7.4**		**a**	**7.7**	
NB - Hill	a	7.2	0.01	a	7.3	0.01	a	7.2	0.01
SB - Hill	a	7.8	0.01	a	7.8	0.02	a	7.4	0.00
EB - Highland	a	7.2	0.04	a	7.3	0.06	a	7.9	0.14
WB - Highland	a	7.3	0.05	a	7.4	0.05	a	7.6	0.11
NB Frontage Road & Hill Avenue									
NB - Hill	b	10.0	0.02	b	10.2	0.02			
EB - Frontage									
Station Avenue & Gillam Avenue	**a**	**7.2**		**a**	**7.3**		**a**	**8.2**	
NB - Station Ave	a	7.1	0.01	a	7.2	0.01	a	7.6	0.00
SB - Station Ave	a	7.0	0.02	a	7.1	0.02	a	7.6	0.02
EB - Gillam Ave	a	7.3	0.06	a	7.4	0.08	a	8.4	0.26
WB - Gillam Ave	a	7.1	0.04	a	7.1	0.05	a	7.5	0.07
SB Frontage Road & Old Lincoln Highway									
SB - Old Lincoln	a	9.4	0.20	a	9.6	0.22			
SB Frontage Road & Parkvale Avenue									
SB - Parkvale	a	9.6	0.06	a	9.8	0.07			
WB - Frontage									
SB Frontage Road & Hulmeville Road									
SB - Hulmeville	a	9.2	0.09	a	9.3	0.10			
WB - Frontage									

TABLE 2 - SR 0001 RC3 Interchange Study HCM 6th Edition LOS and Delay Results									
Scenario	**AM**								
	2024 Existing			**2050 No Build**			**2050 Build ParCLO Interchange**		
Intersection	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**
Old Lincoln Highway & Hulmveille Road									
NB - Old Lincoln									
SB - Old Lincoln	a	8.6	0.11	a	8.7	0.12	a	8.8	0.11
WB - Hulmeville	b	14.5	0.22	c	16.2	0.28	c	17.0	0.23
SB Frontage Road & Station Avenue									
SB - Station	a	9.1	0.01	a	9.2	0.02			
WB - Frontage									
SB Frontage Road & Bellevue Avenue									
SB - Bellevue	b	11.8	0.39	b	12.4	0.43			
WB - Frontage									
Station Avenue & Highland Avenue	**a**	**7.5**		**a**	**7.5**		**a**	**7.9**	
NB - Station	a	6.9	0.01	a	6.9	0.01	a	6.8	0.01
SB - Station	a	7.4	0.03	a	7.5	0.04	a	7.4	0.00
EB - Highland	a	7.2	0.05	a	7.3	0.06	a	7.7	0.14
WB - Highland	a	7.9	0.06	a	7.9	0.06	a	8.2	0.11
NB Frontage Road & Fox Court									
NB - Fox	a	9.6	0.01	a	9.7	0.01			
EB - Frontage									
NB Frontage Road & Parkvale Avenue									
NB - Parkvale	a	8.8	0.01	a	8.9	0.02			
EB - Frontage									
NB Frontage Road & Hulmeville Rd									
NB - Hulmeville	a	8.9	0.06	a	9.0	0.06			
EB - Frontage									
NB Frontage Road & Hulmeville Ave									
NB - Hulmeville	a	9.9	0.17	b	10.1	0.19			
EB - Frontage									
NB Frontage Road & Station Ave									
NB - Station	a	9.9	0.01	b	10.1	0.02			
EB - Frontage									
NB Frontage Road & Bellevue Ave									
NB - Bellevue	b	11.3	0.11	b	11.7	0.12			
EB - Frontage									
Parkvale Avenue & Gillam Avenue	**a**	**8.0**		**a**	**8.0**		**a**	**7.7**	
NB - Parkvale	a	7.3	0.03	a	7.4	0.04	a	6.9	0.02
EB - Gillam	a	7.8	0.16	a	7.9	0.18	a	7.9	0.14
WB - Gillam	a	8.7	0.08	a	8.8	0.09	a	7.7	0.13
Old Lincoln Highway & Brownsville Road	**b**	**10.9**		**b**	**14.9**		**c**	**18.9**	
NB - Old Lincoln	a	8.2	0.07	a	8.2	0.08	a	8.4	0.08
SB - Old Lincoln									
EB - Brownsville	d	27.8	0.69	e	38.8	0.80	f	54.1	0.89
Hulmeville Road & W Richardson Avenue									
NB - Hulmeville									
SB - Hulmeville	a	7.5	0.01	a	7.5	0.01	a	7.4	0.01
WB - Richardson	a	9.6	0.03	a	9.6	0.04	a	9.3	0.04
W Richardson Avenue & Green Street									
SB - Green	a	9.0	0.02	a	9.2	0.03	a	9.2	0.03
EB - Richardson	a	7.3	0.00	a	7.3	0.00	a	7.3	0.00
WB - Richardson									
SR 413 (Pine Street) & Watson Avenue									
NB - Pine	a	9.7	0.01	a	9.9	0.01	a	9.9	0.01
SB - Pine	a	8.8	0.01	a	8.9	0.01	a	8.8	0.01
EB - Watson	d	25.2	0.17	d	26.7	0.20	d	26.3	0.20
WB - Watson	d	28.5	0.12	d	28.0	0.14	d	27.6	0.14

TABLE 2 - SR 0001 RC3 Interchange Study HCM 6th Edition LOS and Delay Results									
Scenario	**AM**								
	2024 Existing			**2050 No Build**			**2050 Build ParCLO Interchange**		
Intersection	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**
SR 413 (Pine Street) & E Winchester Avenue	**C**	**21.4**		**C**	**23.7**		**C**	**23.4**	
NBL - Pine	B	16.5	0.01	C	20.2	0.01	C	21.0	0.02
NBTR - Pine	B	16.5	0.60	B	19.1	0.66	B	19.3	0.65
NB - Pine	B	16.5		B	19.1		B	19.3	
SBL - Pine	B	11.0	0.16	B	12.9	0.20	B	13.0	0.20
SBTR - Pine	B	11.6	0.63	B	13.9	0.68	B	14.4	0.69
SB - Pine	B	11.6		B	13.8		B	14.3	
EB - Winchester	D	50.0	0.72	D	52.0	0.75	D	49.0	0.76
WB - Winchester	D	45.0	0.65	D	44.6	0.66	D	43.1	0.67
Bellevue Avenue & Richardson Avenue	**a**	**7.6**		**a**	**7.8**		**a**	**7.6**	
NB - Bellevue	a	7.7	0.11	a	7.8	0.11	a	7.5	0.07
SB - Bellevue	a	7.6	0.10	a	7.8	0.13	a	7.6	0.11
EB - Richardson	a	7.8	0.07	a	8.0	0.09	a	7.8	0.09
WB - Richardson	a	7.3	0.04	a	7.4	0.05	a	7.3	0.05
Station Avenue & Richardson Avenue									
NB - Station	a	8.8	0.02	a	8.9	0.04	a	8.8	0.03
EB - Richardson									
WB - Richardson	a	7.3	0.00	a	7.3	0.00	a	7.3	0.00
Hill Avenue & SR 213 (Maple Avenue)									
NB - Hill	c	23.4	0.23	d	26.4	0.29	c	19.6	0.16
EB - Maple									
WB - Maple	a	9.3	0.01	a	9.5	0.01	a	9.4	0.01
Hill Avenue & Richardson Avenue	**a**	**7.2**		**a**	**7.3**		**a**	**7.3**	
NB - Hill	a	7.3	0.05	a	7.3	0.05	a	7.2	0.03
SB - Hill	a	7.2	0.03	a	7.3	0.04	a	7.3	0.04
EB - Richardson	a	7.3	0.06	a	7.4	0.07	a	7.4	0.07
WB - Richardson	a	7.1	0.05	a	7.2	0.06	a	7.2	0.05
Hulmeville Avenue & Richardson Avenue									
NB - Hulmeville	a	8.8	0.04	a	8.9	0.06	a	8.9	0.06
EB - Richardson									
WB - Richardson	a	7.6	0.01	a	7.7	0.01	a	7.7	0.01
Hulmeville Road & Olive Street / W Highland Avenue									
NB - Hulmeville	a	7.2	0.00	a	7.2	0.00	a	7.2	0.00
SB - Hulmeville	a	7.4	0.00	a	7.4	0.00	a	0.0	0.00
EB - Highland	a	9.2	0.02	a	9.3	0.02	a	9.3	0.02
WB - Highland	a	9.8	0.07	a	9.9	0.08	a	9.4	0.06
N. Flowers Mill Road & Winchester Avenue / Langhorne Yardley Road	**C**	**31.5**		**D**	**40.1**		**D**	**45.1**	
NBL - Flowers	E	58.6	0.74	E	58.5	0.76	E	58.4	0.76
NBR - Flowers	C	20.5	0.67	D	43.7	0.93	D	53.3	1.00
NB - Flowers	C	26.7		D	46.2		D	54.2	
EBT - Winchester	C	25.7	0.20	B	18.4	0.17	B	17.6	0.16
EBR - Winchester	C	25.4	0.18	B	18.3	0.15	B	17.5	0.15
EB - Winchester	C	25.6		B	18.4		B	17.6	
WB - Langhorne	D	39.4	0.79	D	45.7	0.73	D	49.4	0.76
NB Frontage Road & Timber Lane									
NB - Timber	a	9.2	0.01	a	9.3	0.02	a	0.0	0.00
EBT - Frontage									
EBR - Frontage									
NB Frontage Road & Fee Ave									
NB - Fee	a	8.8	0.05	a	8.8	0.06			
EB - Frontage									
NB Frontage Road & Myrtle Ave									
NB - Myrtle	a	8.8	0.01	a	8.8	0.01			
EB - Frontage									

*HCM 2000 Analysis Results, roadway configuration incompatible with HCM 6th Edition

Note: HCM 6 methodology does not include yield controlled channelized movements in the approach or intersection LOS.

Note: LOS shown in uppercase letter indicates signalized intersection.

Note: Orange Highlight cell indicated LOS E.

Note: Red Highlight Cell indicates LOS F.

TABLE 3 - SR 0001 RC3 Interchange Study HCM 6th Edition LOS and Delay Results									
Scenario	**PM**								
	2024 Existing			**2050 No Build**			**2050 Build ParCLO Interchange**		
Intersection	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**
SR 213 (Maple Avenue) & Bellevue Avenue*	**C**	**22.9**		**C**	**26.1**		**B**	**17.3**	
NB - Bellevue	E	79.2	0.88	F	91.1	0.94	D	46.9	0.44
SB - Bellevue	D	44.4	0.49	D	43.8	0.52	E	56.0	0.70
EB - Maple	B	10.8	0.56	B	12.6	0.61	A	8.3	0.56
WB - Maple	A	9.7	0.54	B	11.0	0.58	B	10.3	0.67
SR 213 (Maple Avenue) & SR 413 (Pine Street)	**C**	**32.1**		**C**	**31.0**		**C**	**32.5**	
NBL - Pine	D	53.3	0.33	D	50.5	0.33	D	38.2	0.74
NBTR - Pine	E	56.8	0.87	E	57.0	0.88	C	33.2	0.64
NB - Pine	E	56.4		E	56.3		C	34.7	
SBL - Pine	D	41.0	0.70	D	41.1	0.73	C	25.4	0.53
SBTR - Pine	D	38.3	0.82	C	29.9	0.82	D	37.4	0.89
SB - Pine	D	38.9		C	32.5		C	34.6	
EBL - Maple	C	21.3	0.16	C	23.0	0.20	C	27.6	0.26
EBTR - Maple	A	2.4	0.55	A	3.9	0.60	B	11.0	0.69
EB - Maple	A	3.9		A	5.5		B	12.5	
WBL - Maple	C	22.0	0.09	C	23.6	0.11	C	32.2	0.14
WBTR - Maple	C	32.6	0.65	D	36.1	0.71	D	50.2	0.84
WB - Maple	C	31.9		D	35.2		D	48.8	
SR 413 (Pine Street) & Gillam Avenue / SR 1 SB Off Ramps							**B**	**15.3**	
NBL - Pine	a	9.5	0.10	a	9.7	0.11	B	14.4	0.17
NBT - Pine							A	4.0	0.39
NB - Pine							A	5.1	
SBL - Pine							C	33.9	0.73
SBT - Pine							B	16.1	0.44
SBR - Pine							A	0.0	0.00
SB - Pine							C	20.7	
EB - Gillam	c	15.4	0.24	c	17.7	0.31	C	21.0	0.24
WBL - SR 1 SB Ramps							C	24.8	0.41
WBT - SR 1 SB Ramps							C	21.4	0.32
WB - SR 1 SB Ramps							C	23.2	
SR 413 (Pine Street) & Woods Drive / SR 1 NB Ramps							**B**	**13.0**	
NBL - Pine							D	36.0	0.71
NBT - Pine							B	15.2	0.35
NBR - Pine							B	13.0	0.04
NB - Pine							C	20.2	
SBL - Pine	a	8.6	0.01	a	8.7	0.01	B	13.7	0.03
SBT - Pine							A	2.8	0.43
SB - Pine							A	2.9	
EBL - NB Ramps							C	25.2	0.54
WBL - Woods	c	17.3	0.18	c	19.3	0.23	C	21.1	0.07
SR 413 (Pine Street) / Highland & SR 2049 (Bellevue Avenue)							**a**	**8.9**	
NB (NBL) - SR 413 (Bellevue)	a	8.8	0.04	a	9.1	0.07	a	7.4	0.45
SB (WB) - Bellevue	f	77.4	0.84	f	166.0	1.13	a	6.2	0.00
EB (EB) - Highland	c	22.3	0.14	c	24.9	0.22	a	6.9	0.15
WB (SB) - SR 413 (Pine)							b	10.1	0.62

TABLE 3 - SR 0001 RC3 Interchange Study HCM 6th Edition LOS and Delay Results									
Scenario	**PM**								
	2024 Existing			**2050 No Build**			**2050 Build ParCLO Interchange**		
Intersection	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**
SR 413 (Pine Street) & Richardson Avenue									
NBL - Pine	a	9.0	0.03	a	9.1	0.04	a	9.0	0.03
EB - Richardson	c	18.7	0.12	c	22.3	0.18	c	24.5	0.20
WB - Richardson	c	23.5	0.10	d	27.1	0.14	d	31.4	0.16
SR 413 (Pine Street) & Flowers Avenue									
NBL - Pine	a	9.1	0.03	a	9.2	0.04	a	9.1	0.04
SBL - Pine	a	8.4	0.01	a	8.5	0.01	a	8.9	0.01
EB - Flowers	d	25.1	0.08	d	27.6	0.09	d	31.4	0.10
WB - Flowers	d	27.0	0.21	d	31.2	0.28	e	38.5	0.33
Bellevue Avenue & Gillam Avenue							**a**	**3.7**	
NBL/NB - Bellevue	a	7.3	0.01	a	7.3	0.01	a	3.2	0.00
SBL/SB - Bellevue	a	7.6	0.01	a	7.7	0.02	a	3.6	0.05
EB - Gillam	b	10.7	0.07	b	11.3	0.09	a	3.6	0.12
WB - Gillam	b	13.0	0.37	b	14.5	0.43	a	3.8	0.13
Highland Avenue & Park Avenue							**a**	**6.1**	
NB - Highland	a	7.9	0.08	a	7.9	0.09	a	5.7	0.29
SB - Highland							a	5.7	0.25
EB - Park	b	12.7	0.37	b	13.8	0.43	a	6.7	0.34
Old Lincoln Highway & Orchard Avenue									
NBL - Old Lincoln	a	7.8	0.02	a	7.9	0.03	a	8.0	0.03
EB - Orchard	b	11.2	0.03	b	11.2	0.04	a	8.9	0.03
Old Lincoln Highway & Fairhill Avenue	**C**	**21.1**		**C**	**22.5**		**C**	**20.9**	
NBLT - Old Lincoln							B	13.5	0.45
NBR - Old Lincoln							B	11.1	0.34
NB - Old Lincoln	B	11.3	0.44	B	12.6	0.49	B	12.6	
SBL - Old Lincoln							B	18.4	0.20
SBTR - Old Lincoln							B	12.3	0.35
SB - Old Lincoln	A	9.8	0.32	B	10.8	0.37	B	13.5	
EB - Fairhill	E	77.9	0.83	E	67.2	0.80	E	67.5	0.81
WBLT - Fairhill	C	28.0	0.54	C	28.3	0.56	C	26.8	0.47
WBR - Fairhill	D	41.1	0.84	D	44.3	0.85	D	41.8	0.88
WB - Fairhill	D	35.6		D	37.4		D	35.5	
Old Lincoln Highway & Arbutus Avenue									
NBL - Old Lincoln	a	7.9	0.03	a	8.0	0.03	a	8.0	0.04
SBL - Old Lincoln	a	8.1	0.04	a	8.1	0.04	a	8.7	0.04
EB - Arbutus	c	16.2	0.16	c	18.9	0.24	c	24.3	0.30
WB - Gillam	c	17.7	0.36	c	20.5	0.44	f	57.8	0.71
SR 213 (Maple Avenue) & SR 2045 (Old Lincoln Highway) / Golf Club Drive	**C**	**26.4**		**C**	**32.6**		**C**	**31.3**	
NB - Old Lincoln	D	36.3	0.81	D	47.4	0.89	D	46.9	0.89
SBL - Golf Club	B	19.9	0.04	C	20.8	0.05	C	20.1	0.05
SBTR - Golf Club	B	19.6	0.03	C	20.4	0.03	B	19.8	0.03
SB - Golf Club	B	19.7		C	20.6		B	20.0	
EBL - Maple	B	19.0	0.01	C	20.7	0.01	C	20.1	0.01
EBTR - Maple	C	29.6	0.74	C	34.2	0.78	C	32.8	0.77
EB - Maple	C	29.5		C	34.1		C	32.7	
WBL - Maple	C	22.4	0.61	C	29.2	0.71	C	25.3	0.66
WBT - Maple	B	14.3	0.44	B	16.0	0.47	B	15.3	0.45
WB - Maple	B	17.1		C	20.7		B	18.9	

TABLE 3 - SR 0001 RC3 Interchange Study HCM 6th Edition LOS and Delay Results									
Scenario	**PM**								
	2024 Existing			**2050 No Build**			**2050 Build ParCLO Interchange**		
Intersection	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**
SR 213 (Maple Avenue) & SR 1 SB Ramps / N Flowers Mill Road	**D**	**42.6**		**D**	**48.6**		**D**	**51.1**	
NB - N Flowers Mill	E	56.6	0.73	E	57.9	0.75	E	58.4	0.76
SBL - Rt 1 SB	D	44.9	0.81	D	47.8	0.85	C	35.0	0.75
SBT - Rt 1 SB	C	27.7	0.38	C	26.8	0.39	C	23.8	0.36
SBR - Rt 1 SB	C	25.1	0.16	C	24.1	0.17	C	21.4	0.16
SB - Rt 1 SB	D	36.6		D	37.7		C	29.5	
EBL - Maple	C	25.0	0.35	C	27.0	0.38	C	28.5	0.37
EBTR - Maple	C	33.9	0.50	D	37.3	0.56	D	41.6	0.65
EB - Maple	C	32.5		D	35.6		D	39.6	
WBL - Maple	C	28.4	0.75	C	33.5	0.81	C	34.7	0.82
WBT - Maple	D	36.6	0.30	D	38.0	0.32	D	39.3	0.34
WBR - Maple	E	69.1	0.95	F	90.2	1.04	F	107.7	1.09
WB - Maple	D	49.0		E	60.1		E	68.5	
SR 213 (Maple Avenue) & SR 1 NB Ramps / Woods Drive*	**C**	**29.9**		**C**	**34.1**		**C**	**23.9**	
NB - Woods	E	63.0	0.56	F	87.8	0.78	E	68.9	0.66
SBL - Rt 1 NB Ramps	E	78.0	0.79	F	92.8	0.89	E	74.5	0.80
SBT - Rt 1 NB Ramps	E	67.7	0.71	E	77.1	0.81	E	77.1	0.84
SBR - Rt 1 NB Ramps	A	0.2	0.14	A	0.2	0.15	A	0.2	0.15
SB - Rt 1 NB Ramps	D	43.1		D	51.4		D	45.9	
EBL - Maple	E	73.6	0.97	F	85.0	1.02	D	41.7	0.86
EBTR - Maple	D	45.2	0.91	D	47.2	0.94	C	26.2	0.85
EB - Maple	D	49.5		D	53.0		C	29.0	
WBL - Maple	E	60.7	0.03	E	60.4	0.03	E	57.7	0.03
WBTR - Maple	A	4.5	0.81	A	5.4	0.85	A	5.9	0.85
WB - Maple	A	5.0		A	5.9		A	6.4	
SR 213 (Maple Avenue) & S Flowers Mill Road / Dunkin'*	**C**	**27.0**		**C**	**28.9**		**C**	**30.3**	
NBL - S Flowers Mill	E	57.6	0.78	E	62.2	0.84	E	70.3	0.89
NBTR - S Flowers Mill	D	43.0	0.05	D	43.1	0.05	D	44.1	0.05
NB - S Flowers Mill	E	55.5		E	59.5		E	66.6	
SBR - Dunkin'	D	42.6	0.01	D	42.6	0.01	D	45.2	0.01
EBT - Maple	A	0.5	0.43	A	0.6	0.45	A	0.6	0.43
EBR - Maple	A	0.1	0.28	A	0.1	0.29	A	0.1	0.29
EB - Maple	A	0.4		A	0.4		A	0.4	
WBL - Maple	E	77.4	0.74	F	81.6	0.77	E	69.7	0.69
WBTR - Maple	D	46.6	0.83	D	49.5	0.87	D	51.2	0.89
WB - Maple	D	49.2		D	52.2		D	52.8	
Old Lincoln Highway & Neshaminy HS Entrance*									
NBL - Old Lincoln	a	8.3	0.01	a	8.4	0.01	a	9.3	0.14
SB - Old Lincoln	a	8.2	0.01	a	8.3	0.01	a	0.0	0.00
WB - Connector Rd	b	13.9	0.34	b	14.9	0.39	a	0.0	0.00
Hulmeville Avenue & Gillam Avenue	**a**	**8.0**		**a**	**8.1**		**a**	**8.0**	
NB - Hulmeville	a	8.3	0.17	a	8.5	0.18	a	7.6	0.00
SB - Hulmeville	a	7.1	0.04	a	7.2	0.05	a	7.3	0.05
EB - Gillam	a	8.0	0.12	a	8.2	0.14	a	8.2	0.20
WB - Gillam	a	7.7	0.06	a	7.8	0.07	a	7.9	0.15
Hulmeville Avenue & Highland Avenue									
NB - Hulmeville	a	7.5	0.10	a	7.6	0.11	a	7.5	0.10
SB - Hulmeville	a	7.3	0.00	a	7.3	0.00	a	0.0	0.00
EB - Highland	b	12.1	0.34	b	13.2	0.40	b	11.0	0.30
WB - Highland	b	14.7	0.18	c	16.3	0.23	c	17.1	0.39
SB Frontage Road & Hulmeville Avenue									
SB - Hulmeville	b	10.1	0.02	b	10.3	0.02			
WB - Frontage									

TABLE 3 - SR 0001 RC3 Interchange Study HCM 6th Edition LOS and Delay Results									
Scenario	**PM**								
	2024 Existing			**2050 No Build**			**2050 Build ParCLO Interchange**		
Intersection	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**
SR 213 (Maple Avenue) & Green Street									
NB - Green	d	25.3	0.11	d	25.6	0.13	d	25.1	0.13
SB - Green	c	21.4	0.11	c	22.1	0.13	c	21.7	0.13
EB - Maple	a	8.9	0.02	a	9.0	0.02	a	8.9	0.02
WB - Maple	a	8.7	0.01	a	8.8	0.01	a	8.8	0.01
NB Frontage Road & Park Avenue									
NB - Park	b	10.1	0.16	b	10.4	0.18			
EB - Frontage									
SB Frontage Road & Connector Road									
SB - Connector	a	9.3	0.01	a	9.4	0.01			
WB - Frontage									
Hill Avenue & Gillam Avenue	**a**	**7.4**		**a**	**7.5**		**a**	**7.9**	
NB - Hill	a	7.3	0.05	a	7.4	0.05	a	7.5	0.00
SB - Hill	a	7.2	0.02	a	7.3	0.03	a	7.6	0.03
EB - Gillam	a	7.6	0.08	a	7.7	0.09	a	8.1	0.16
WB - Gillam	a	7.3	0.06	a	7.3	0.06	a	7.7	0.13
SB Frontage Road & Hill Avenue									
SB - Hill	b	10.5	0.03	b	10.8	0.04			
WB - Frontage									
Old Lincoln Highway & SB SR 0001 On/Off Ramps									
NB - Old Lincoln	a	9.9	0.01	b	10.0	0.01			
SB - Old Lincoln	a	0.0	0.12	a	0.0	0.13	a	7.7	0.18
WB - SR 0001 Off Ramp	a	0.0	0.00	a	0.0	0.00	b	10.9	0.41
Old Lincoln Highway & Neshaminy HS Exit									
NB - Old Lincoln									
SB - Old Lincoln									
EBL - HS Exit	c	16.5	0.58	c	17.7	0.61	f	228.8	1.40
EBR - HS Exit	a	9.6	0.07	a	9.7	0.06	b	10.4	0.07
Hulmeville Road & Gillam Avenue	**a**	**9.3**		**a**	**9.5**		**a**	**8.9**	
NB - Hulmeville	a	9.3	0.22	a	9.3	0.21	a	7.9	0.00
SB - Hulmeville	a	9.7	0.25	a	10.0	0.27	a	9.4	0.25
EB - Gillam	a	8.7	0.12	a	8.8	0.13	a	8.3	0.12
WB - Gillam	a	9.1	0.25	a	9.4	0.29	a	8.7	0.26
Hill Avenue & Highland Avenue	**a**	**7.5**		**a**	**7.5**		**a**	**8.1**	
NB - Hill	a	8.3	0.02	a	8.3	0.02	a	8.3	0.02
SB - Hill	a	7.4	0.02	a	7.4	0.02	a	7.6	0.00
EB - Highland	a	7.3	0.05	a	7.4	0.06	a	7.7	0.11
WB - Highland	a	7.5	0.11	a	7.5	0.12	a	8.3	0.24
NB Frontage Road & Hill Avenue									
NB - Hill	a	9.2	0.01	a	9.3	0.02			
EB - Frontage									
Station Avenue & Gillam Avenue	**a**	**7.5**		**a**	**7.6**		**a**	**8.5**	
NB - Station Ave	a	7.3	0.03	a	7.4	0.04	a	7.7	0.00
SB - Station Ave	a	7.1	0.02	a	7.2	0.02	a	7.6	0.02
EB - Gillam Ave	a	7.8	0.08	a	8.0	0.10	a	8.8	0.23
WB - Gillam Ave	a	7.3	0.08	a	7.3	0.09	a	8.2	0.21
SB Frontage Road & Old Lincoln Highway									
SB - Old Lincoln	a	9.3	0.16	a	9.4	0.18			
SB Frontage Road & Parkvale Avenue									
SB - Parkvale	a	9.1	0.02	a	9.2	0.03			
WB - Frontage									
SB Frontage Road & Hulmeville Road									
SB - Hulmeville	a	9.5	0.03	a	9.6	0.04			
WB - Frontage									

TABLE 3 - SR 0001 RC3 Interchange Study HCM 6th Edition LOS and Delay Results									
Scenario	**PM**								
	2024 Existing			**2050 No Build**			**2050 Build ParCLO Interchange**		
Intersection	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**
Old Lincoln Highway & Hulmveille Road									
NB - Old Lincoln									
SB - Old Lincoln	a	8.6	0.10	a	8.9	0.11	a	9.2	0.11
WB - Hulmeville	c	23.6	0.56	d	33.0	0.69	d	25.9	0.48
SB Frontage Road & Station Avenue									
SB - Station	b	10.6	0.02	b	10.9	0.03			
WB - Frontage									
SB Frontage Road & Bellevue Avenue									
SB - Bellevue	c	15.0	0.41	c	16.5	0.46			
WB - Frontage									
Station Avenue & Highland Avenue	**a**	**7.5**		**a**	**7.6**		**a**	**8.2**	
NB - Station	a	7.2	0.03	a	7.2	0.05	a	7.3	0.03
SB - Station	a	7.4	0.01	a	7.5	0.02	a	7.6	0.00
EB - Highland	a	7.3	0.05	a	7.3	0.05	a	7.7	0.11
WB - Highland	a	7.7	0.12	a	7.9	0.13	a	8.5	0.23
NB Frontage Road & Fox Court									
NB - Fox	a	8.7	0.01	a	8.8	0.01			
EB - Frontage									
NB Frontage Road & Parkvale Avenue									
NB - Parkvale	a	9.0	0.01	a	9.0	0.01			
EB - Frontage									
NB Frontage Road & Hulmeville Rd									
NB - Hulmeville	a	8.7	0.04	a	8.7	0.05			
EB - Frontage									
NB Frontage Road & Hulmeville Ave									
NB - Hulmeville	a	9.2	0.10	a	9.3	0.11			
EB - Frontage									
NB Frontage Road & Station Ave									
NB - Station	a	9.2	0.02	a	9.4	0.03			
EB - Frontage									
NB Frontage Road & Bellevue Ave									
NB - Bellevue	b	10.0	0.09	b	10.1	0.10			
EB - Frontage									
Parkvale Avenue & Gillam Avenue	**a**	**7.9**		**a**	**8.0**		**a**	**7.7**	
NB - Parkvale	a	7.9	0.09	a	8.1	0.10	a	7.6	0.04
EB - Gillam	a	7.7	0.10	a	7.7	0.11	a	7.7	0.12
WB - Gillam	a	8.1	0.13	a	8.3	0.14	a	7.8	0.13
Old Lincoln Highway & Brownsville Road	**b**	**14.7**		**c**	**15.4**		**c**	**24.7**	
NB - Old Lincoln	b	14.5	0.52	c	15.5	0.56	a	8.4	0.10
SB - Old Lincoln	b	13.8	0.52	b	14.9	0.57			
EB - Brownsville	c	15.8	0.56	c	15.8	0.55	f	83.4	1.00
Hulmeville Road & W Richardson Avenue									
NB - Hulmeville	a	8.8	0.28	a	8.9	0.29			
SB - Hulmeville	a	8.4	0.22	a	8.7	0.25	a	7.5	0.02
WB - Richardson	a	8.1	0.05	a	8.3	0.07	b	10.1	0.06
W Richardson Avenue & Green Street									
SB - Green	a	8.9	0.02	a	9.1	0.03	a	9.1	0.03
EB - Richardson	a	7.3	0.00	a	7.4	0.00	a	7.4	0.00
WB - Richardson									
SR 413 (Pine Street) & Watson Avenue									
NB - Pine	a	9.3	0.01	a	9.5	0.01	a	9.5	0.01
SB - Pine	a	8.5	0.01	a	8.6	0.01	a	8.6	0.01
EB - Watson	c	19.0	0.14	c	20.0	0.17	c	20.0	0.17
WB - Watson	c	22.7	0.12	c	22.9	0.14	c	22.9	0.14

TABLE 3 - SR 0001 RC3 Interchange Study HCM 6th Edition LOS and Delay Results									
Scenario	**PM**								
	2024 Existing			**2050 No Build**			**2050 Build ParCLO Interchange**		
Intersection	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**	**LOS**	**Delay**	**v/c**
SR 413 (Pine Street) & E Winchester Avenue	**C**	**29.6**		**C**	**31.4**		**C**	**31.3**	
NBL - Pine	C	34.4	0.01	D	38.7	0.01	D	39.4	0.01
NBTR - Pine	D	35.2	0.51	D	37.8	0.56	D	38.3	0.56
NB - Pine	D	35.2		D	37.8		D	38.3	
SBL - Pine	B	14.4	0.20	B	16.1	0.24	B	16.4	0.24
SBTR - Pine	B	13.5	0.60	B	15.6	0.65	B	16.1	0.65
SB - Pine	B	13.6		B	15.7		B	16.1	
EB - Winchester	D	41.4	0.48	D	40.3	0.50	D	40.1	0.51
WB - Winchester	D	53.4	0.82	D	54.1	0.83	D	51.7	0.84
Bellevue Avenue & Richardson Avenue	**a**	**8.2**		**a**	**8.3**		**a**	**7.7**	
NB - Bellevue	a	8.7	0.22	a	8.9	0.23	a	8.0	0.10
SB - Bellevue	a	7.6	0.09	a	7.8	0.10	a	7.4	0.08
EB - Richardson	a	7.9	0.08	a	8.1	0.10	a	7.7	0.09
WB - Richardson	a	7.7	0.07	a	7.8	0.09	a	7.5	0.09
Station Avenue & Richardson Avenue									
NB - Station	a	9.2	0.04	a	9.3	0.06	a	9.1	0.05
EB - Richardson									
WB - Richardson	a	7.3	0.00	a	7.4	0.00	a	7.4	0.00
Hill Avenue & SR 213 (Maple Avenue)									
NB - Hill	c	24.0	0.26	d	27.5	0.33	c	17.6	0.14
EB - Maple									
WB - Maple	a	8.8	0.01	a	8.9	0.01	a	8.8	0.01
Hill Avenue & Richardson Avenue	**a**	**7.5**		**a**	**7.6**		**a**	**7.5**	
NB - Hill	a	7.5	0.08	a	7.6	0.09	a	7.3	0.05
SB - Hill	a	7.4	0.05	a	7.6	0.06	a	7.5	0.06
EB - Richardson	a	7.4	0.05	a	7.6	0.07	a	7.5	0.07
WB - Richardson	a	7.5	0.10	a	7.6	0.12	a	7.5	0.11
Hulmeville Avenue & Richardson Avenue									
NB - Hulmeville	a	9.0	0.04	a	9.1	0.06	a	9.1	0.06
EB - Richardson									
WB - Richardson	a	7.3	0.01	a	7.3	0.01	a	7.3	0.01
Hulmeville Road & Olive Street / W Highland Avenue									
NB - Hulmeville	a	7.3	0.00	a	7.3	0.00	a	7.2	0.00
SB - Hulmeville	a	7.4	0.00	a	7.4	0.00	a	0.0	0.00
EB - Highland	a	9.2	0.02	a	9.3	0.02	a	9.3	0.02
WB - Highland	b	10.1	0.19	b	10.4	0.21	a	9.8	0.18
N. Flowers Mill Road & Winchester Avenue / Langhorne Yardley Road	**D**	**37.2**		**D**	**37.9**		**D**	**37.9**	
NBL - Flowers	E	65.6	0.88	E	67.4	0.89	E	68.8	0.89
NBR - Flowers	B	15.6	0.48	B	14.3	0.50	B	14.0	0.49
NB - Flowers	C	32.3		C	31.9		C	32.2	
EBT - Winchester	D	35.6	0.18	D	38.5	0.22	D	39.7	0.24
EBR - Winchester	D	36.6	0.26	D	39.6	0.32	D	40.9	0.34
EB - Winchester	D	36.1		D	39.1		D	40.4	
WB - Langhorne	D	42.6	0.85	D	43.7	0.88	D	42.8	0.87
NB Frontage Road & Timber Lane									
NB - Timber	a	9.8	0.01	b	10.0	0.01	a	6.9	0.05
EBT - Frontage									
EBR - Frontage									
NB Frontage Road & Fee Ave									
NB - Fee	a	8.7	0.03	a	8.8	0.04			
EB - Frontage									
NB Frontage Road & Myrtle Ave									
NB - Myrtle	a	8.6	0.01	a	8.7	0.01			
EB - Frontage									

*HCM 2000 Analysis Results, roadway configuration incompatible with HCM 6th Edition

Note: HCM 6 methodology does not include yield controlled channelized movements in the approach or intersection LOS.

Note: LOS shown in uppercase letter indicates signalized intersection.

Note: Orange Highlight cell indicated LOS E.

Note: Red Highlight Cell indicates LOS F.

Table 4 - SR 0001 RC3 VISSIM Queue Results							
Scenario	Turn Lane Length / Link Length (Exist / Prop)	AM			PM		
		Existing	No Build	Build 2A (ParClo)	Existing	No Build	Build 2A (ParClo)
		95th Percentile Queue	95th Percentile Queue	95th Percentile Queue	95th Percentile Queue	95th Percentile Queue	95th Percentile Queue
Intersection / *Lane Grp.*	Feet	Feet	Feet	Feet	Feet	Feet	Signal 3 NBL advance arrow
SR 413 (Pine Street) / Highland Avenue & Bellevue Avenue							
NBLT - Bellevue	***325***	1	1	3	3	3	6
SB - Bellevue	***795***	14	20	0	10	2	0
EB - Highland	***1730***	1	1	4	1	1	4
WB - Pine	***600***			20			40
SR 1 NB Ramps / Woods Drive &							
NBL - Pine	**275**			25			23
NBT - Pine	**1295**			10			8
NBR - Pine (to Wood Dr)	**175**	0	0	0	0	0	0
SBL - Pine (to Wood Dr)	**150**	0	0	9	0	0	3
SBT - Pine	**875**			24			19
SBR - Pine	**325**			0			0
EBL(T) - SR 1 NB Off Ramp	**175**			40			27
EBT - SR 1 NB Off Ramp				2			2
EBR - SR 1 NB Off Ramp	**175**			2			1
WB L Woods				2			3
WB T Woods				0			0
WB R Woods				0			0
WB Woods		1	1		1	1	
SR 1 SB Ramps / Gillam Avenue & SR 413 (Pine Street)							
NBL - Pine (to Gillam Ave)	**200**	0	0	6	2	1	11
NBT - Pine	**875**			19			46
NBR - Pine	**100**			0			0
SBL - Pine	**375**			38			37
SBTR - Pine	**1180**			13			25
SBR - Pine (to Gillam Ave)	**75**	1	1	0	0	0	0
EBL Gillam				0			0
EBT Gillam				11			10
EBR Gillam				7			4
EB Gillam	***800***	2	2		2	3	
WBL - SR 1 SB Off Ramp	**150**			11			16
WBT - SR 1 SB Off Ramp				3			17
WBR - SR 1 SB Off Ramp	**200**			0			0
Bellevue Avenue & Gillam Avenue							
NB Bellevue	**325**			0			0
SB Bellevue	**1900**			0			0
EB Gillam	**400**	0	0	0	1	1	0
WB Gillam	**750**	16	20	0	10	10	0
Old Lincoln Highway & Fairhill Avenue							
NBLT - Old Lincoln	**150**	31	41	18	10	13	18
SBTR - Old Lincoln	**800**	29	35	51	8	10	12
EB Fairhill	**1000+**	27	31	8	4	5	1
WBLT - Highland	**800**	79	83	97	28	30	32
WBR - Highland	**150**	1	1	1	10	13	7

Table 4 - SR 0001 RC3 VISSIM Queue Results							
Scenario	**Turn Lane Length / Link Length (Exist / Prop)**	**AM**			**PM**		
		Existing	**No Build**	**Build 2A (ParClo)**	**Existing**	**No Build**	**Build 2A (ParClo)**
		95th Percentile Queue	**95th Percentile Queue**	**95th Percentile Queue**	**95th Percentile Queue**	**95th Percentile Queue**	**95th Percentile Queue**
Intersection / *Lane Grp.*	**Feet**	**Feet**	**Feet**	**Feet**	**Feet**	**Feet**	**Signal 3 NBL advance arrow**
Old Lincoln Highway & Neshaminy HS Entrance							
WB SR 1 SB Off Ramp		1	1	0	4	4	0
Highland Avenue & Park Avenue							
NB Highland	**850**			1			2
SB Highland				0			1
EB Park	**1000**	3	3	1	8	10	2
SR 213 (Maple Avenue) & Bellevue Avenue							
NB Bellevue	***1965***	14	15	16	43	44	28
SB Bellevue	***780***	27	32	28	61	58	86
EB Maple	***2970***	30	43	31	35	37	36
WB Maple	***785***	5	9	32	18	23	35
SR 213 (Maple Avenue) & SR 413 (Pine Street)							
NBL - Pine	***275***	8	8	316	11	14	159
NBTR - Pine	***990***	136	137	272	110	96	137
SBL - Pine	***200***	54	45	61	34	34	63
SBTR - Pine	***815***	163	171	212	136	166	753
EBL - Maple	***100***	3	3	4	5	5	10
EBTR - Maple	***785***	73	78	133	67	76	188
WBL - Maple	***100***	4	8	6	5	9	8
WBTR - Maple	***2405***	78	111	144	89	135	128
SR 213 (Maple Avenue) & SR 1 SB Ramps/ N Flowers Mill Road							
NBLT - Rt 1 Ramp		37	42	49	72	108	323
SBL - N Flowers Mill	***150***	184	303	171	555	1148	507
SBT - N Flowers Mill	***805***	33	43	40	187	1084	109
SBR - N Flowers Mill	***115***	1	1	1	1	2	2
EBL - Maple	***165***	4	6	10	19	22	13
EBT - Maple	***430***	58	58	103	93	106	109
WBL - Maple	***200***	59	67	81	60	96	117
WBT - Maple	***875***	42	38	43	47	44	54
WBR - Maple	***115***	69	57	88	96	511	219
SR 213 (Maple Avenue) & SR 1 NB Ramps / Woods Drive							
NBLT - Woods	***700***	8	8	8	17	18	22
NBR - Woods	***100***	0	1	1	1	2	2
SBL - Rt 1 NB Ramps	***300***	99	126	213	57	73	201
SBLT - Rt 1 NB Ramps	***850***	99	126	213	57	73	201
SBR - Rt 1 NB Ramps	***300***	5	8	9	6	90	9
EBL - Maple	***210***	50	94	64	41	81	37
EBTR - Maple	***875***	65	73	53	116	131	88
WBL - Maple	***175***	13	2	15	5	5	4
WBT - Maple	***175***	40	0	39	24	63	28
SR 213 (Maple Avenue) & S Flowers Mill Road / Dunkin							
NBL - S Flowers Mill	***200***	522	295	497	195	303	498
NBTR - S Flowers Mill	***730***	27	16	29	0	1	0
SBR - Dunkin Donuts	**50**	2	1	2	0	0	0
EBT - Maple	***175***	14	15	10	5	3	5
EBR - Maple	***175***	10	11	2	5	4	1
WBL - Maple	***140***	16	19	18	56	72	87
WBTR - Maple	***2060***	59	81	65	108	162	104

Table 5 - SR0001 RC3 VISSIM Ramp Density Results

	Ramp Movement	Merge, Diverge, or Weave	Existing AM		No Build AM		Build Alt Par-Clo AM		Existing PM		No Build PM		Build Alt Par-Clo PM	
			LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
D1 NB	Diverge from SR 1 NB near Park Avenue	Diverge	B	18.6	C	20.1	A	5.0	B	16.1	B	17.4	A	4.6
M1 NB	Merge to SR 1 NB near Fox Court	Merge	B	18.3	B	19.7	B	20.0	B	14.5	B	15.7	B	15.9
D2 NB	Diverge from SR 1 NB near West Interchange	Diverge	B	18.3	B	19.7			B	14.5	B	15.7		
D3 NB	Diverge from SR 1 NB near Station Avenue	Diverge	B	18.1	B	19.5			B	14.3	B	15.4		
M2 NB	Merge to SR 1 NB near Bellevue Avenue	Merge	B	18.7	C	21.9			B	15.5	B	18.3		
D4 NB	Diverge from SR 1 NB to SR 413 (Pine Street)	Diverge					C	22.0					B	17.9
M3 NB	Merge to SR 1 NB from SR 413 (Pine Street)	Merge					B	19.9					B	15.5
D1 SB	Diverge from SR 1 SB to SR 413 (Pine Street)						B	15.4					C	22.8
M1 SB	Merge to SR 1 SB from SR 413 (Pine Street)	Merge					B	17.0					C	21.7
D2 SB	Diverge from SR 1 SB near Bellevue Avenue	Diverge	B	14.7	B	15.8			C	20.3	C	21.7		
M2 SB	Merge to SR 1 SB near Station Avenue	Merge	B	15.9	B	17.1			B	18.8	B	19.9		
M3 SB	Merge to SR 1 SB near West Interchange	Merge	B	16.0	B	17.3			B	19.1	C	20.1		
D3 SB	Diverge from SR 1 SB near Highland Avenue	Diverge	B	15.9	B	17.1			B	18.8	B	20.0		
D4 SB	Diverge from SR 1 SB to Old Lincoln Highway	Diverge					B	17.7					A	10.0
M4 SB	Merge to SR 1 SB from Old Lincoln Highway	Merge	B	16.1	B	17.6	B	16.9	C	20.3	C	21.5	C	21.4

REGIONAL CONFORMITY

Bucks

MPMS# 93446 ***Route 1 Improvements Frontage Corridor (Section RC3)***

LIMITS: Route 1 - Frontage Road Corridor, Bucks County
Est Let Date: 10/1/2026

IMPROVEMENT Roadway New Capacity
NHPP: Y
MRPID:37

MUNICIPALITIES: Bensalem Township; Langhorne Manor Borough; Middletown Townsh
FC: 12; 19
AQ Code:S10

PLAN CENTER:
IPD: 19

PROJECT MANAGER: Plans/S. Hasan
CMP: Major SOV Capacity
CMP Subcorridor(s): 4A, 5I

The S.R. 0001 Group 03S Section RC3 project extends from the northern end of the S.R. 0001 bridge over the CSX railroad to approximately 700 feet north of the S.R. 0413 (PA 413/Pine Street) bridge over S.R. 0001, a distance of 2.5 miles. This project includes the 2.0 mile +/- segment of frontage (service) road corridor.

The S.R. 0001 Group 03S Section RC3 project includes Resurfacing, Restoration and Rehabilitation (3R) improvements to S.R. 0001 and the frontage roads, reconstruction of 1 bridge (West Interchange Road over S.R. 0001), and the rehabilitation of 1 bridge (S.R. 0001 over S.R. 2008). The primary proposed improvements for this section of S.R. 0001 are as follows:

-Widening of S.R. 0001 median width from 4' to 10' to meet current design criteria.
-Replacement of 12,100 ft. of existing double-face guide rail median barrier and 985 ft. of existing concrete median barrier with concrete glare screen.
-Removal of existing raised concrete islands separating the mainline S.R. 0001 travel lanes from the frontage road to be replaced with 12'-0" paved outside shoulders along the mainline travel lanes and concrete median barrier between the proposed mainline outside shoulder and the frontage road.
-Closing the existing intermediate crossovers between the mainline S.R. 0001 travel lanes and the frontage roads.
-Updating the overhead guide signage for the project corridor due to the revised frontage road access and for coordination with the S.R. 0001 Sec. RC1, RC2 and LHB projects.
-Relocating the existing ITS infrastructure, including conduit throughout the corridor and ITS CCTV camera assembly, communications cabinets and VD sensor assemblies that are supported by the affected overhead guide signs.
-Lengthening of the acceleration lanes from the frontage roads onto S.R. 0001 in the northbound and southbound directions to meet current design criteria.
•Relocating the existing roadway inlets along the existing double face median guide rail and existing raised concrete traffic islands to along the proposed concrete glare screen and proposed concrete median barrier.
•Structure improvements include the replacement of one existing functionally obsolete bridge (West Interchange Road over S.R. 0001) along the existing horizontal alignment and the rehabilitation of one bridge (S.R. 0001 over S.R. 2008) including superstructure replacement.

Design Parent is MPMS #13549
Route 1 Improvements Northern section RC2 is MPMS #93445
Route 1 Improvements Southern section RC1 is MPMS #93444

Project CMP (Congestion Management Process) commitments include signal improvements, sidewalks and other improvements for pedestrians, investigation of new bus stops and enhanced bus services in consultation with SEPTA, safety improvements including increased speed enforcement, and outreach to employers to promote transportation demand management strategies. See DVRPC's 2013-2014 memorandum on supplemental strategies for details related to this project.

TIP INFORMATION WILL BE UPDATED ACCORDINGLY. SEE REGIONAL CONFORMITY SECTION IN THE MEMO FOR MORE INFORMATION.

From: Kenawell, Michael
To: Nathaniel Weinstock
Cc: Yerges, Kenneth; Patrick, Jared; Altimare, Amy
Subject: FW: [EXTERNAL] RE: [External] RC3 - TIP Description Update/Conformity
Date: Monday, September 22, 2025 8:11:42 AM
Importance: High

Nat,

See note below from Rick Murphy with DVRPC on the steps that DVRPC will be taking to get the SR 0001, RC3 Project Description updated in the Conformity document for review and approval.

Please look over the timeline mentioned in Rick's email and let me know what we can do on our end to get the Air Tech memo updated to reflect the actions that are taking place with DVRPC so that we can include the Air memo in the EA document.

Reach out with any questions.

Thanks.

Johnson, Mirmiran & Thompson, Inc.
An Employee Owned Company

Michael Kenawell
Associate Vice President
Natural and Cultural Resources
P. 717-741-6258
M. 717-460-6271

From: Hasan, Sibty <shasan@pa.gov>
Sent: Monday, September 22, 2025 8:02 AM
To: Korus, Jonathan M <jkorus@pa.gov>
Cc: Yerges, Kenneth <kyerges@jmt.com>; Kenawell, Michael <mkenawell@jmt.com>; Patrick, Jared <jpatrick@jmt.com>
Subject: [EXTERNAL] RE: [External] RC3 - TIP Description Update/Conformity
Importance: High

Morning Jon!

Based on the email chain below, please let us know if we need to do anything to make sure that David Alas sends the conformity document to DVRPC urgently for their review and Fed approval. The meeting is in early October, therefore, DVRPC should have the document in their hand before end of October.

If the descriptions are updated by early November based on the timeline below, we should be fine. I will let Mike add any additional comment he may have.

Thanks. Sibty

From: Korus, Jonathan M <jkorus@pa.gov>
Sent: Monday, September 22, 2025 7:44 AM
To: Hasan, Sibty <shasan@pa.gov>
Subject: FW: [External] RC3 - TIP Description Update/Conformity

Good Evening Sibty,

Following up on our RC3 discussion earlier in the week. Please see update below from DVRPC and please share with the other RC3 team members as I don't have their emails. Please ask if you have any questions.

Thanks,
Jonathan Korus | Transportation Planning Manager
PA Department of Transportation | Engineering District 6-0
7000 Geerdes Boulevard | King of Prussia, PA 19406-1525
Phone: 610-205-6961 | Fax: 610-205-6914
www.penndot.gov

From: Richard Murphy <rmurphy@dvrpc.org>
Sent: Friday, September 19, 2025 10:33 AM
To: Korus, Jonathan M <jkorus@pa.gov>; Alas, David <dalas@pa.gov>
Cc: sgreene <sgreene@dvrpc.org>; jbuerk@dvrpc.org; Travis Spotts <tspotts@dvrpc.org>
Subject: Re: [External] RC3 - TIP Description Update/Conformity

Jonathan below are the steps we will take to update the description. Please share with the project team as appropriate for inclusion in their documentation.

Updated RC3 has been modeled and will be included in the Conformity Document that will be adopted next week. It will be called out in the LRP (PAR004) section and in the TIP section (MPMS #93446).

DVRPC will take the updated scope/description to the RTC and Board in October.

DVRPC will **NOT** be able to process an eSTIP until **AFTER** the Conformity document has been approved by the feds. This is the direction from our conversation with Ronnique yesterday.

Once the Conformity document is approved we will send the eSTIP. By the time the Board approved the TIP amendment, it would have been four weeks since the Board adopted the Conformity document. There is a good amount of lead time. Hopefully this all falls into place where the EA does not have to mention any discrepancies.

David: Please be aware that the feds will not begin review of the Conformity document until PennDOT officially sends it to them to review. We will need this forwarded to the feds as soon as possible.

Rick

Richard Murphy, Jr. | Manager, Office of TIP Development and Maintenance
Delaware Valley Regional Planning Commission
190 N Independence Mall West, 8th Floor
Philadelphia, PA 19106-1520
215-238-2946

On Wed, Sep 17, 2025 at 9:25 AM Korus, Jonathan M <jkorus@pa.gov> wrote:

> Thanks Rick!
>
> **Jonathan Korus** | Transportation Planning Manager
> PA Department of Transportation | Engineering District 6-0
> 7000 Geerdes Boulevard | King of Prussia, PA 19406-1525
> Phone: 610-205-6961 | Fax: 610-205-6914
> www.penndot.gov
>
> ---
>
> **From:** Richard Murphy <rmurphy@dvrpc.org>
> **Sent:** Wednesday, September 17, 2025 9:23 AM
> **To:** Korus, Jonathan M <jkorus@pa.gov>; sgreene <sgreene@dvrpc.org>
> **Cc:** jbuerk@dvrpc.org; Travis Spotts <tspotts@dvrpc.org>
> **Subject:** [External] RC3 - TIP Description Update/Conformity
>
>
>
> Just spoke with Ronnique asking for guidance. She is going to check in with Gene and get back to me ASAP.
>
> Rick
>
> Richard Murphy, Jr. | Manager, Office of TIP Development and Maintenance
> Delaware Valley Regional Planning Commission

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215-238-2946