NEW JERSEY DEPARTMENT OF TRANSPORTATION
ROUTE 22 WB - VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET SAFETY IMPROVEMENTS MILEPOST 55.9 TO MILEPOST 56.4

PRELIMINARY ENGINEERING REPORT

Submitted to:
New Jersey Department of Transportation
P.O. Box 600
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Submitted by:
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I. INTRODUCTION

The New Jersey Department of Transportation is proposing widening to improve safety and resurfacing of Route 22 westbound in Union Township, New Jersey. The project is referred to as the "Route 22 Westbound Vicinity of Vauxhall Road to West of Bloy Street" project

The project limits on Route 22 are from 400' west of the Sayre Road (MP 55.9) intersection to 100' east of the Gary Road intersection (MP 56.4). The work includes improvements to the Gary Road intersection, the Vauxhall Road Interchange, and the Sayre Road intersection.

Vauxhall Road (MP 56.2 along Route 22) is also known as County Route 630. It is oriented in a northwest-southeast direction and crosses over N.J. Route 22 at a skew angle of 44 degrees. The existing overpass (structure No. 2004150) is in good condition and is not rated structurally deficient (sufficiency rating of 76.5 in November 2011). The existing span width of the bridge constrains the potential widening for Route 22 through this half-mile project corridor.

A. Foreword

NJDOT's "Route 22 Needs Assessment/Concept Development Study (2003)", documented the needs and deficiencies for the 4.1 mile segment of the Route 22 corridor between the Garden State Parkway (MP 55.3) in Union Township and Meeker Avenue (MP 59.4) in the City of Newark. Short-term and long-term concepts, recommendations, as well as multi-modal and non-motorized alternatives were evaluated as part of this study.

The study concluded that there was a lack of directional signage throughout the corridor, particularly at and in advance of exits. Signage recommendations were proposed throughout the corridor to improve consistency, safety, navigability, and ease of travel. A "Guide Signing Engineering" report was then prepared for the Route 22 corridor between the Garden State Parkway in Union Township and Meeker Avenue in the City of Newark. The report included an inventory of existing guide signs to address the physical condition and effectiveness of existing signage and recommended guide sign improvements. Based on these recommendations, NJDOT completed a guide sign improvement project throughout the corridor.

As part of the project study, accident rates were computed for twenty-three segments on Route 22 and were compared with the statewide accident rates to determine the relative severity of accident occurrences at these locations. Of the 23 segments, 19 (83%) were below the statewide average. Of the remaining four segments; Route 22 & Bloy Street, Route 22 & Sayre Road, and Route 22 & Vauxhall Road were above the statewide average while Route 22 & Route 82 was more than double the statewide average.

In review, it was determined that the leading reason for these high accident rates was the limited weaving areas associated with the intersection and interchange ramps.

The proposed "Route 22 WB Vicinity of Vauxhall Road to West of Bloy Street" Safety Improvement Project includes improvements to interchange ramps to alleviate unsafe conditions that contribute to the high accident rates being experienced at this segment of Route 22. The project proposes to mitigate this by widening the roadway, constructing an auxiliary lane, acceleration and deceleration lanes, and improving access management by limiting the number of entrances/exits immediately adjacent to the acceleration/deceleration lanes.

B. Project Purpose and Need

The purpose for the project is to improve safety. The absence of acceleration and deceleration lanes along Route 22 significantly contributes to the higher than statewide accident rate along this segment of Route 22. Various alternatives for improving the interchange ramp geometry to conform to current engineering design standards were studied and the Alternative Analysis Report is provided in Appendix D.

Based on Accident Reports obtained from the NJDOT Bureau of Safety Programs for the 3-year period from January 1, 2006 to December 31, 2008, the WB roadway at this segment of the corridor experienced 58 crashes. The crash rate on this project is 3.79 versus the Statewide average of 2.93. The Crash and Collision Data is presented in Appendix S

The most frequent crash types identified by the data were Rear-End (63.8%), Side Swipe (17.2%), Fixed Object (10.3%), Right Angle (5.5%), and Overturn (1.7%). The highest number of crash occurrences on this project was identified in the vicinity of the Sayre Road intersection. This intersection accommodates entrance and exit ramps from Vauxhall Road southbound with approximately 24 crashes (41% of the crashes on Route 22 WB). The majority were rear-end crashes and occurred in the vicinity of the merge and diverge areas.

As noted above, the existing Vauxhall Road bridge over Route 22 is in good condition. All alternative studies retained the existing bridge structure without altering the existing span width or vertical clearance. Unfortunately, by maintaining the existing bridge span, uniform widening for an acceleration/deceleration lane cannot be constructed.

Interchange deficiencies, identified in the Transportation Problem Statement for the Route 22 Corridor Study, prepared in 2003, are summarized as follows:

- The interchange ramps are substandard.
- The entry ramps from Vauxhall Road have no acceleration lanes.
- The deceleration lanes are short.
- Pedestrian stairways at the Vauxhall Road overpass are not in good condition and need maintenance.
- The accident rate at this section of Route 22 is higher than the statewide average.
- The Sayre Road off-ramp from westbound Route 22 is projected to operate (2025) at Level of Service "E" during the PM peak hour.

The proposed project improvements evaluated geometric, safety, and operational issues as the primary concerns and do not address capacity issues.

C. Design Standards

The following design standards were used to develop the project alternatives:

- AASHTO, A Policy on Geometric Design of Highways and Streets, 2011
- Manual of Uniform Traffic Control Devices for Streets and Highways, 2009 Edition
- NJDOT Design Exception Manual 2012
- NJDOT Roadway Design Manual, 2013
- NJDOT Access Design Guidelines
- NJDOT Right of Way Engineering Manual
- NJDOT Right of Way Design Guidelines

The design controls for this project is presented in the table below.

Table 1 - Design Controls

Design Feature	Design Criteria
Highway Classification	Urban Principal Arterial
Design Vehicle	WB-50
Design Speed	50 mph
Min. Passing Sight Distance	1835 ft
Min. Stopping Sight Distance	425 ft
Min. Curve Radius	926 ft
Min. Radius for Normal Crown	7,231 ft
Max. Superelevation	4%
Min. Desirable Gradient	0.3%
Max. Desirable Gradient	6%
Desirable Travel Lane Width	12 ft
Right Shoulder Width	10 ft
Left Shoulder Width	3 ft
Min. Border Width	10 ft

D. Preliminary Engineering Scope Statement Summary

The project proposes to mitigate existing safety concerns by constructing ramp acceleration lanes where there are currently variable-width shoulders and property frontages. This will require narrow strips of right-of-way acquisition in selected locations. Additionally, safety will be improved through better access management because accesses will be modified or revoked.

The Preliminary Phase Scope Statement is attached to this report as Appendix T.

II. PROJECT SURVEY

A. Control Survey Report Summary

Survey and photogrammetric services for the development of topographic mapping for study of improvement plans as part of the Preliminary Engineering was performed by GEOD Corporation. The services included establishing primary horizontal and vertical control for the aerial mapping of the project corridor and compiling topographic digitized mapping at 30-scale.

Primary horizontal and vertical control was established for the project control to locate points for the spatial orientation of the aerial photography. Existing 1st and 2nd order monuments were recovered to serve as primary control and to establish horizontal traverse points and vertical benchmarks for control of the project.

The topographic mapping was digitized at scale 1" = 30' with one-foot contour intervals using Digital Terrain Modeling (DTM) procedures. The planimetric detail contains all land use features visible on or interpretable from the aerial photography. The features shown are consistent with the detail mapping requirements of the NJDOT and are shown on separate CAD levels with symbols and line types identical to the NJDOT standard legend for engineering plans.

Municipal tax maps were obtained from Union Township and the property lines added to the topographic base mapping on a "best fit" basis, holding the ROW line of Route 22 and local roads.

The supplemental survey report was submitted to NJDOT in October 2011

III. UTILITY ENGINEERING

A. Utility Engineering Summary

Underground utilities have been shown on the base plans using utility verification information obtained from the respective utility company on site and subsurface utility engineering. Approximately 500 feet of underground gas line is to be relocated between station 235+00 and 240+00 with a utility easement and the existing utility poles will be relocated within the existing right of way. See Appendix U for complete verification information.

B. Subsurface Utility Engineering Report Summary

Subsurface Utility Engineering was conducted in February 2013. Subsurface Utility Engineering Report is provided in Appendix U

C. Railroad Diagnostic Team Meting Summary

There is no railroad within the project limits.

IV. ROADWAY ENGINEERING

A. Pavement Recommendation Summary

As part of the Route 22 WB Vicinity of Vauxhall Road to West of Bloy Street improvements a subsurface exploration program was performed in November 2012. The results are summarized below

Route 22 Westbound Travel Lanes and shoulder

- Ten (10) years of service life
- 3 inch milling and overlay with
- HMA 12.5M76 Surface Course 3 inch

Full depth Asphalt Concrete (AC) Pavement

Shoulder widening and Ramp of unpaved sections (widening in excess of 5 feet)

- Twenty (20) years of service life
- HMA 12.5M76 Surface Course: 3 inch
- HMA 12.5M64 Intermediate Course: 3 inch
- HMA 25M64 Base Course: 5 inch
- Dense Graded Aggregate Base (DGAB): 8 inch
- Subbase (I-3): 12 inch

Full Pavement Design Report is provided in Appendix I.

B. Preliminary Drainage Design Summary

The existing system of drainage inlets and storm drains will be maintained and modified to accommodate construction of the acceleration and deceleration lanes and exit ramp improvements. However, additional inlets may be required to address gutter spread. The improvements are not expected to disturb one or more acre of land nor increase the area of impervious surface by more than one-quarter acre. Therefore; the improvements will not be required to address the NJDEP stormwater requirements.

There are approximately five catch basins along the Route 22 gutterline. The basins may need to be relocated according to the widening of the roadway at each location. Additional inlets are required to bring drainage into conformance with current standards in regards to gutter spread.

C. Preliminary Traffic Engineering Summary

The traffic engineering study was conducted as part of the alternative analysis and the Traffic Engineering Report is provided in Appendix S

D. Preliminary ITS Facility Design Summary

There are no existing or planned ITS facilities

V. STRUCTURAL ENGINEERING

A. Preliminary Geotechnical Engineering Report Summary

No geotechnical engineering is required for this project.

B. Prepare Structural Design Recommendation Summary

No structural improvements are planned

VI. RIGHT OF WAY AND ACCESS

A. Project Access Plan and Access Impact Summary

Construction easements required will be addressed in detail during the next phase of the design process.

Driveway accesses within portions of acceleration, deceleration, or weaving lanes typically have safety concerns since motorists are distracted from other vehicles potentially entering the roadway.

There are four driveway access locations that are to be revoked without impact to the present operation of the property. They are Block 1702, Lot 2.01; two (2) on Block 1703, Lot 1; and Block 1806, Lot 1. Two drive access locations that are to be modified on Block 1703, Lot 1 and Block 1806 Lot 2. Nine drive access locations that are to be adjusted two (2) on Block 1702 Lot 2.01, Block 1703 Lot 1, Block 1806 Lot 1, Block 1806 Lot 3.01, two (2) on Block 1806 Lot 3.02 and two (2) on Block 1806 Lot 3.03. Change of access on Block 1702 Lot 2.01 close one driveway and create one new driveway.

Revocation of an additional southern driveway access along Sayre Road on Block 1703, Lot 1 cannot be done until the proposed building expansion takes place as delivery trucks need to utilize the existing configuration.

Waivers are required for eleven driveway access locations along the proposed auxiliary lane, acceleration lane and deceleration lane. Revocation of these access points would leave the properties they serve landlocked, necessitating total acquisition. Access Impact Plan and Access Impact Summary is provided in Appendix E.

B. Right of Way Report Summary

The preferred alternative improvements will require right-of-way acquisition of 1,595 sf in fee taking, 7,710 sf in Utility Easement, 19,347 sf in Temporary Site Mitigation Work (Access) and 901 sf in Temporary Site Mitigation Work from the properties as noted in the table below:

RIGHT OF WAY REQUIREMENTS
Route 22 Vicinity of Vauxhall Road to West of Bloy Street

BLOCK	LOT	MUNCIPALITY	TYPE	REMARKS	DEPTH (LF)	WIDTH (LF)	TOTAL (SF)
1702	2.01	TWP. UNION	COMMERCIAL	PARTIAL ACQUISITION	2.5	10	25
				TSMW (Access)	52	105	3392
1703	1	TWP. UNION	COMMERCIAL	PARTIAL ACQUISITION	5	274	1370
			COMMERCIAL	PARTIAL ACQUISITION	6	10	60
			COMMERCIAL	TSMW	18	30	540
			COMMERCIAL	TSMW (Access)	24	78	1423
1806	1	TWP. UNION	COMMERCIAL	UTILITY EASEMENT	10	172	1720
				TSMW (Access)	41	66	2408
	2	TWP. UNION	COMMERCIAL	UTILITY EASEMENT	10	100	1000
				TSMW (Access)	25	86	2242
	3.01	TWP. UNION	COMMERCIAL	UTILITY EASEMENT	10	43	430
				TSMW (Access)	30	42	1217
	3.02	TWP. UNION	COMMERCIAL	PARTIAL ACQUISITION	14	10	140
				UTILITY EASEMENT	10	190	1900
				TSMW (Access)	31	91	2001
				TSMW (Access)	32	89	2037
				TSMW	24	15	361
	3.03	TWP. UNION	COMMERCIAL	UTILITY EASEMENT	10	167	1670
	3.03	TWP. UNION		TSMW (Access)	23	64	1385
				TSMW (Access)	45	72	2520
1806	4	TWP. UNION	COMMERCIAL	UTILITY EASEMENT	10	99	990
				TSMW (Access)	43	28	722
						Total	**29,553 SF**
						Acre	**0.68 Ac**

The Right of Way report is provided in Appendix E

VII. ENVIRONMENTAL

A. Environmental Document Summary

The environmental sensitive parcels within the Vauxhall Road Interchange were identified from the Categorical Exclusion Document prepared by NJDOT. Based on these findings, it has been determined that there is a potential for involvement with a known or suspected contaminated site(s) and may also indirectly involve leaking underground storage tank(s).

Potentially environmentally sensitive sites within 250 feet of the project include:

Exxon Station 33998
Route 22 & Sayre Road
Union, NJ 07083
91-7-19-0809-55/ LUST/ NJD986600096/ KCSNJ

Sunset Union LLC
410 Route 22
Union, NJ 07083
0017183/ Active/ UST

Business
1597 West Route 22
Union, NJ 07083
07-12-17-1741-50/ LUST

Exxon Station 34276
1597/ 1601 West Route 22
Union, NJ 07083
93-1-4-1118-18/ 07-03-22-1413-23/ 07-03-29-1210-18/ LUST

Gary Road Property/ Morre-Tec Industries Inc.
1 Gary Road
Union, NJ 07083
LU-0502-2219/ LUST/ NJN008022725/ VGN

Rajoppi Constructions Inc.
2 Gary Road
Union, NJ 07083
LU-0802-2613/ LUST

Vauxhall Substation
East Vauxhall/ Route 22
Union, NJ 07083
05-10-04-2252-20/ SPILLS

The Categorical Exclusion Document is presented in Appendix A.

Based on the proposed scope of work with right-of-way acquisition and soil excavation, it has been determined that there is potential for involvement with hazardous waste or contaminated sites. Therefore a re-evaluation is required once the right-of-way and drainage plans become available in Final Design.

The project is in an urban area and the land use is primarily commercial with some intermittent residential development. Route 22 crosses the Elizabeth River at MP 56.5. Wetlands and a documented flood prone area are situated adjacent the north and south side of Route 22 at the Elizabeth River crossing. The wetlands are located within the Elizabeth River Park which is a protected open space resource that provides a narrow buffer to the Elizabeth River. Based on the "National Heritage Priority Sites" database, none of the habitats, threatened or endangered species or natural communities have been identified within the project area. Also, the project area does not traverse through any historic districts nor does it contain any archaeological sites. Several properties within the project area have uses that are regulated by the NJDEP.

B. Public Information Center Summary

Public Information Center was held on Wednesday, July 13, 2011 at the Union Township Building, Union, NJ. Project Preliminary Preferred Alternative (PPA) and existing topography plans were presented.

Block 1703 and Lot 1 Aarti World Liquor store owner Arvind Patel attended the PIC and discussed their future plans and potential building expansion. At present, the building expansion is on hold. Proposed driveway improvements on this lot are in agreement with the proposed building improvements. If the building improvement doesn't happen before roadway improvements, the driveway improvements along Route 22 can be as shown on the PPA and the driveway improvements along Sayre Road should remain as existing because the delivery truck has to use the south driveway along Sayre Road. NJDOT requested Mr. Patel keep the NJDOT Office of Community Relations updated regarding to the potential building expansion.

Final Design Public Involvement Action Plan is provided in Appendix P

C. Environmental Commitments

Proposed new inlets, reconstructed inlets, and existing inlets that come into contact with resurfacing must meet the New Jersey Pollutant Discharge Elimination System requirements.

Construction staging activities (including the storage of materials/equipment) are prohibited in environmentally sensitive areas, specifically the floodplain of the Elizabeth River.

Best Management Practices (such as inlet protection, sediment and erosion controls, and periodic clean out of debris) will be utilized to prevent sediment and debris from entering the stormwater inlets, and environmentally sensitive areas.

If there are any changes to the proposed activities, the changes must be re-evaluated by the NJDOT Bureau of Environmental Program Resources (BEPR) to determine the need for additional regulatory compliance. This may require coordination with regulatory agencies.

All construction activities shall be performed in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey.

D. Initial Deforestation / Reforestation Plan Summary

There are no forested areas within the project limits.

E. Green Acres Process Summary

There are no green acre parcels within the project limits.

VIII. COSNTRUCTABILITY AND MAINTENANCE

A. Preliminary Detour and Construction Staging Plans Summary

Due to the speed of traffic and volume of traffic, the Route 22 WB exit and entry ramps require the proposed improvements be constructed adjacent to active travel lanes with the work zone being protected by construction barrier. Construction barrier can be placed to provide 24 feet between the median barrier and construction barrier and provide a 16-foot wide work zone. Pavement milling and final paving of the improvement can be constructed with daily lane closures at night hours. A minor detour for several nights will be required for Route 22 WB ramps at Vauxhall Road to perform resurfacing work.

The Detour and Construction staging sections are included as Appendix H.

B. Preliminary Construction Schedule

Final design is anticipated to be authorized in February 2015 and to be completed in August of 2016.

The project is anticipated to be advertised for construction in October of 2017.

The project is scheduled to begin construction in February of 2018.

IX. PROJECT PLAN

A. Project Plan Summary

The preferred alternative provides an auxiliary lane along Route 22 WB between Gary Road and Vauxhall Road. Improve the turning radius from Vauxhall Road to Route 22 WB to allow large trucks to make a right turn into the appropriate lane without encroaching on the adjacent lane. Provide a foreshortened deceleration and a foreshortened acceleration lane to and from Sayre Road along Route 22 WB by widening Route 22 WB pavement converting the existing right shoulder to be part of the new auxiliary lane. Provide sidewalk along Route 22 WB between Vauxhall Road and Sayre Road. Improve the drainage system by adding inlets along Route 22 WB to address spread at low points and along widened pavement. Existing Route 22 WB travel lanes will be milled 2 inches and overlaid with 2 inches asphalt. The existing pavement cross slopes and elevations on the travel lanes will remain the same.

The proposed roadway cross section elements along the auxiliary lane section comprises a 1-foot left shoulder, two (2) 11-foot wide through lanes with standard cross slopes, a 15-foot wide auxiliary lane with a 2.5% cross slope, and a 4-foot border area. The proposed roadway section along the deceleration lane section comprises a 1-foot left shoulder, two (2) 11-foot wide through lanes with standard cross slopes, a 15-foot wide deceleration lane with a 2.5% cross slope, and a 9-foot border area. The proposed roadway section along the acceleration lane comprises of a 1-foot left shoulder, two (2) 11-foot wide through lanes with standard cross slopes, a 13-foot wide acceleration lane with a 2.5% cross slope, and a 6-foot border area.

B. Complete Streets Compliance Summary

Pedestrian activity along Route 22 is sporadic in the vicinity of the Vauxhall Road interchange. Sidewalks are intermittently provided along both sides of Route 22 within the project limits. There are no at-grade pedestrian crossings of Route 22 within the 4-mile corridor from the Garden State Parkway in Union Township to Meeker Avenue in the City of Newark. Pedestrian walkways are provided on all roads crossing over or under Route 22 including the Vauxhall Road overpass. Sidewalk is proposed west of Vauxhall Road bridge to Sayre Road along Route 22 WB.

No bicycle facilities are provided along the 4-mile Route 22 corridor limits noted above. Complete Streets Checklist is provided in Appendix K.

C. Design Exception Report Summary

The Design Exception Report for this project has been approved by NJDOT.

See Appendix C for the approved Design Exception report dated February 7, 2014.

Table of Controlling Substandard Design Elements To Be Retained

Location Number	Location (Station and Milepost)	CSDE
1	Route 22 WB, Sta.234+46 to Sta. 241+46 (MP 56.23 to MP 56.36)	Substandard Stopping Sight Distance on Vertical Curve
2	Route 22 WB, Sta. 239+97.64 to Sta. 243+54.38 (MP 56.19 to 56.26)	Substandard Stopping Sight Distance on Horizontal Curve
3	Route 22 WB, Sta. 243+36 to Sta. 243+60 (MP 56.19 to 56.20)	Substandard Minimum Radius of Curve (for Exit Ramp)
4	Route 22 WB, Sta. 239+97.64 to Sta. 243+54.38 (MP 56.19 to MP 56.26)	Substandard Superelevation
5	Route 22 WB, Sta. 231+03 to Sta. 253+87 (MP 56.00 to 56.43)	Substandard Left Shoulder Width
6	Route 22 WB, Sta. 250+44 to Sta. 253+87 (MP 56.00 to 56.06)	Substandard Right Shoulder Width
7	Route 22 WB, Sta. 245+25 (MP 56.16)	Substandard Vertical Clearance
8	Route 22 WB, Sta. 243+55 to Sta. 244+00 (MP 55.18 to 56.19)	Substandard Acceleration Lane Length (For Vauxhall Road NB to Route 22 WB)
9	Route 22 WB, Sta. 245+85 to Sta. 248+99 (MP 56.09 to 56.15)	Substandard Deceleration Lane Length
10	Route 22 WB, Sta. 250+44 to Sta. 253+87 (MP 56.00 to 56.06)	Substandard Acceleration Lane Length

D. Risk Management Summary

Project specific Risk Register is provided in Appendix O

X. COST ESTIMATES

A. Initial Right of Way Estimate and Construction Cost Estimate Summary

Initial Right of Way cost estimate is $303,000. The estimated construction cost including utility relocation cost is approximately $ 2.7 million. Detailed Right of Way cost is provided in Appendix F and the detailed Construction Cost Estimate is provided in Appendix G.

APPENDIX A

ENVIRONMENTAL DOCUMENT

NEW JERSEY DEPARTMENT OF TRANSPORTATION

ENVIRONMENTAL REEVALUATION

Route & Sec.:	Rt. 22 Westbound, Vauxhall Rd. to West of Bloy Street	Fed. Project. No.:	N/A
Local Rd. Name:	None	NJDOT Job No.:	2004516
Municipality:	Union Township	County:	Union
Environmental Document Type & Approval Date:		Categorical Exclusion Document (CED) certified 11/23/2010	
Section 4(f):	N/A	NJDOT Project Manager:	Hardev Dave
Date of Previous Reevaluation:	None	Type of Authorization Requested:	Design

A. Changes to the project since approval of the environmental document:

Has there been a change in:	No Yes	Has there been a change in:	No Yes
1. Design / Scope	Yes	2. Right-of-Way	Yes
a. Project Limits	No	3. Public Opinion	No
b. Roadway Work	No	4. Regulations, Rules, Laws	No
c. Structure Work	No	5. Land Use	No
d. Pavement Width	No	6. Section 4(f)	No
e. Alignment	No	7. Other (Permits, Section 106, etc.)	No
f. Drainage Type	No		
g. Access	Yes		
h. Other Project Features	No		

Describe any items checked YES above and comment on current public reaction.

1g and 2. Access to 5 parcels will be done by modifications / adjustments of property driveways along Route 22 Westbound.

Due to the limited nature of the proposed work, which upon completion will benefit the vehicle riding public and the community, no community involvement has been completed.

B. **Environmental Documentation:** (Indicate response with a yes, no or N/A)

1.	NEPA document still valid without additional documentation.	Yes
2.	NEPA document still valid, supplemental documentation completed.	N/A
3.	New NEPA document required.	No
4.	Project subject to Army Corps of Engineers Nationwide Permit # 23. FHWA concurrence with this reevaluation required.	No
5.	Project complies with E.O. 11988 Floodplain. (For construction only)	N/A
6.	Project complies with E.O. 11990 Wetlands. (For construction only)	N/A

Comments:

C. FHWA Consultation: Consultation required if any items in Table A are marked YES unless project still meets a Certified CED definition. Use in determining need for FHWA concurrence of Environmental Reevaluation

N/A

FHWA person consulted: Date

D. FHWA Concurrence of Environmental Reevaluation is required because (Yes No)

Items 2, 3, or 4 in Part B were checked YES	No
Consultation in Part C requires it	No

On the basis of this reevaluation, there are no significant changes in the proposed project's scope, right of way, affected environment or anticipated impacts since approval of the environmental document.

E. Submitted for Approval:

Project Manager, Division of Project Management — Date: 05/23/13

Environmental Team Leader, BLAES — Date: 5/23/13

F. Approved by:

Manager, BLAES — Date: 24 May 2013

G. Concurrence: Not required for certified CED's

N/A

(FOR) - Division Administrator, Federal Highway Administration — Date

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CATEGORICAL EXCLUSION DOCUMENTATION

CED Form Updated May 27, 2009

I. GENERAL INFORMATION

DOT Job Code No.		**Federal Project No.**	
Project Management Team	DPPD Region North	**UPC No.**	UPC # 058003
Route & Section	22 WB	**Structure No.**	2004150
Local Road Name	Vauxhall Road		
Municipality(ies)	Union Township	**County(ies)**	Union
Type of Project	Safety Improvement	**Length**	0.5 Mile
From Milepost	55.9	**To Milepost**	56.4
Congressional District	10	**Legislative District**	20
ROW Cost	To be provided by NJDOT	**Construction Cost**	$2.8 M

EXISTING FACILITY			
ROW Width	86'		
No. Lanes & Width	2, 12' Westbound		
Shoulder Width	2' left 6' and varies right	**Median**	Conc. NJ barrier
Overall Roadway Width	66'-70'		

PROPOSED FACILITY			
ROW Width	86'		
No. Lanes & Width	2-11' and 15' auxiliary lane/13' acceleration and deceleration lane westbound		
Shoulder Width	1' left and 0 right	**Median**	Conc. NJ barrier
Overall Roadway Width	72'-73' (6'-3' widening)		

II. PROJECT DESCRIPTION (attach location map; USGS map suggested)

A. Project Need (briefly explain why the project is needed):

The Vauxhall Road interchange configuration along westbound Route 22 lacks acceleration, deceleration and auxiliary lanes necessary to reduce conflicts between through traffic and traffic exiting and entering Route 22 westbound at Vauxhall Road and the numerous commercial establishments that front along the westbound roadway. There are high rate of rear end type and sideswipe accidents on Route 22 westbound in the vicinity of interchange.

B. Proposed Improvements (provide a brief description of proposed improvements):

Proposed auxiliary lane along Route 22 westbound from Gary Road to Vauxhall Road and acceleration and deceleration lane along Route 22 westbound at Sayre Road to improve the safety for this section of Route 22 westbound. In addition to the widening, existing westbound lanes will be resurfaced. Road surfaces will be milled and resurfaced to the same elevation.

C. Right-of-Way Taking			
Total area needed: 0.19 Ac	Est. No. parcels:	In fee- 1	easements-6
Est. No. relocations:	residences-0	businesses-0	parking spaces-0
Community Facilities Affected: 0			
Area of public recreation land taken: 0 (acres)		Out of a total area of: 0 (acres)	
☐	Green Acres/State-owned Land Involvement		
☐	Federally Owned/Federally Funded Land Involvement		

Comments: Minor R.O.W. is required to relocate a sign (Block 1806, Lot 3.02), and for utility poles and overhead lines. See attached plansheet.

III. ENVIRONMENTAL CONSIDERATIONS	
A. Noise	
☒	Sensitive receptors exist within 200 feet for two lanes or 400 feet for four lanes.
☒	Project substantially changes the vertical or horizontal alignment of the roadway.
☐	Traffic volumes or speeds substantially increase.
Conclusion:	
☒	Noise study not required. No significant impact anticipated.
☐	Potential noise impacts were studied and are discussed in comments. Project still meets CE criteria.

Comments: The addition of an auxiliary lane will not significantly effect traffic noise levels in the project area.

B. Air Quality: CONFORMITY WITH THE CLEAN AIR ACT AMENDMENTS (CAAA) OF 1990	
Section 1: Regional Emissions Analysis (STIP or MPO's conforming transportation plan)	
☐	Project is included in the FY 20_ - 20_ approved State Transportation Improvement Plan (STIP).
☐	Project is not listed in the FY 20_ - 20_ approved STIP but is included in the MPO's conforming transportation plan.
☒	Project is not included in either the approved STIP or the MPO's conforming transportation plan.

Section 2: Based on its scope, the project is categorized by the Transportation Conformity Rule (TCR) as:	
☒	A project type listed in **Table 2** of the TCR, i.e., **Exempt** from the conformity requirements of the CAAA (i.e., exempt from regional emissions analysis, Carbon Monoxide (CO) analysis, and Particulate Matter PM2.5 and PM10 analyses requirements) and may proceed towards implementation even in the absence of a conforming transportation plan and TIP.
☐	A project listed in **Table 3** of the TCR, i.e., **Exempt** from regional emissions analysis requirement, but local effects of this project with respect to CO, PM2.5 and PM10 concentrations must be considered to determine if a hot-spot analysis is required. *Complete Section 2a below.*
☐	A project type **not listed in Table 2 or Table 3** of the TCR, i.e., must be part of a conforming STIP and/or a MPO's conforming transportation plan and requires CO, PM2.5 and PM10 hot-spot analyses. *Complete Section 2a below.*

Section 2a(1): Project type listed in Table 3 of the TCR for CO analysis Project type not listed in either Table 2 or Table 3 of the TCR for CO analysis	
☐	Project located in **CO Attainment Area**. CO analysis not required. Project may proceed to the project development process.
☐	The total eight-hour Carbon Monoxide levels are expected to be reasonably below the NAAQS of 9 ppm. This is based on LOS data for the intersection(s) and the total highest traffic volumes at this (those) intersection(s) and the distance of the sensitive receptors to the roadway. No quantitative analysis is required. Project may proceed to the project development process even in the absence of a conforming transportation plan and TIP.
☐	Project located in a Carbon Monoxide **Non-Attainment/Maintenance Area** and requires a Carbon Monoxide hot-spot analysis. A CO Analysis was completed at the following intersection(s): _____ And the results are: _____

Section 2a(2): Project type listed in Table 3 of the TCR for PM2.5 analysis Project type not listed in Table 2 or Table 3 of the TCR for PM2.5 analysis	
☐	The project is located in PM2.5 **Attainment Area.** PM2.5 hot-spot analysis is not required. Project may proceed to the project development process.
☐	The project is located in a PM2.5 **Non-Attainment/Maintenance Area** and the project is **not an air quality concern** under 40CFR 93.123(b) (1). Quantitative/qualitative analysis is not required. Project may proceed to the project development process.
☐	The project is located in a PM2.5 **Non-Attainment/Maintenance Area** and the project **is an air quality concern** under 40CFR 93.123(b) (1). A PM2.5 hot-spot analysis was completed at the following location(s): _____ And the results are: _____

Section 2a(3): Project type listed in Table 3 of the TCR for PM10 analysis Project type not listed in Table 2 or Table 3 of the TCR for PM10 analysis	
☐	The project is located in PM10 **Attainment Area.** PM10 hot-spot analysis is not required. Project may proceed to the project development process.
☐	The project is located in a PM10 **Non-Attainment/Maintenance Area** and the project is **not an air quality concern** under 40CFR 93.123(b) (1). Quantitative/qualitative analysis is not required. Project may proceed to the project development process.
☐	The project is located in a PM10 **Non-Attainment/Maintenance Area** and the project **is an air quality concern** under 40CFR 93.123(b) (1). A PM10 hot-spot analysis was completed at the following location(s): _____ And the results are: _____
Comments (include LOS, if appropriate): This project adds a short acceleration/deceleration lane and will not have a significant effect on air quality.	

C. Potential Ecological Constraints (check those that apply)

☐	Floodplains	☐	Shellfish Habitat
☐	Wetlands	☐	Acid Producing Soils
☐	Vernal Pools	☐	Submerged Aquatic Vegetation
☐	Waterbody: ☐ Category One ☐ Trout Production ☐ Trout Maintenance ☐ Non-Trout	☐	Sole Source Aquifer
		☐	Forested Areas
		☐	Threatened and Endangered Species: ☐ State-listed species ☐ Federally listed species
☐	Wild and Scenic River	☐	Other (specify):
☐	Essential Fish Habitat		

Federally Listed Threatened & Endangered Species Checklist:

(Please see http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html for guidance on the current US Fish and Wildlife Service (USFWS) Consultation Procedures. County/municipal species lists are only valid for 90 days.)

☒ The proposed project is **not** located in a municipality with extant, historic, or potential occurrence of a federally listed species. The municipality list was checked within the last 90 days and documentation of this determination is included in the project file. No further action is required under the Endangered Species Act (ESA).

☐ The proposed project **is** located in a municipality with extant, historic, or potential occurrence of a federally listed species. Habitat requirements for each of the species have been reviewed and the project's impact area (*i.e., action area) was assessed to determine whether it contains potentially suitable habitat. *Based on existing information or field surveys, the results revealed:*

- ☐ The project's impact area (i.e., action area) does **not** contain potentially suitable habitat for a federally listed species. Documentation of this determination is in the project file. No further action is required under the ESA. Concurrence from the USFWS is not required.
- ☐ The project's impact area (i.e., action area) **does or may** contain potentially suitable habitat for a federally listed species. *The assessment and all relevant project information:*
  - ☐ Have been submitted to the US Fish and Wildlife Service's NJ Field Office for ESA **Section 7 consultation.** Correspondence is attached. See comments below.
  - ☐ Will be submitted to the New Jersey Division of Land Use Regulation Program during the **permitting process.** Project requires authorization under the NJ Freshwater Wetlands Protection Act. See comments below.

*Action Area: The action area is defined by regulation as all areas to be affected **directly or indirectly** by the Federal action and **not merely the immediate area involved in the action** (50 CFR §402.02). This analysis is not limited to the "footprint" of the action nor is it limited by the Federal agency's authority. Rather, it is a biological determination of the reach of the proposed action on listed species. Subsequent analyses of the environmental baseline, effects of the action, and levels of incidental take are based upon the action area.

Conclusion:

☒ No significant impact anticipated

☐ Further studies are needed to obtain permits. Project still satisfies CE criteria.

Comments (briefly describe *all* potential ecological constraints): The New Jersey Landscape Project data does not show any habitat for endangered and threatened species within the project area. The floodplain of the Elizabeth River lies just east of the project area.

D. Anticipated Environmental Permits/Approvals/Coordination (check those that apply)			
☐	US Coast Guard	☐	NJDEP Pollutant Discharge
☐	USACOE Section 10 (Navigable Waters)	☐	NJDEP Dam Safety
☐	USACOE Section 404 (Nationwide)	☐	NJDEP Remediation Approval
☐	USACOE Section 404 (Individual)	☐	NJDEP Tidelands Conveyance
☐	USEPA Sole Source Aquifer	☐	EO 11990 Wetlands
☐	NJDEP Freshwater Wetlands—GP	☐	EO 11988 Floodplains
☐	NJDEP Freshwater Wetlands—IP	☐	NJDEP Highlands Preservation Area: ☐ Exempt ☐ Highlands Applicability Determination ☐ Highlands Preservation Area Approval
☐	NJDEP Transition Area Waiver		
☐	NJDEP Coastal Wetlands		
☐	NJDEP Waterfront Development		
☐	NJDEP CAFRA	☐	USDA-Farmland Conversion (Form AD 1006)
☐	NJDEP Flood Hazard Area Permit—GP	☐	NJ Agriculture Development Area
☐	NJDEP Flood Hazard Area Permit—IP	☐	NJDEP Green Acres Program/State House Comm.
☐	NJDEP Stormwater Management: ☐ ≥ 0.25 acre impervious surface ☐ ≥ 1.0 acre disturbance ☐ Unknown at this time	☐	National Marine Fisheries Service
		☐	NJDEP Parks & Forestry (PL 2001 Chapter 10 Reforestation)
		☐	D&R Canal Commission
		☐	Meadowlands Commission
	☐ Approval through NJDEP LURP Permit (or) ☐ NJDOT self-certification	☐	Pinelands Commission
		☐	Endangered Species Act Section 7 Consultation
☐	NJPDES Construction Activity Stormwater GP (RFA)	☐	NJDEP Threatened & Endangered Species Coordination
☐	NJDEP Water Quality Certificate	☐	Other (specify):

Comments:

No permits are anticipated for this project

A NJPDES Construction Activity Stormwater GP (RFA), will not be required, since the total disturbance for the project without the resurfacing is under one acre.

E. Cultural Resources	
	Technical Findings:
☐	Project is not an undertaking for Section 106 purposes; concurrence has been received from FHWA.
☐	No Effect per DOT/SHPO Agreement of 05/14/09; subject to conditions identified in the Agreement.
☐	No Section 106 Consultation per 5/25/01 SHPO concurrence with *Section 106 Compliance Procedures, Federally Funded Drainage Improvement Program*; subject to conditions identified in the Agreement.
☐	No Effect to significant properties if they exist in APE per 36CFR800.3(a)(1) with SHPO concurrence. (Because the Section 106 regulations allow for a level of effort for conducting and evaluating cultural resources to be commensurate with the undertaking, this category of finding was developed to be used for certain projects when no cultural resources survey has been conducted; and self-imposed conditions, if applicable, are presented as part of the undertaking, e.g., Pipeline 3 or other small-scale projects.)
☒	No National Register (NR) listed or eligible properties in APE (Section 106 Findings = No Historic Properties Affected).
☐	National Register listed/eligible properties exist within APE (***see consultation summary below***).

Archaeology	Architecture				Section 106 Finding
	Bridge	Building	District	Other	
					NR listed/eligible property(ies)—No Historic Properties Affected
					NR listed/eligible property(ies)—No Adverse Effect (NAE)
					NR listed/eligible property(ies)—NAE with conditions
					NR listed/eligible property(ies)—Adverse Effect

	Section 106 Consultation Summary	Date
☐	FHWA concurred with Adverse Effect Finding	
☒	SHPO provided Section 106 consultation comments	10-19-10
☐	FHWA concurred with No Adverse Effect with Conditions	
☐	ACHP notified of Adverse Effect	
☐	ACHP responded to notification (check one/enter date): ☐ ACHP will participate in consultation ☐ ACHP declined to participate in consultation	
☐	MOA executed by FHWA (check one/enter date): ☐ MOA filed with ACHP ☐ ACHP accepted/signed MOA	

Comments (include MOA stipulations or other conditions, if applicable): No historic properties will be adversely impacted by the proposed project. No further Section 106 or New Jersey Historic Preservation Act (NJHPA) consultation is required unless there are changes to the project or additional resources are discovered during project implementation.

F. Section 4(f) Involvement

Section 1: Historic Sites

☒		No Section 4(f) Involvement
☐		Project results in a "constructive use" of Section 4(f) property.
☐		Project results in a use of Historic site(s) on or eligible for the National Register of Historic Places (check one below):
	☐	Section 4(f) Involvement. Project is covered under ***de minimis*** **Evaluation of Impacts** and all applicability criteria have been met, including concurrence *first* by the FHWA that the project meets the applicability criteria, and *then* concurrence by SHPO with the "No Effect" or "No Adverse Effect" determination *after* they are notified of the intent to use a *de minimis* finding.
	☐	Section 4(f) Involvement. Project is covered under the **Nationwide Section 4(f) Programmatic Evaluation for minor involvement** and all applicability criteria have been met, including concurrence by the SHPO (or ACHP) with the "No Effect" or "No Adverse Effect" determination.
	☐	Section 4(f) Involvement. Project is covered under the **Nationwide Section 4(f) Programmatic Evaluation for Net Benefits** and all applicability criteria have been met, including notification to and concurrence by the FHWA with the determination.
	☐	Section 4(f) Involvement. Project has an "Adverse Effect" determination. **Individual Section 4(f)** was prepared.

Comments: Due to the nature of the proposed project activities, no involvement with Section 4(f) Historic Sites is anticipated. Two historic districts are located in proximity to the project area. The Garden State Parkway Historic District to the north and west and the Lightning Brook Section of the Elizabeth

River Park. Portions of the park lie to the north, northeast, east and southeast of the proposed project area. Any change in the proposed project that extends the limits and or requires additional ROW may result in the need for a Section 4(f) Evaluation.

Section 2: Historic Bridges

☒	No Section 4(f) Involvement
☐	Section 4(f) Involvement. Project is covered under the **Nationwide Section 4(f) Programmatic Evaluation for Historic Bridges.**

Comments: There are no historic bridges in the project study area.

Section 3: Publicly Owned Park, Recreation Area, Wildlife or Waterfowl Refuge

☒		No Section 4(f) Involvement
☐		Project results in a "Constructive Use" of Section 4(f) property (fill out Site Information below)
☐		Project requires acquisition from publicly owned recreation land (fill out Site Information below):
	☐	Section 4(f) Involvement. Project is covered under ***de minimis* Evaluation of Impacts** and all applicability criteria and conditions have been met, including concurrence *first* by the FHWA that the project meets the applicability criteria, and *then* notification to the officials with jurisdiction of the intent to use a *de minimis* finding.
	☐	Section 4(f) Involvement. Project is covered under **Nationwide Section 4(f) Programmatic Evaluation for minor involvement** and all applicability criteria and conditions have been met, including concurrence by the officials having jurisdiction over the property.
	☐	Section 4(f) Involvement. Project is covered under the **Nationwide Section 4(f) Programmatic Evaluation for Net Benefits** and all applicability criteria have been met, including notification to and concurrence by the FHWA with the determination.
	☐	Section 4(f) Involvement. Nationwide Section 4(f) Programmatic applicability criteria were not met; **Individual Section 4(f) Evaluation** was prepared.

Site Information (for projects involving "Constructive Use" or acquisition from publicly owned recreation land, wildlife or waterfowl refuge):

Name of Site (use local name): _____
Lot and Block: _____
Total acreage of site: _____
Acreage of site affected (acquisition and permanent easements): _____

☐	Federal encumbrances involved (e.g., Wild and Scenic Rivers Act, Land and Water Conservation Fund Act, Rivers and Harbors Act).

Comments: Due to the nature of the proposed project activities, no involvement with Section 4(f) Park, Recreation Areas or Wildlife Refuges is anticipated.

Section 4: Independent Walkway & Bikeway Construction Projects	
☒	No Section 4(f) Involvement
☐	Section 4(f) Involvement. Project is covered under the **Nationwide Section 4(f) Programmatic Evaluation.** Project requires use of recreation and park areas established and maintained primarily for active recreation, open space, or similar purposes. All applicability criteria have been met, including approval in writing by the official with jurisdiction over the property that the project is acceptable and consistent with the designated use of the property and that all possible planning to minimize harm has been accomplished in the location and design of the bikeway or walkway facility.

Comments: The project is not classified as an Independent Bikeway project.

G. Hazardous Materials and Landfills	
☒	Involvement with known or suspected contaminated site.
☒	Involvement with underground storage tanks.

Conclusion:

☐	Low potential for involvement with contamination; no further investigation required.
☒	Further investigation and/or sampling required to determine extent of involvement with contamination. Project still meets FHWA criteria for a CE.

Comments: The following sites have been identified as potentially environmental sensitive parcels within 250 feet of the project area as a result of an environmental screening dated November 9, 2010:

EXXON STATION 33998
RT 22 & SAYRE ROAD, UNION, NJ 07083
91-7-19-0809-55/ LUST/ NJD986600096/ KCSNJ

SUNSET UNION LLC
410 RT 22, UNION, NJ 07083
0017183/ ACTIVE/ UST

BUSINESS
1597 WEST RT 22, UNION, NJ 07083
07-12-17-1741-50/ LUST

EXXON STATION 34276
1597/ 1601 WEST RT 22, UNION, NJ 07083
93-1-4-1118-18/ 07-03-22-1413-23/ 07-03-29-1210-18/ LUST

GARY ROAD PROPERTY/ MORRE-TEC INDUSTRIES INC
1 GARY RD, UNION, NJ 07083
LU-0502-2219/ LUST/ NJN008022725/ VGN

RAJOPPI CONSTRUCTIONS INC
2 GARY RD, UNION, NJ 07083
LU-0802-2613/ LUST

VAUXHALL SUBSTATION
EAST VAUXHALL/ RT 22, UNION, NJ 07083
05-10-04-2252-20/ SPILLS

Based on the proposed scope of work with Right of Way (ROW) acquisition and soil excavation (auxiliary lane, acceleration/ deceleration lane, shoulder work), as well as associated research, it has been determined that there might be a potential for involvement with hazardous waste or contaminated sites.

Therefore, a re-evaluation is required once the ROW plans and construction/ drainage plans become available.

H. Socioeconomics

☒ The project will **not** result in any significant socioeconomic impacts.

Comments: The proposed work will not isolate any residential neighborhoods or adversely impact community cohesion in the project area. The proposed project will not require the acquisition or relocation of any residential, business, or commercial properties. The proposed project will not involve the relocation of any residents living within the study area. No residences, community facilities, or existing land use patterns will be adversely impacted by the proposed project.

I. Environmental Justice

☒	Project will have **no** disproportionately high or adverse effects on low income and/or minority communities.
☐	Project will have disproportionately high and adverse effects on low income and/or minority communities.

Conclusion:

☒	Project is in compliance with the goals of Executive Order 12898 and the requirements of the Civil Rights Act of 1964.
☐	Project is in compliance with the goals of Executive Order 12898 and the requirements of the Civil Rights Act of 1964, through the identification of measures to address disproportionate effects, including actions to avoid or mitigate them. Project satisfies CE criteria.

Comments: Due to the nature of the proposed project, the proposed improvements will not have any impact on low income or minority communities.

J. Public Reaction (briefly describe input from the Office of Community Relations or current status of public reaction):
A meeting was held with Union Township on 09/10/2010. No adverse comments were received and the township approves of the concept which consists of safety improvements. A public meeting (PIC) will take place in January or February 2011.

K. Environmental Commitments (refer to MOA stipulations or other conditions noted in Section D, if applicable; permit conditions, etc.):

Proposed new inlets, reconstructed inlets, and existing inlets that come into contact with resurfacing/repaving, repairing (except individual pothole repair), reconstruction or alterations must meet the New Jersey Pollutant Discharge Elimination System (NJPDES) requirements.

Construction staging activities (including the storage of materials/equipment) are prohibited in environmentally sensitive areas, specifically the floodplain of the Elizabeth River.

Best Management Practices (such as inlet protection, sediment and erosion controls, and periodic clean out of debris) will be utilized to prevent sediment and debris from entering the stormwater inlets, and environmentally sensitive areas.

If there are any changes to the proposed activities, the changes must be re-evaluated by the NJDOT Bureau of Environmental Program Resources (BEPR) to determine the need for additional regulatory compliance. This may require coordination with regulatory agencies.

All construction activities shall be performed in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey.

DETERMINATION OF CATEGORICAL EXCLUSION

Project name and location: Rt. 22 and Vauxhall Road Safety Improvements M.P. 55.9-56.4 (westbound), Union Township, Union County

CE #: 23CFR 771.117(d)(1) Modernization of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or adding auxiliary lanes (e.g., parking, weaving, turning, climbing).

The proposed project satisfies the Categorical Exclusion definition outlined in 23 CFR 771.117 (a) and will not result in significant environmental impacts.

Project Manager, Division of Project Development — Date: 12/1/10

Recommended by: Pamela Garrett — Environmental Supervisor — Date: 11/19/10

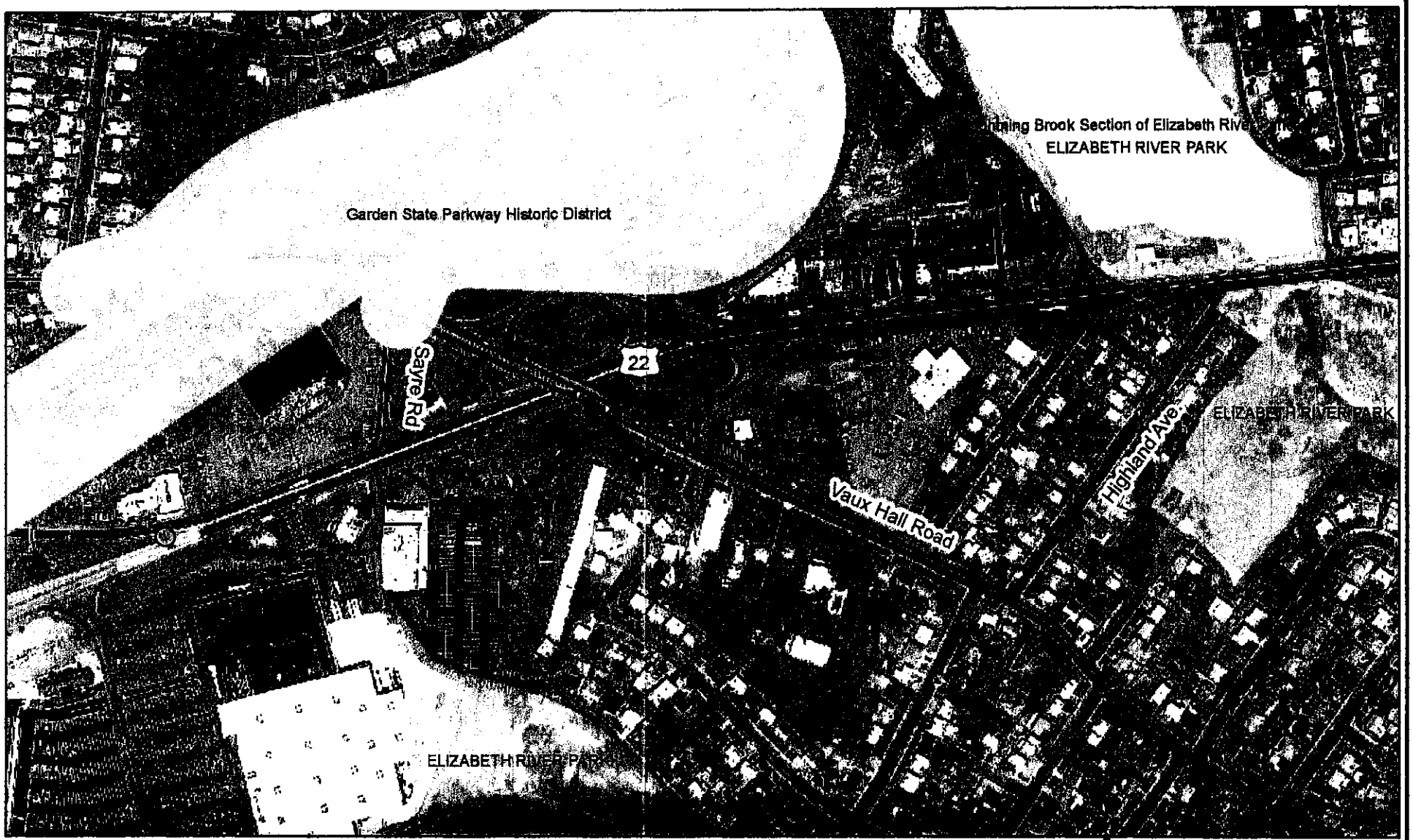
Certified ☒
(or)
Approved ☐

Manager, Bureau of Environmental Program Resources — Date: 11/23/10

Concurrence
(non-self certified CEs) Division Administrator, Federal Highway Administration — Date

enclosures (please include any correspondence referenced in the CED):

- ☒ Project Location Map
- ☐ NJ Natural Heritage Program letter
- ☐ USFWS coordination letter(s)
- ☐ NMFS coordination letter
- ☒ SHPO Eligibility & Effects concurrence letter
- ☐ Signed MOA
- ☐ Final Nationwide Section 4(f) Programmatic Evaluation for:
  - ☐ Minor Involvement with Historic Sites
  - ☐ Use of Historic Bridges
  - ☐ Minor Involvement with Publicly Owned Park, Recreation Area, Wildlife or Waterfowl Refuge
  - ☐ Independent Walkway and Bikeway Construction Projects
  - ☐ Net Benefits
  - ☐ *De minimis* Evaluation of Impacts documentation (i.e., notice to SHPO, *de minimis* template)
- ☐ Final Individual Section 4(f)
- ☐ Resolution of Support from Municipality/County
- ☒ Other (specify): Hazardous waste screening



0 300 600 1,200 Feet

N
W E
S

Legend

- Municipal_Parks
- historicalsites
- Project Limits

Route 22 WB and Vauxhall Rd
Interchange Improvements

State of New Jersey

DEPARTMENT OF TRANSPORTATION
P.O. Box 600
Trenton, New Jersey 08625-0600

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

JAMES S. SIMPSON
Acting Commissioner

HISTORIC PRESERVATION OFFICE
RECEIVED
OCT 14 2010

11-0073-1 MHL
HPO-J2010-111

October 14, 2010

Daniel D. Saunders
Acting Administrator
Mail Code 501-04B
State of New Jersey
Department of Environmental Protection
Historic Preservation Office
P.O. Box 420
Trenton, NJ 08625-0420

Attn: Michelle Hughes

Re: Rt. 22 WB and Vauxhall Rd. Interchange Improvements
Structure No. 2004150
Township of Union, Union County
Scoping Project

Dear Mr. Saunders:

The New Jersey Department of Transportation has proposed safety improvements at the Vauxhall Road/Route 22 WB interchange in the Township of Union, Union using funds provided by the Federal Highway Administration (FHWA). The project is comprised of two segments: east of the Vauxhall Road Bridge and west of the Vauxhall Bridge as described below.

Project Description
East of the Vauxhall Bridge, NJDOT proposes to construct an auxiliary lane along route 22 WB from Gary Road to Vauxhall Road for "right in" and "right out" traffic movements. The proposed typical section for Route 22 would consist of a 2-foot left shoulder, two 11-foot through lanes and a 15-foot auxiliary lane, and a 4-foot border area for utility poles, etc. With the exception of the erection of a single sign, the proposed improvements can be constructed

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HPO-J2010-1

within the existing ROW. Relocation of the sign [to Block 1806, Lot 3.02] will require minor ROW acquisition. An aerial utility easement along the length of the auxiliary lane will also be acquired to allow for the relocation of eight utility poles and overhead utility lines.

West of the Vauxhall Road Bridge, NJDOT proposes to construct a short deceleration and acceleration lane along Route 22 WB at the Sayre Road intersection for "right in" and "right out" traffic movements. The proposed typical section for Route 22 WB would be comprised of a 2-foot left shoulder, two 11-foot through lanes, a 13-foot acceleration/deceleration lane and a 6-foot border area for utility poles [fourteen utility poles and overhead lines must be relocated], etc. A one block sidewalk on the north side of Route 22 in Block 1703 may be added in to the project. All of the proposed improvements can be constructed within the existing ROW; the existing Vauxhall Road Bridge will remain untouched.

Additional information about existing conditions, alternatives considered and the preferred alternatives [Alternative1 eastbound and westbound] can be found in the enclosed *Fact Sheet*.

800.3 Initiation of Consultation

On September 30, 2010, Rob Bird and Michelle Hughes met to initiate Section 106 consultation for the project. At that time, agreement was reached on the Area of Potential Effects [APE] and a path for completing the Section 106 consultation process. Due to the existing setting, the nature of the proposed work and the limited potential for the construction to adversely affect historic properties, the APE was determined to coincide with the footprint of construction and any staging areas that might be identified. The APE as agreed upon is depicted on an enclosed map.

In addition to the FHWA, NJDOT and NJ SHPO, consulting and interested parties for the subject project would include the following:

Union County Engineering, Public Works and Facilities Department
2335 South Avenue
Scotch Plains, NJ 07071

Union County Office of Cultural & Heritage Affairs
633 Pearl St.
Elizabeth, NJ 07202

Union County Historical Society
116 E. 4th Avenue
Roselle, NJ 07203

Union Township Historical Society
909 Caldwell Avenue
Union, NJ 07083

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No adverse public reaction is expected for this project. FHWA recommended the current project be developed as a companion to recent improvements to Route 22 eastbound in the same location. No objections or concerns were raised with respect to Section 106 issues as the result of the eastbound project. A public officials meeting was held for the current project in September of 2010. Reportedly information pertinent to the project need, alternatives considered and preferred alternatives were presented during that meeting. A public information center is planned for January of 2011. Additional opportunities for public input will exist as the project moves through the design process.

800.4 Identification of Historic Properties

Review of information included in the NJ Historic Preservation Office's GIS indicated that two historic districts are located in proximity to, but outside of, the project area. The Garden State Parkway Historic District lies to the north and west of the project APE, and the Lightning Brook Section of the Elizabeth River Park and portions of the park itself lie to the north, northeast, east and southeast of the APE. The eastern terminus of the project borders on the park historic district. A review of aerial photographic information indicated that commercial/industrial establishments, their associated parking, and highway ramp facilities border most of the APE. Because of this, the extremely low possibility that any properties 50 years of age or greater persist within the APE, and after review of photographic documentation from the project area Ms. Hughes waived the requirement for architectural survey of the APE.

Consideration of the archeological potential of the project APE suggests that it is unlikely that significant archeological remains persist. Construction related to the extant roadway system, and the degree and type of development within the APE suggests that the probability of encountering intact pre-Contact or Historic Period archeological sites is very low. Because of this, we believe no additional archeological investigations are warranted.

800.5 Assessment of Adverse Effect

As the result of the 9/30/10 joint [NJ SHPO and NJDOT] review of available information, agreement was reached that **that no historic properties will be adversely affected** by the proposed construction. Proposed construction at the eastern end of the project includes only minor changes to the radius of the ramps to Gary Road. Preliminary design requires only a five foot expansion of the paved roadway into an existing shoulder area characterized by grass and scrub. None of the mature trees will be removed. No further work is recommended in order to demonstrate compliance with Section 106 of the National Historic Preservation Act of 1966, as amended.

Because this project is part of the Department's Scoping Program, we would appreciate receiving your formal concurrence with the findings described in this letter within the 30 day agreed upon review period. To your review, we have enclosed the following:

1. Project Fact Sheet [August 2010]
2. Plan sheet – Initially Preferred Alternative

3. NJDEP GIS Mapping showing Project Limits, Municipal Parks and Historical Sites with Area of Potential Effects Delineated
4. CD Containing Photos of Project APE

To facilitate your response, concurrence lines have been included at the conclusion of this letter. Should you have any questions about the project design, please do not hesitate to contact Bhavesh Shah at 530-8078; questions about the cultural resources evaluation may be directed to Rob Bird at 609-530-4239 or Lauralee Rappleye at 530-2990 directly. Thank you in advance for your continuing cooperation in advancing the Department's program.

Very truly yours,

Pamela Garrett

Pamela Garrett
Supervising Environmental Specialist
Bureau of Environmental Program Resources

Enclosures
C: B. Shah, NJDOT-DPD without enclosures

✓ I concur, due to the limited nature of the proposed construction, initiation of consultation as required by 36 CFR 800.3 has been satisfactorily completed.

✓ I concur with your finding that no historic properties will be adversely affected by the proposed construction. Consequently, pursuant to 36 CFR 800.5, no further Section 106 consultation is required unless there are changes to the project or additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

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_____ I do not concur for the following reason(s):

Daniel D. Saunders
Deputy State Historic Preservation Officer

10/19/10
Date

NEW JERSEY DEPARTMENT OF TRANSPORTATION

-- M E M O R A N D U M --

TO: Robert Bird
Technical Support/ Project Development – Northern Team

FROM: Jane Liou
Bureau of Environmental Program Resources

PHONE: 530-5503

DATE: November 9, 2010

SUBJECT: Route 22 WB and Vauxhall Road Interchange Improvements
Milepost 55.9 to 56.4
Union Township, Union County

Modified Hazardous Waste Screening

In conjunction with the Bureau of Environmental Program Resources Hazardous Waste Group has completed a hazardous waste screening of the proposed project areas. The intent of the analysis was to identify locations having the potential for hazardous waste and/or contaminated sites within the Right of Way plus 250 feet on either side. Areas of concern include solid waste landfills, Industrial Site Recovery Act (ISRA) sites, properties with storage tanks (underground and aboveground) and other sites of questionable integrity. The Hazardous Waste Group utilizes the Data Map Technology Corporation to provide a high quality computer data base search service. This on line search reviews the most up to date database files for involvement with the project. The electronic search conducts a review of the following files: the National Priority List (NPL), Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS), Resource Conservation and Recovery Information System (RCRIS), Emergency Response Notification System (ERNS), National Pollution Discharge Elimination System (NPDES), Known and Suspected Hazardous Waste Sites, State Spills Sites, Regulated UST Sites and Leaking UST Sites (LUST). Summary tables and maps of this search are provided as an attachment.

The major findings of the screening are:

1. A review of the NJDEP's Environmental Information Inventory (EII) revealed there is no solid waste landfill within the vicinity of the project:

2. A review of the Known and Suspected Hazardous Waste Site List, the Site Remediation Program (SRP) Report and the National Priorities List (Superfund) indicated that there are no hazardous waste sites within the proposed project vicinity:

3. **ISRA** - Current preliminary plans indicate no ROW taking of any industrial establishment subject to ISRA; therefore, there would be no involvement with this regulation. If ROW situation changes, then a re-evaluation is required.

4. **Storage Tanks** - A review of the preliminary information revealed that no Underground Storage Tanks (USTs) will be physically affected by the proposed project. However, the following UST sites are located within the 250' study corridor:

   EXXON STATION 33998
   RT 22 & SAYRE ROAD, UNION, NJ 07083
   91-7-19-0809-55/ LUST/ NJD986600096/ KCSNJ

   SUNSET UNION LLC
   410 RT 22, UNION, NJ 07083
   0017183/ ACTIVE/ UST

   BUSINESS
   1597 WEST RT 22, UNION, NJ 07083
   07-12-17-1741-50/ LUST

   EXXON STATION 34276
   1597/ 1601 WEST RT 22, UNION, NJ 07083
   93-1-4-1118-18/ 07-03-22-1413-23/ 07-03-29-1210-18/ LUST

   GARY ROAD PROPERTY/ MORRE-TEC INDUSTRIES INC
   1 GARY RD, UNION, NJ 07083
   LU-0502-2219/ LUST/ NJN008022725/ VGN

   RAJOPPI CONSTRUCTIONS INC
   2 GARY RD, UNION, NJ 07083
   LU-0802-2613/ LUST

5. **Environmental First Search Report-** The environmental computer check revealed that there are seven (7) sites (see Section 4 and the one below) within an 1/8 mile and zero (0) additional site within the overall zip code area of the search.

   VAUXHALL SUBSTATION
   EAST VAUXHALL/ RT 22, UNION, NJ 07083
   05-10-04-2252-20/ SPILLS

6. **Asbestos** - A review of preliminary plans indicates that no buildings would be demolished for this project; therefore, Asbestos Containing Material (ACM) considerations would not be necessary.

7. **Surface/Subsurface Work Efforts** - This screening revealed that as a result of a library search, a review of NJDEP records and a field inspection, there are apparent constraints to subsurface work activities along the project in the area of those sites mentioned in Sections 4 & 5.

8. **Historical Land Use-** The Hazardous Waste Section did a survey of the Sanborn Insurance Maps and no additional sites were identified within the project area.

9. **Environmental Sensitive Parcels: :** As a result of this screening the Hazardous Waste Section has identified the following as potentially environmental sensitive parcels:

   - the seven (7) sites identified in Sections 4 & 5

Conclusion - Based on the proposed scope of work (ROW acquisition and interchange improvements) and associated research, we find this project has a potential for involvement with Hazardous Waste.

If you have any questions relative to the above, please contact me at 5-5503.

c: file – BEPR

APPENDIX B

ENVIRONMENTAL PLAN SHEETS

There are no Environmental Plan Sheets for this project

APPENDIX C

DESIGN EXCEPTION REPORT

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MEMORANDUM

TO: **Eli D. Lambert III, P.E.**
State Transportation Engineer

FROM: **Hardev Davé**
Project Manager
Division of Project Management

DATE: **January 31, 2014**

PHONE: **609-530-3594**

RE: **DESIGN EXCEPTION**
Route 22 Westbound Vicinity of Vauxhall Rd
to West of Bloy St, Safety Improvements
MP 56.00 to MP 56.43
Township of Union
Union County
Project Category: Reconstruction, Widening
NJDOT Job Number: 2204994

Approval of the design exceptions is requested to the following controlling substandard design elements contained in the NJDOT Design Manual Roadway; NJDOT Design Manual for Bridges and Structures; AASHTO publication, A Policy on Geometric Design of Highways and Streets (2004) based on the warranting conditions described herein:

Attached is list by location of the impacts for each CSDE identified.

Please refer to the attached Project Fact Sheet for the project description. A crash analysis is also included.

Based on the warranting conditions presented (the existing conditions, proposed geometry, impacts, accident analysis and safety measures), it is recommended that the above design exceptions be approved.

Approval By:

Eli D. Lambert III

Eli D. Lambert III, P.E.
State Transportation Engineer

2/7/14
Date

Attachment 2 – List of Controlling Substandard Design Elements

Route: Route 22 Westbound (MP 56.00 to MP 56.43)
Contract No. 058003

DESIGN EXCEPTION

This project contains the following substandard controlling design element(s):

CONTROLLING DESIGN ELEMENTS

___x__	Stopping Sight Distance (SSD) Vertical Curve(s)	_____	SSD at Non-Signalized Intersections
__ x__	SSD Horizontal Curve(s)	__ x__	Minimum Radius of Curve
_____	Minimum & Maximum Grades	__ __	Cross Slope
__ ___	Lane Width (Through & Aux.)	__ x__	Superelevation
__ x__	Shoulder Width	_____	Bridge Width
__ x__	Vertical Clearance	_____	Structural Capacity
__ x__	Acceleration & Deceleration Lane Length	_____	Through Lane Drop Transition Length

Controlling substandard design elements have been identified at the following locations:

Controlling Substandard Design Elements		
Location Number	Location (Station and Milepost)	CSDE
1	Route 22 WB, Sta.234+50 to Sta. 241+50 (MP 56.23 to MP 56.36)	Substandard Stopping Sight Distance on Vertical Curve
2	Route 22 WB, Sta. 239+97.64 to Sta. 243+54.38 (MP 56.19 to 56.26)	Substandard Stopping Sight Distance on Horizontal Curve
3	Route 22 WB, Sta. 243+36 to Sta. 243+60 (MP 56.19 to 56.20)	Substandard Minimum Radius of Curve (for Exit Ramp)
4	Route 22 WB, Sta. 239+97.64 to Sta. 243+54.38 (MP 56.19 to MP 56.26)	Substandard Superelevation
5	Route 22 WB, Sta. 231+03 to Sta. 253+87 (MP 56.00 to 56.43)	Substandard Left Shoulder Width
6	Route 22 WB, Sta. 250+44 to Sta. 253+87 (MP 56.00 to 56.06)	Substandard Right Shoulder Width
7	Route 22 WB, Sta. 245+25 (MP 56.16)	Substandard Vertical Clearance
8	Route 22 WB, Sta. 243+55 to Sta. 244+00 (MP 55.18 to 56.19)	Substandard Acceleration Lane Length (For Vauxhall Road NB to Route 22 WB)
9	Route 22 WB, Sta. 245+85 to Sta. 248+99 (MP 56.09 to 56.15)	Substandard Deceleration Lane Length
10	Route 22 WB, Sta. 250+44 to Sta. 253+87 (MP 56.00 to 56.06)	Substandard Acceleration Lane Length

Attachment 3 – Checklist of Impacts of Controlling Substandard Design Elements
Route: Route 22 Eastbound (MP 56.00 to MP 56.43)
Contract No. 056098005

Controlling Substandard Design Elements											
Impact		Location Number									
		1	2	3	4	5	6	7	8	9	10
Indicator Accidents	Does not exceed statewide average			x	x	x	x	x		x	x
	Exceeds statewide average	x	x						x		
Impacts											
COST	No Impact										
	Impact	x	x	x	x	x	x	x	x	x	x
ROW	No Impact										
	Slope easements	x			x	x					
	Fee takings		x	x		x	x	x	x	x	x
	Residential Impact										
	Business Impact	x	x	x	x	x	x	x	x	x	x
ENVIRONMENTAL	No Impact	x	x	x	x	x	x	x	x	x	x
	Wetlands Impact										
	Historic Bridge Impact										
	Historic site Impact										
	Public Parkland Impacted										
	Endangered species impacted										
	Sole source aquifer impacted										
	Contaminated site impacted										
UTILITIES	No Impact										
	Impact	x	x	x	x	x	x	x	x	x	x
PUBLIC SUPPORT	Yes (date)										
	No										
	NA	x	x	x	x	x	x	x	x	x	x

CONTROLLING SUBSTANDARD DESIGN ELEMENTS (CSDE's)

1. Stopping Sight Distance on Vertical Curve

Location Number	Location (Station / Milepost)	Type of Curve	A (%) Exist. / Prop.	L (feet) Exist. / Prop.	S (feet) Exist. / Prop.	S (feet) Stand.	V(calc.) (mph) Exist. / Prop.	Posted Speed / Design Speed (mph)
1	Route 22 WB, Sta.234+50 to Sta. 241+50 (MP 56.22 to MP 56.36)	Crest	9.27/9.38	700/700	403.68/ 401.30	425	48/48	45/50

- Proposed Safety Measures

  The proposed safety measures at Location Number 1 will be resurfacing the section of Route 22 WB within the project limits to improve pavement skid resistance, the addition of an auxiliary lane between Gary Road and Vauxhall Road to improve weaving, 4-inch wide long-life pavement striping, and raised pavement markers.

- Accident Analysis

  Same Direction Rear End, Right Angle and Left Turn crashes at Location Number 1 are over represented. For the three-year period analyzed, there was 1 Right Angle Crash out of a total of 7 accidents. Bureau of Safety's opinion, 1 accident in 3 years is too low a frequency to be considered a result of the CSDE, as opposed to random occurrences. A copy of the Bureau of Safety Programs crash analysis is included in the attached project fact sheet.

- Impact

  To provide the standard vertical curve stopping sight distance would require increase in length of vertical curve. Increase in length of vertical curve would raise the profile by approximately 1.3 feet in some locations and require replacing the concrete median barrier with a 700 feet differential height barrier and reconstructing the full width of the westbound roadway of Route 22 with full depth pavement from station 239+00 to 246+00. An increase in length of vertical curve will result in slope easements for the commercial properties situated at Block 1806 Lot 1, 2, 3.01, 3.02 and 3.03 along Route 22 westbound.

The existing substandard vertical clearance under the bridge will also be reduced by four inches. The impacts to utilities include replacement of water main and gas main. It is estimated the project construction cost will increase by approximately $2.2 million or be 85% higher than the proposed option. There are currently no other projects for the 5-year program for this location. Not meeting the length of vertical curve will not result in degrading the relative safety of the roadway.

2. Stopping Sight Distance on Horizontal Curve

Location Number	Location (Station / Milepost)	Radius(feet)		M (feet)	S (feet) Exist. / Prop	S (feet) Stand.	V(calc.) (mph) Exist. / Prop.	Posted Speed / Design Speed (mph)
		Exist.	Prop.	Exist. / Prop.				
2	Route 22 WB, Sta.239+97 to Sta. 243+54.38 (MP 56.19 to 56.26)	1432.69	1432.69	6.5 /6.5	273.35/ 273.35	425	37.12/ 37.12	45/50

- Proposed Safety Measures

  The proposed safety measures at Location Number 2 include providing warning sign combination of horizontal alignment (curve sign) with advisory 30 MPH speed sign.

- Accident Analysis

  The accident rate at Location No. 2 is over represented. For the three-year period analyzed, there were 33 Same Direction Rear End accidents out of a total of 67 accidents. Bureau of Safety's opinion is that the occurrence of the indicator crashes may be attributable to the substandard design element. A copy of the Bureau of Safety Programs accident analysis is included in the attached project fact sheet.

- Impact

  Providing the standard stopping sight distance will require the left shoulder width to be 10-foot. Providing 10-foot left shoulder along Route 22 WB will impact the right of way. Also it will impact the parking spaces and parking circulation of the commercial businesses on Block 1806 Lot 1. Right of way fee takings and slope easements will

be necessary from these properties. Providing a 10-foot shoulder requires alignment modification with two travel lanes shifted to the north which will require the bridge to be widened. Providing a 10-foot shoulder would also impact grading of the driveways along Route 22 WB. Drainage impacts include addition of storm basin and water quality treatment. Additional Utility relocation includes PSE&G utility poles which had Verizon wire, Comcast cable and Sunysys fiber optics. Project construction cost would increase over $10 million or be 370% higher than the proposed option. There are currently no other projects for the 5-year program for this location. Not meeting the design values at Location Number 2 will not result in degrading the relative safety of the roadway.

3. Minimum Radius of Curve (for Ramp)

Location Number	Location (Station / Milepost)	Radius(feet)		Radius (feet)	Design speed (mph)	Safe Speed (mph)	Posted Speed (mph)
		Exist.	Prop.	Stand.	Prop.	Prop.	
3	Vauxhall Rd. NB to Rt. 22 WB on Ramp Sta. 243+48 (MP 56.19)	41	75	150	10	10	N/A

- Proposed Safety Measures

  The proposed safety measures at Location Number 3 include increasing the ramp width to improve the truck turning movement from Vauxhall Road NB to Route 22 WB to prevent trucks from encroaching the island and driving over the curb; and providing advance warning signs such as combination horizontal alignment (curve sign) with ramp speed 10 MPH sign and chevron signs.

- Accident Analysis

  There were no indicator accidents for the three years analyzed.

- Impact

  Providing the minimum curve design radius of 150-foot will require realignment of the ramp from Vauxhall Road NB to Route 22 WB as well as the ramp from Vauxhall Road to the Garden State Parkway North. It would also require extending the Vauxhall Road Bridge over Route 22. It would require ROW fee takings from the New Jersey

Turnpike Authority lot situated at east of the existing ramp and from Route 22 BBQ situated at Block 1806 Lot 1. This will result in impacts to the business parking at both properties. Drainage inlets would also need to be relocated. Incidental impacts to drainage include addition of storm basin and water quality treatment. Electric lines running along Vauxhall Road would be affected. Fourteen utility poles would need to be relocated. The additional construction cost to do this improvement would be approximately $2.5 million or be 94% higher than the proposed option. There are currently no other projects for the 5-year program for this location. Not meeting the minimum radius of curve for the ramp will not result in degrading the relative safety of the roadway.

4. Superelevation (for mainline)

Loc. No.	Location (Station / Milepost)	Radius (feet)		eMax (%)		EMax 4%	V(safe) mph		V(safe) mph	Posted Speed (mph)
		Exist.	Prop.	Exist.	Prop.	Stand.	Exist.	Prop.	Stand.	
4	Route 22 WB, Sta. 239+97.24 to Sta. 243+54.38 (MP 56.19 to 56.26)	1432.69	1432.69	-0.66 % to -3.58%	-0.66 % to -3.58%	3.7%	49-53	49-53	60	45

- Proposed Safety Measures

  The proposed safety measures at Location Number 4 will be resurfacing the section of Route 22 within the project limits to improve pavement skid resistance, 4 inch wide long-life pavement striping, and improve the drainage system by adding inlets along Route 22 WB to address spread at low points and along widened pavement.

- Accident Analysis

  Fixed object crashes at Location Number 4 are underrepresented. For the three-year period analyzed, there were 1 Fixed Object accidents out of a total of 67 accidents. A copy of the Bureau of Safety Programs crash analysis is included in the attached project fact sheet.

- Impact

  Providing full superelevation will raise the outside pavement elevation within the curve by approximately 1.85 feet. The rise in pavement elevation within the existing curve will impact the ramps and require a

slope easement from Block 1806 Lot 1. Route 22 WB to Vauxhall Road exit and on ramps need to be regraded. It will also reduce the vertical clearance under the bridge. The drainage pattern will be impacted along the median barrier curb with additional inlets in the median and cross pipes. Water and gas facilities will be impacted. Business impact includes the impact to driveways located on Block 1806 Lot 1 and Lot 2 with ground clearance. Project construction cost would increase by approximately $2.0 million or be 77% higher than the proposed option. In addition, the traffic impact during the construction will be longer along Route 22 WB. The safe speed is above the posted speed. There are currently no other projects for the 5-year program for this location. Not meeting the design values at Location Number 4 will not result in degrading the relative safety of the roadway.

5. Shoulder Width

Location Number	Location (Station/Milepost)	Type of Shoulder	Existing Width (feet)	Proposed Width (feet)	Standard Width (feet)
5	Route 22 WB, Sta. 231+03 to Sta. 253+87 (MP 56.00 to 56.43)	Left	2	1	3 (Min.) 1 (Abs. Min.)

- Proposed Safety Measures

  The proposed safety measures at Location Number 5 will be resurfacing the section of Route 22 within the project limits to improve pavement skid resistance, the addition of an auxiliary lane to improve weaving, the addition of a short deceleration lane and a short acceleration lane to improve safety, the installation of 4-inch wide long-life pavement striping, and raised pavement markers.

- Accident Analysis`

  There were no indicator accidents for the three years analyzed.

- Impact

  Providing the standard left shoulder width at Location Number 5 requires the right-of-way taking from commercial properties situated on Block 1806 Lot 1, 2, 3.01, 3.02, 3.03, 4 Block 1703 Lot 1 that would impact the building and Block 1702 Lot 2.01 along Route 22 WB

that would impact the parking. Right of way fee takings would be necessary as well as slope easements for these properties. Providing a standard shoulder would impact grading of the driveways along Route 22 WB. Incidental impacts to drainage include addition of storm basin and water quality treatment. Utility relocation includes PSE&G utility poles which had Verizon wire, Comcast cable and Sunysys fiber optics. Project construction cost would increase by approximately $2.5 million or be 94% higher than the proposed option. There are currently no other projects for the 5-year program for this location. Not meeting the design values at Location Number 5 will not result in degrading the relative safety of the roadway.

6. Shoulder Width

Location Number	Location (Station / Milepost)	Type of Shoulder	Existing Width (feet)	Proposed Width (feet)	Standard Width (feet)
6	Route 22 WB, Sta. 250+44 to Sta. 253+87 (MP 56.00 to 56.06)	Right	6	0	10 (Min.) 8 (Abs. Min.)

- Proposed Safety Measures

  The proposed safety measures at Location Number 6 will be resurfacing the section of Route 22 WB within the project limits to improve pavement skid resistance, the addition of an acceleration lane to improve safety, 4-inch wide long-life pavement striping, and raised pavement markers.

- Accident Analysis
  There were no indicator accidents for the three years analyzed.

- Impact

  Providing the standard right shoulder width at Location Number 6 requires the Right Of Way fee taking from the commercial property situated on Block 1702 Lot 2.01 that would impact parking circulation and eliminate 29 parking spaces along Route 22 WB. Additional impacts to drainage include requirements of storm water basin and water quality treatment. Three PSE&G utility poles need to be relocated. The additional construction cost to do this improvement

would be approximately $2.0 million or be 80% higher than the proposed option. There are currently no other projects for the 5-year program for this location. Not having the shoulder will not result in degrading the relative safety of the roadway.

7. Vertical Clearance

Location Number	Location (Station / Milepost)	Bridge Clearance (feet)		Bridge Clearance (feet)
		Exist.	Prop.	Standard
7	Route 22 WB, Sta. 245+25 (MP 56.16)	14'-2" (SI&A) 13'-11" (Posted)	14'-2"	16'-6"

- Proposed Safety Measures

  The proposed vertical clearance of the Vauxhall Road Bridge over Route 22 WB will be the same as the existing vertical clearance of 13'-11". The minimum vertical clearance is marked on the existing bridge.

- Accident Analysis

  There were no indicator accidents for the three years analyzed.

- Impact

  The minimum vertical clearance for Vauxhall Road Bridge over Route 22 EB is 13'-8" and for Route 22 WB is 13'-11". The minimum vertical clearance as required by the AASHTO based LRFD NJDOT Design Manual for Bridge and Structures is 16'-6".

  A vertical profile that would accommodate the 2'-7" increase in vertical clearance would impact the entire interchange. Route 22 to Vauxhall Road exit and on ramps on eastbound and westbound are to be regraded. The change in roadway approach grades will require ROW fee taking from Block 1703 Lot 1. The abutments have to be replaced to meet the higher elevation grades. Power lines running along Vauxhall Road would be affected. Construction and traffic impact will be significantly more. No major environmental impact is anticipated for this. The additional cost of raising the profile to meet the vertical

clearance required by AASHTO would be over $10 million or 370% higher than the proposed option. Not meeting the standard vertical clearance will not result in degrading the relative safety of the roadway and Bridge.

8. Acceleration Lane Length (for ramps)

Location Number	Location (Station / Milepost)	Type Of Lane	Lane Length (feet)		Lane Length (feet)
			Exist.	Prop.	Standard.
8	Route 22 WB, Sta. 243+55 to Sta. 244+00 (MP 56.18 to 56.19)	Acceleration	None	None	660

- Proposed Safety Measures

  The proposed safety measures at Location Number 8 will be to increase the ramp pavement width at the entrance to improve the truck turning movement from Vauxhall Road NB to Route 22 westbound, resurfacing the section of Route 22 WB within the project limits to improve pavement skid resistance, 4-inch wide long-life pavement striping, raised pavement markers, and additional signage.

- Accident Analysis

  The accident rate at Location No. 8 is over represented. For the three-year period analyzed, there were 16 Same Direction Rear End accidents out of a total of 23 accidents. Bureau of Safety's opinion is that the occurrence of the indicator crashes may be attributable to the substandard design element. A copy of the Bureau of Safety Programs accident analysis is included in the attached project fact sheet.

- Impact

  Providing the standard acceleration lane at Location Number 8 requires extending the Vauxhall Road Bridge over Route 22. The sufficiency rating of the Vauxhall Road overpass is 76.6 as determined by the NJDOT Bridge Management System (2009). It would increase the span of the bridge to the north and to the south. This will require the ROW fee taking from the New Jersey Turnpike Authority's Vauxhall service area on the north and the ROW fee taking from Tiffany restaurant on the south. This would also result in relocating the restaurant business. Additional ROW fee taking will be required from Block 1703 Lot1 and this will impact the Aarti's Liquor store building. Providing standard

acceleration lane will result in closing the access to Sayre Road. There are electric lines running along Vauxhall Road that would be affected. Three utility poles would need to be relocated. Incidental impacts to drainage include requirements of storm water basin and water quality treatment. There will be no major environmental impacts. The additional cost to improve the acceleration lane length would be approximately $8 million or be 300% higher than the proposed option. There are currently no other projects for the 5-year program for this location. Not meeting the design values at Location No. 8 will not result in degrading the relative safety of the roadway.

9. Deceleration Lane Length (for Route 22 WB)

Location Number	Location (Station / Milepost)	Type Of Lane	Lane Length (feet)		Lane Length (feet)
			Exist.	Prop.	Standard.
9	Route 22 WB, Sta. 245+85 to Sta. 248+99 (MP 56.09 to 56.15)	Deceleration	None	272	615

- Proposed Safety Measures

  The proposed safety measures at Location Number 9 will be providing a short deceleration lane to improve the safety movement from Route 22 WB to Sayre Road, resurfacing the existing pavement within the project limits to improve skid resistance, 4-inch wide long-life pavement striping, and raised pavement markers.

- Accident Analysis

  Same Direction Rear End Crashes at Location Number 9 are not over represented. For the three-year period analyzed, there was 1 Same Direction Rear End Crash out of a total of 33 accidents. A copy of the Bureau of Safety Programs crash analysis is included in the attached project fact sheet.

- Impact

  The deceleration lane is in the vicinity of the Vauxhall Road Bridge over Route 22. Providing the standard deceleration at Location No. 9 requires the reconstruction of the Vauxhall Road Bridge over Route 22. This improvement would require ROW fee taking from Aarti's Liquor store situated at Block 1703 Lot 1. This would result in realignment of

the ramp of Vauxhall Road NB to Route 22 WB and the ramp of Route 22 WB to Vauxhall Road and a ROW fee taking from New Jersey Turnpike Authority (NJTA). There are electric lines running along Vauxhall Road that would be affected. Three utility poles would need to be relocated. Two inlets along Route 22 WB would need to be relocated as well. There will be no major environmental impacts. To reconstruct the bridge, project cost would increase by approximately $8.0 million or be 300% higher than the proposed option. There are currently no other projects for the 5-year program for this location. Not meeting the design values at Location No. 9 will not result in degrading the relative safety of the roadway.

10. Acceleration Lane Length

Location Number	Location (Station / Milepost)	Type Of Lane	Lane Length (feet)		Lane Length (feet)
			Exist.	Prop.	Standard.
10	Route 22 WB, Sta. 250+44 to Sta. 253+87 (MP 56.00 to 56.06)	Acceleration	None	368	960

- Proposed Safety Measures

  The proposed safety measures at Location Number 10 will be providing a short acceleration lane to improve the safety movement from Sayre Road onto Route 22 WB, resurfacing the existing pavement within the project limits to improve skid resistance, 4-inch wide long-life pavement striping, and raised pavement markers.

- Accident Analysis

  Same Direction Rear End Crashes at Location Number 10 are not over represented. For the three-year period analyzed, there was 1 Same Direction Rear End Crash out of a total of 26 accidents. A copy of the Bureau of Safety Programs crash analysis is included in the attached project fact sheet.

- Impact

  Providing the standard acceleration lane length along Route 22 WB would require ROW fee takings from the Renovation Center building situated at Block 1702 Lot 1 and New Jersey Turnpike Authority. Providing the standard acceleration length would end just before the

Garden State Parkway Bridge over Route 22. Five utility poles on the westbound side would need to be relocated. There is an existing overhead sign structure just east of the Garden State Parkway that would be impacted as well. Electric and telephone lines will be impacted. There will be no major environmental impacts. The additional cost to do this improvement would be approximately $5 million or be 180% higher than the proposed option. Incidental impacts to drainage and utilities would also be required when the acceleration lane length is increased. There are currently no other projects for the 5-year program for this location. Not meeting the standard acceleration lane length will not result in degrading the relative safety of the roadway.

PROJECT FACT SHEET

A. Funding Source

Federal and State funding

B. Type of Project:

Reconstruction, Widening

C. Highway Classification:

Route U.S. 22 – Urban Principal Arterial

D. Project Limits

Route U.S. 22 is an urban, principal arterial roadway extends generally east-west from Warren County on the west to Route 1 and 9 on the east. The eastern terminus of the project limits on Route US 22 is station 231+50 and the western terminus of the project is station 253+87.

E. Project Origin

This project is to improve safety at the Vauxhall Road/Route 22 WB interchange turning movements. The Transportation Problem Statement for the Route 22 Corridor Study, which was prepared in 2003, states the Vauxhall Road interchange with Route 22 should be reconstructed to provide ramps that conform to current engineering standards and alleviate unsafe conditions. The accident rate at this section of Route 22 is 3.79 which is higher than the statewide average rate of 2.93. Similar safety improvements were adopted and advanced to Final Design on Route 22 EB.

FHWA suggested similar safety improvements be evaluated within the interchange limits for WB Route 22.

F. Existing Conditions

The existing condition of the Vauxhall Road (CR 630) overpass (Structure No. 2004150) over NJ Route 22 (MP 56.2) is not deficient

and requires normal maintenance. The sufficiency rating of the Vauxhall Road overpass is 76.6 as determined by the NJDOT Bridge Management System (2009). The existing Route 22 WB roadway typical section consists of a 6-foot median with a 2-foot median barrier, two 12-foot wide travel lanes and a 6-foot right shoulder in each direction with a 9-foot border area for utility poles. The existing Route 22 ROW width outside the interchange area is 86 feet. The existing pavement cross slopes on Route 22 WB are various from 0.34% to 4.27%.

The traffic movement to northbound Vauxhall Road from Route 22 westbound has no deceleration lane and conflicts with traffic exiting and entering the commercial establishment situated along westbound Route 22 between the Gary Road intersection and the exit ramp terminal. The traffic movement entering westbound Route 22 from northbound Vauxhall Road has no acceleration lane with a yield condition (due to a bridge abutment). The traffic movement to southbound Vauxhall Road exits Route 22 westbound onto Sayre Road has no deceleration lane and conflicts with traffic exiting and entering a liquor store situated between the Vauxhall Road Overpass and Sayre Road. The traffic movement from southbound Vauxhall Road to Route 22 westbound uses Sayre Road to enter Route 22 with a stop condition and conflicts with traffic exiting and entering the commercial establishments situated along westbound Route 22 west of Sayre Road.

G. Proposed Improvements

Provide an auxiliary lane along Route 22 WB between Gary Road and Vauxhall Road. Improve the turning radius from Vauxhall Road to Route 22 WB to allow large trucks to make a right turn into the appropriate lane without encroaching on the adjacent lane. Provide a foreshortened deceleration and a foreshortened acceleration lane to and from Sayre Road along Route 22 WB by widening Route 22 WB pavement converting the existing right shoulder to part of the new auxiliary lane. Provide sidewalk along Route 22 WB between Vauxhall Road and Sayre Road. Improve the drainage system by adding inlets along Route 22 WB to address spread at low points and along widened pavement. Existing Route 22 WB travel lanes will be milled 2 inches and overlay with 2 inches asphalt. The existing pavement cross slopes and elevations on the travel lanes will remain the same.

H. Roadway Section:

The proposed roadway cross section along the auxiliary lane section comprises of 1-foot left shoulder, two (2) 11-foot wide through lanes with existing cross slopes and a 15-foot wide auxiliary lane with 2.5% cross slope, 4-foot border area. The proposed roadway section along the deceleration lane section comprises of a 1-foot left shoulder, two (2) 11-foot wide through lanes with existing cross slopes, 15-foot wide deceleration lane with 2.5% cross slope, 9-foot border area. The proposed roadway section along acceleration lane comprises of a 1-foot left shoulder, two (2) 11-foot wide through lanes with existing cross slopes , a 13-foot wide auxiliary lane with 2.5% cross slope and a 6-foot border area.

I. ADT:

Existing ADT is 33,967 vpd (in 2011) Route 22 WB.
Expected ADT for 2030 is 50,611 vpd.

J. Posted Speed:

The posted speed limit on U.S. Route 22 is 45 mph.

K. Design Speed:

The design speed for this project is 50 mph.

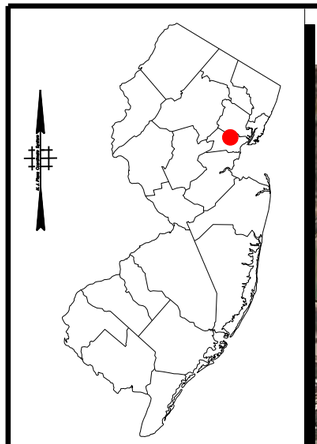
L. Approximate cost of this Project: $2.6 million

APPENDIX A

Project Location Map

Straight Line Diagram

STATE	FEDERAL PROJECT NO.
N.J.	*



TOWNSHIP OF UNION

COUNTY OF UNION

GARDEN STATE PARKWAY

GSP SERVICE AREA

SAYRE ROAD

Project Location

GARY ROAD

Elizabeth River

STATE ROUTE 22 W.B.

STATE ROUTE 22 W.B.

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

VAUXHALL ROAD

HIGHLAND AVENUE

N. SUNSET PL.

ERHARDT STREET

NEW JERSEY DEPARTMENT OF TRANSPORTATION

LOCATION MAP

ROUTE 22 WESTBOUND
FROM GARY ROAD TO SAYRE ROAD
SAFETY IMPROVEMENTS
(FROM M.P. 55.9 TO M.P. 56.4)

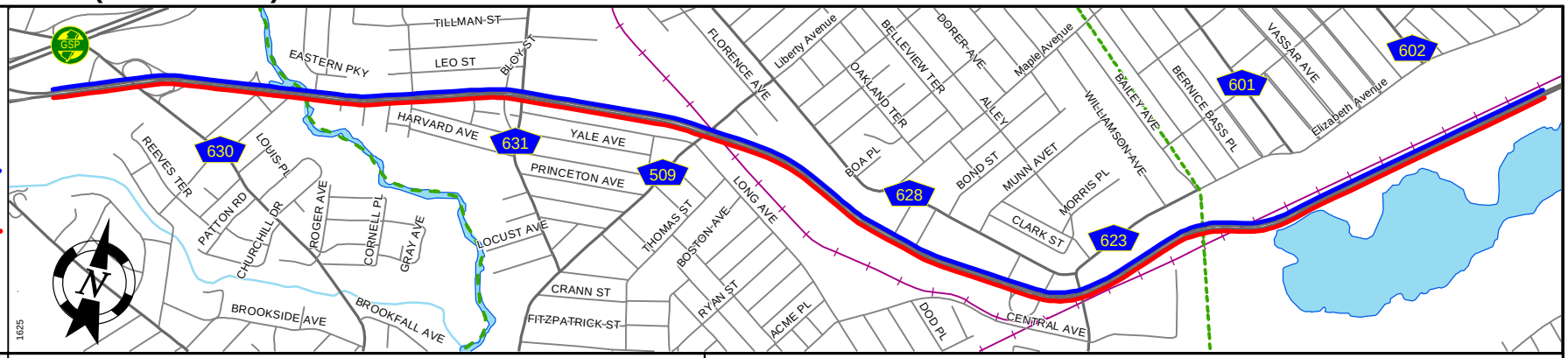
THE LOUIS BERGER GROUP, INC.
MORRISTOWN, NEW JERSEY

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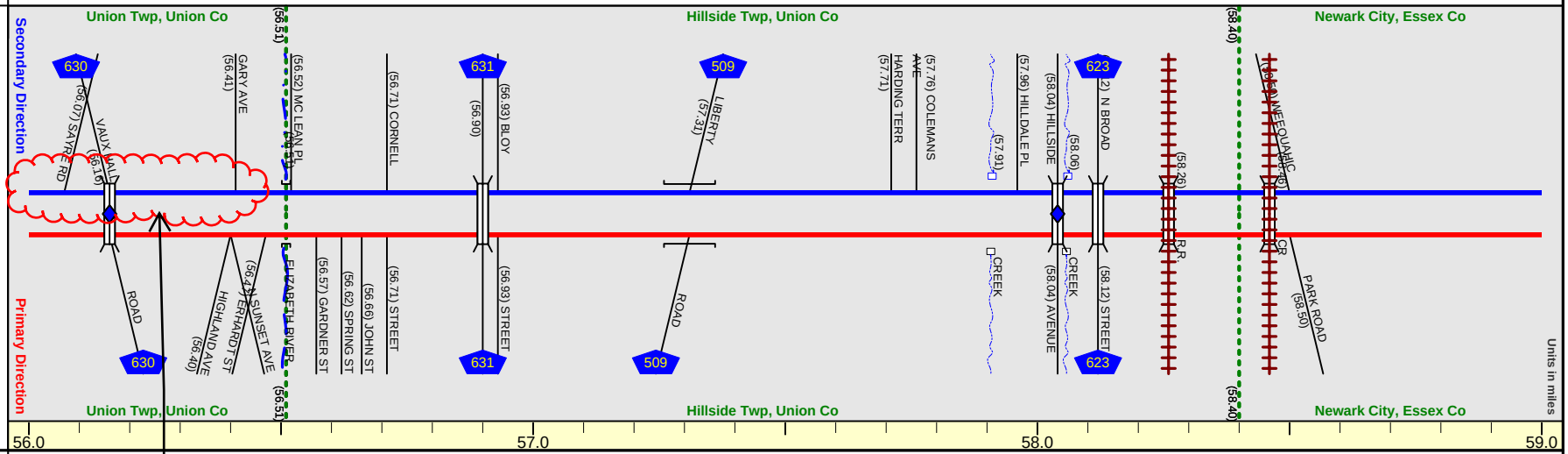
file= $FILEL$ $MODELNAME$

US 22 (West to East)

Mile Posts: 56.000 - 59.000



Pavement	24			26		
Shoulder	6	4	10	4	0	4
Number of Lanes	2					
Speed Limit	45					
Street Name	US 22					



Street Name	US 22					
Jurisdiction	N.J.D.O.T.					
Functional Class	Urban Principal Arterial					
Federal Aid - NHS Sy	NHS					
Control Section	2004				0718	
Speed Limit	45					
Number of Lanes	2	3		2		
Med. Type	Positive					
Med. Width	5					
Pavement	24	36		26		
Shoulder	6	4		0	4	
Traffic Volume			62,474 (2009)		61,810 (2005)	63,560 (2008)
Traffic Sta. ID			3-9-543		3-7-262	3-7-262
Structure No.	2004150	2004151	2004152	2004153	2004154 2004155 2004156 2004157 2004158	0718150
Enlarged Views	See Enlarged View #8					

Project Location

SRI = 00000022__

Date last inventoried: March 2006

Page Created: May 2010

APPENDIX B

New Jersey Department of Transportation

Bureau of Safety Programs,

Design Exception Crash Analysis

State of New Jersey
Department of Transportation
1035 Parkway
CN 600
Trenton, New Jersey 08625-0600

CHRIS CHRISTIE
GOVERNOR

James S. Simpson
COMMISSIONER

July 27, 2011

Hong Sun
The Louis Berger Group, Incorporated
412 Mt. Kemble Avenue
PO Box 1946, Morristown, NJ 07962-1946

RE: Design Exception Crash Analysis
Route 22 W/B MP 55.90 to 56.40
Union Township, Union County

As requested by your office on June 21, 2011, crash data was analyzed for the subject location. Crash data used is for the years 2008 to 2010. The following is a summary of this data and you will also find attached the crash detail sheets used for this analysis.

Controlling Substandard Design Elements

Substandard Deceleration Lane Length – Indicator Crash Types: Same Direction Crashes

MP 56.07 to 56.16	1 – Same Direction Rear End Crash (3.03%)
	33 – Total Crashes

Conclusion

Same Direction Rear End Crash is not overrepresented when compared with the 2010 State Highway Average Crash Value (47.63%).

Substandard Acceleration Lane Length – Indicator Crash Types: Same Direction Crashes

MP 55.90 to 56.07	1 – Same Direction Rear End Crash (3.85%) 26 – Total Crashes

Conclusion
Same Direction Rear End Crash is not overrepresented when compared with the 2010 State Highway Average Crash Value (47.63%).

MP 56.10 to 56.16	16 – Same Direction Rear End Crash (69.57%) 23 – Total Crashes

Conclusion
Same Direction Rear End crashes are overrepresented when compared with the 2010 State Highway Average Crash Value (47.63%) and their annual frequency is greater than the two per year amount considered statistically significant. Therefore, it is our opinion that the occurrence of the indicator crashes may be attributable to the substandard design element.

Substandard Outside Shoulder – Indicator Crash Types: Fixed Object, Struck Parked Vehicle, and Overturned Vehicle

MP 55.90 to 56.07 (Acceleration Lane)	No indicator crashes at this location.
MP 55.90 to 56.40	No indicator crashes at this location.

Substandard Inside Shoulder – Indicator Crash Types: Fixed Object (Median), and Head - On

MP 55.90 to 56.40	No indicator crashes at this location.

Substandard Horizontal Curve – Indicator Crash Types: Fixed Object, Head-On, Struck Parked Vehicle, and Overturned Vehicle. (Also same direction side swipe crashes on multi-lane roadways)

MP 56.20 to 56.24 (WB Exit Ramp)	No indicator crashes at this location.
MP 56.20 to 56.24 (WB Entrance Ramp)	No indicator crashes at this location.

Substandard Crest Vertical Curve – Indicator Crash Types: Same Direction Rear End, Right Angle, and Left Turn

MP 56.22 to 56.36 — 1 – Right Angle Crash (14.29%)
7 – Total Crashes

Conclusion
Right Angle Crash is overrepresented when compared with the 2010 State Highway Average Crash Value (10.89%), but its annual frequency is not greater than the two per year amount considered statistically significant. Therefore, it is our opinion that the occurrence of the indicator crash may be considered random and not necessarily related to the substandard element.

Substandard Superelevation – Indicator Crash Types: Fixed Object, Head-On, Struck Parked Vehicle, and Overturned Vehicle. (Also same direction side swipe crashes on multi-lane roadways)

MP 55.90 to 56.40 — 1 – Fixed Object Crash (1.49%)
67 – Total Crashes

Conclusion
Fixed Object Crash is not overrepresented when compared with the 2010 State Highway Average Crash Value (10.42%).

Substandard Cross Slope – Indicator Crash Type: Wet Surface

MP 55.90 to 56.40 — 1 – Fixed Object Crash (1.49%)
67 – Total Crashes

Conclusion
Fixed Object Crash is not overrepresented when compared with the 2010 State Highway Average Crash Value (10.42%).

Substandard Minimum Vertical Clearance – Indicator Crash Type: Fixed Object (Overhead Structure)

MP 56.16 (Vauxhall Road Bridge) — No indicator crashes at this location.

If there are any further questions, please contact Mr. Thomas Zim of this office at 530-4123.

Very truly yours,

Kevin Conover
Section Chief, Bureau of Safety Programs

Cc: Bhavesh Shah, Division of Project Development

Mail Log # 81-11

State of New Jersey
Department of Transportation
1035 Parkway
CN 600
Trenton, New Jersey 08625-0600

CHRIS CHRISTIE
GOVERNOR

James S. Simpson
COMMISSIONER

RECEIVED
FEB 13 2012
LBG INCOMING

February 8, 2012

Hong Sun
The Louis Berger Group, Incorporated
412 Mt. Kemble Avenue
PO Box 1946, Morristown, NJ 07962-1946

RE: Design Exception Crash Analysis
Route 22 W/B MP 55.90 to 56.40
Union Township, Union County

This is in further reference to the original request from your office on June 21, 2011, for design exception crash analysis for several Controlling Substandard Design Elements as part of the above-captioned roadway project. Due to some additional information that was recently brought to our attention by our Quality Management Services unit, specifically regarding the Substandard Cross Slope (Below Minimum versus Above Maximum) for the length of the project, we deemed it necessary to re-do this particular CSDE analysis and provide it to you as a supplement to our original Design Exception memo dated July 27, 2011.

Crash data used is again for the years 2008 to 2010. The following is a summary of this data. You were previously supplied with the crash detail sheets used for this analysis.

The results for the substandard cross slope (below minimum) are shown below.

Controlling Substandard Design Element

Substandard Cross Slope (Below Minimum) – Indicator Crash Type: Wet Surface

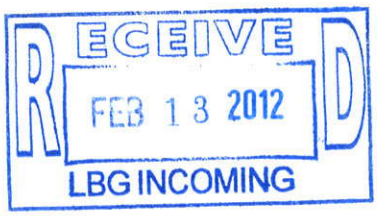
MP 55.90 to 56.40	10 – Wet Surface Crashes (14.93%)
	67 – Total Crashes

Conclusion
Wet Surface crashes are not overrepresented when compared with the 2010 State Highway Average Crash Value (17.12%).

If there are any further questions, please contact Mr. Thomas Zim of this office at 530-4123.

Very truly yours,

Kevin Conover
Project Engineer, Bureau of Transportation Data and Safety



Cc: Bhavesh Shah, Capital Program Management
Amutha Vijayakumar, Quality Management Services

NL#

State of New Jersey
Department of Transportation
1035 Parkway
CN 600
Trenton, New Jersey 08625-0600

CHRIS CHRISTIE
GOVERNOR

James S. Simpson
COMMISSIONER

November 26, 2013

Naveen Gumedelli
The Louis Berger Group, Incorporated
412 Mt. Kemble Avenue
PO Box 1946, Morristown, NJ 07962-1946

RE: Design Exception Crash Analysis
Route 22 W/B MP 55.90 to 56.40
Union Township, Union County

As requested by your office on October 16, 2013, crash data was analyzed for the subject location. Crash data used is for the years 2008 to 2010. Attached are the details used for this analysis (and previous analysis done on July 27, 2011).

Controlling Substandard Design Element

Substandard Sight Distance within Horizontal Curve – Indicator Crash Type: Same Direction Rear End, Right Angle, and Left Turn

MP 55.90 to 56.40 W/B	33 – Same Direction Rear End Crashes (49.25%)
	2 – Right Angle Crashes (2.99%)
	67 – Total Crashes

Conclusion

Same Direction Rear End crashes are overrepresented when compared with the 2010 State Highway Average Crash Value (47.63%) and their annual frequency is greater than the two per year amount considered statistically significant. Therefore, it is our opinion that the occurrence of the indicator crashes may be attributable to the substandard design element.

Right Angle crashes are not overrepresented when compared with the 2010 State Highway Average Crash Value (10.89%).

If there are any further questions, please contact Mr. Thomas Zim of this office at 530-4123.

Very truly yours,



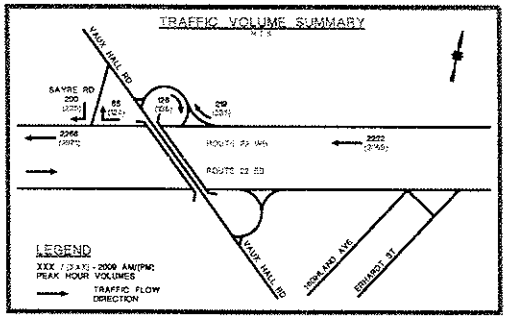
Kevin Conover
Project Engineer, Bureau of Transportation Data and Safety

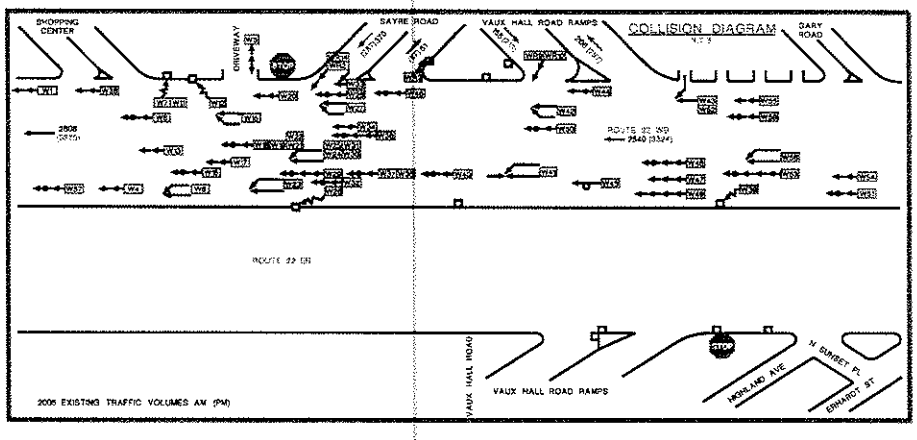
Cc: Hardev Dave, Division of Project Management

Mail Log# 138-13

STATE	FEDERAL PROJECT NO.
N.J.	

COUNTY OF UNION

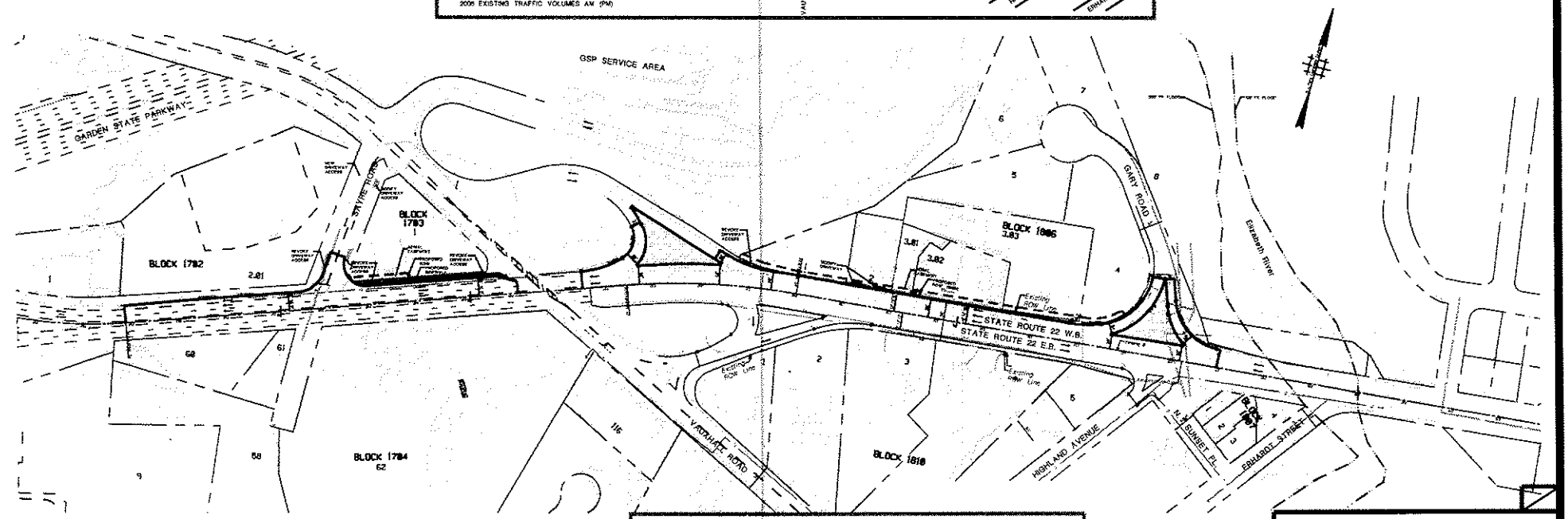




COLLISION DIAGRAM LEGEND

MOVING VEHICLE	M MOTORCYCLE	REAR END	HEAD ON
PARKED VEHICLE	P PEDESTRIAN	OVERTAKE	LEFT TURN
BACKING VEHICLE	B BICYCLE	OUT OF CONTROL	RIGHT TURN
STOPPED VEHICLE	FIXED OBJECT	SKIDDING	RIGHT ANGLE
TRAFFIC SIGNAL	F FATAL	OVERTURNED	SIDE SWIPE

NOTES:
LOCATION OF ROUTE 22 CRASHES ARE NOT LANE SPECIFIC
XXX NUMBER ASSIGNED TO POLICE ACCIDENT REPORT



ESTIMATED RIGHT OF WAY REQUIREMENTS

BLOCK	LOT	MUNICIPALITY	TYPE	REMARKS	DEPTH (ft)	WIDTH (ft)	TOTAL (SF)
1703	1	TWP. OF UNION	COMMERCIAL	PARTIAL ACQUISITION	8	377	3053
				AERIAL EASEMENT	12	93	1252
1908	1	TWP. OF UNION	COMMERCIAL	AERIAL EASEMENT	10	212	2360
	2	TWP. OF UNION	COMMERCIAL	AERIAL EASEMENT	3	98	952
	3.01	TWP. OF UNION	COMMERCIAL	AERIAL EASEMENT	12	43	430
				PARTIAL ACQUISITION	10	10	100
	3.02	TWP. OF UNION	COMMERCIAL	AERIAL EASEMENT	10	193	1930
	3.03	TWP. OF UNION	COMMERCIAL	AERIAL EASEMENT	10	193	1930
	4	TWP. OF UNION	COMMERCIAL	AERIAL EASEMENT	10	59	590
						TOTAL	13,593

LEGEND

- PROPOSED ROADWAY
- PROPOSED CONCRETE SIDEWALK
- PROPOSED GRASS ISLAND
- EXISTING DRIVEWAY
- PROPOSED RIGHT-OF-WAY
- PROPOSED CURB
- EXISTING SANITARY SEWER LINE
- EXISTING WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING GAS LINE

100 0 100 200

DRAFT

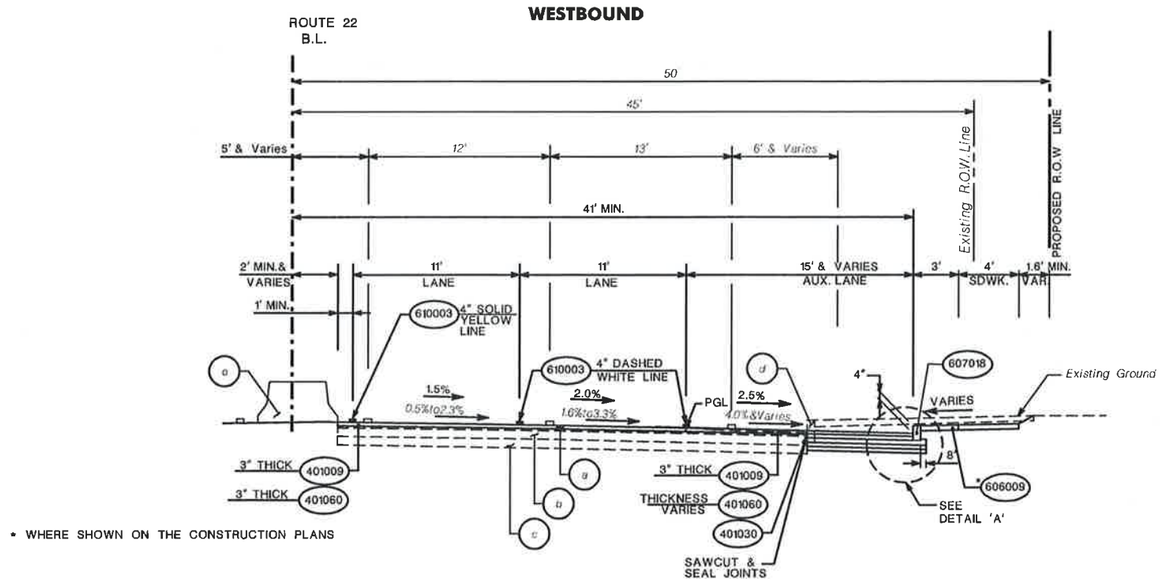
NEW JERSEY DEPARTMENT OF TRANSPORTATION

PRELIMINARY PREFERRED ALTERNATIVE

ROUTE 22 WESTBOUND
FROM GARY ROAD TO SAYRE ROAD
SAFETY IMPROVEMENTS
(FROM M.P. 55.9 TO M.P. 56.4)

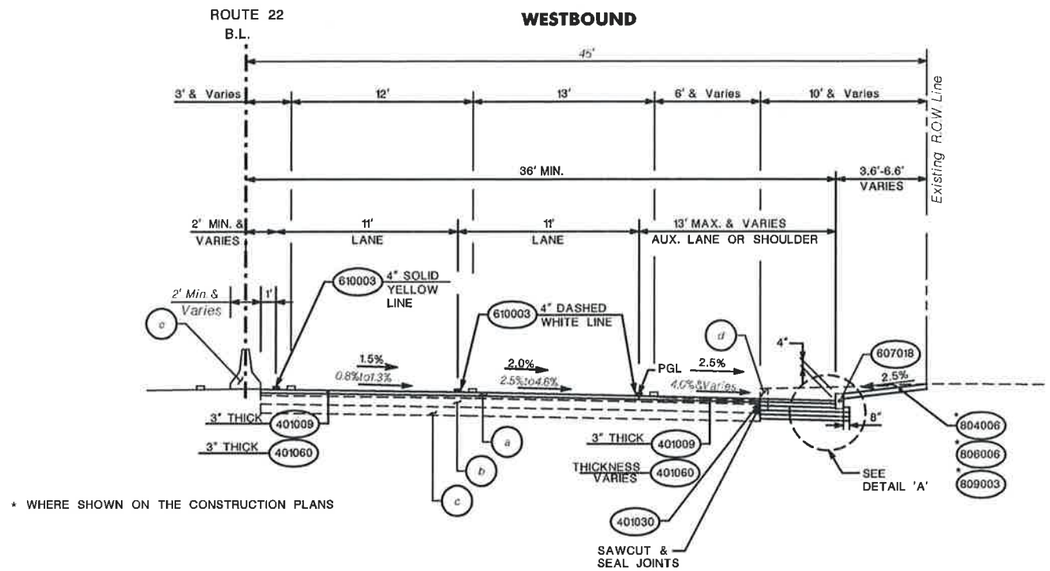
THE LOUIS BERGER GROUP, INC.
MORRISTOWN, NEW JERSEY

STATE	FEDERAL PROJECT NO.
N.J.	



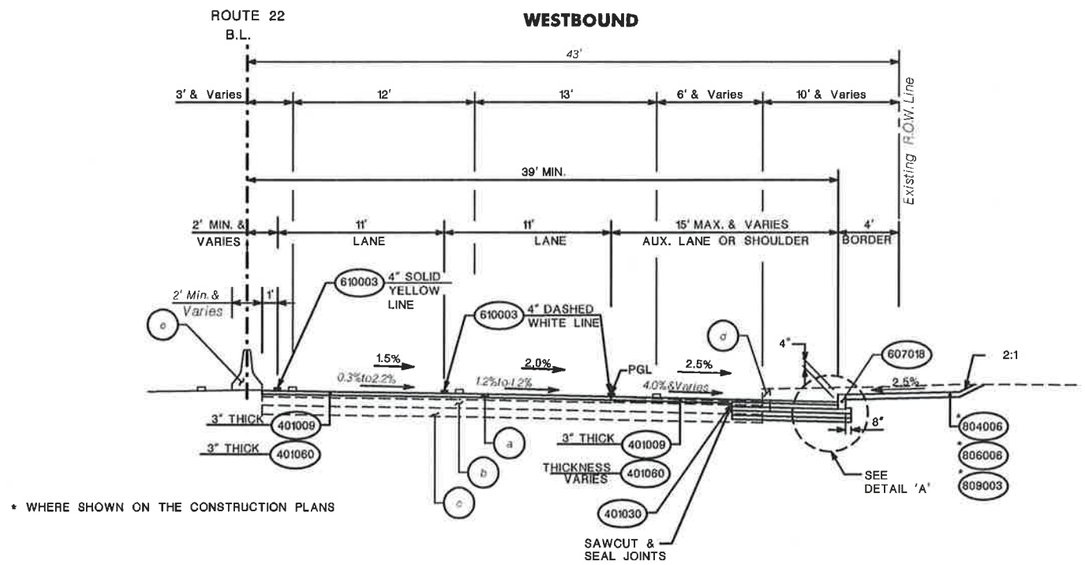
* WHERE SHOWN ON THE CONSTRUCTION PLANS

ROUTE 22 WESTBOUND AT VAUXHALL RD
STA. 246+09± TO STA. 249+32±
N.T.S.



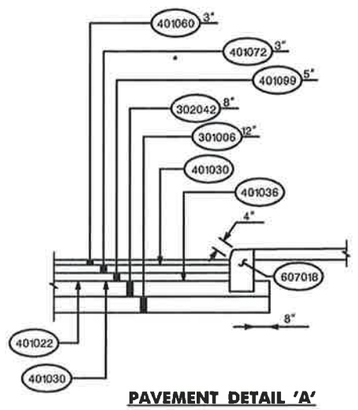
* WHERE SHOWN ON THE CONSTRUCTION PLANS

ROUTE 22 WESTBOUND AT VAUXHALL RD
STA. 249+32± TO STA. 253+85±
N.T.S.



* WHERE SHOWN ON THE CONSTRUCTION PLANS

ROUTE 22 WESTBOUND AT VAUXHALL RD
STA. 231+01± TO STA. 246+09±
N.T.S.



PAVEMENT DETAIL 'A'
N.T.S.

Existing Materials	
Item No.	Description
a	Pavement Type MA-BC Top Course, 4" and Variable Thickness
b	Pavement Type Concrete Base Course, 10" Thick
c	Subbase
d	9"x18" Concrete Vertical Curb
e	Existing 24"x32" Concrete Barrier Curb

PROPOSED MATERIALS	
ITEM NO.	DESCRIPTION
202021P	REMOVAL OF PAVEMENT
301006P	SUBBASE
302042P	DENSE-GRADED AGGREGATE BASE COURSE, 8" THICK
401009P	HMA MILLING, 3" OR LESS
401022M	GEOTEXTILE, PAVING FABRIC
401030M	TACK COAT
401036M	PRIME COAT
401060M	HOT MIX ASPHALT 12.5M76 SURFACE COURSE
401072M	HOT MIX ASPHALT 12.5M64 INTERMEDIATE COURSE
401099M	HOT MIX ASPHALT 25M64 BASE COURSE
606009P	HOT MIX ASPHALT SIDEWALK, 5½" THICK
607018P	9"x16" CONCRETE VERTICAL CURB
610003M	TRAFFIC STRIPES, LONG LIFE EPOXY RESIN 4"
804006P	TOPSOILING, 4" THICK
806006P	FERTILIZING AND SEEDING, TYPE A-3
809003M	STRAW MULCHING

DRAFT

TS-1
TS-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

3
14

date: 1/21/2014 4:14:15 PM driver: AS SHOWN

file= W:\Operations\834\Route 22 WB PE\Deliverables\Drawings\Sheet Files\03-Typical Section Sheets\sht2typ01.dgn

NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARD LEGEND

STATE	FEDERAL PROJECT NO.
N.J.	

Linear Features

Existing	PROPOSED	
W	W	Water Main (Size)
G	G	Gas Main (Size)
	T	Telephone Conduit
E	E	Electric Conduit (Highway or Utility)
CTV	CTV	Cable TV
		Fiber Optic
ITS	ITS	Intelligent Transpotation System (Wires & Cables)
(Size & Type) (Over 30" - Dram to Size)	(SIZE & TYPE)	Sanitary Sewers or Storm Drains
		Pavements (Concrete or Bituminous)
		Shoulders
		Curbs
(F) (C)	(C) (F)	Slopes (Cut & Fill)
5+00 ℄	℄ 10+00	Base Line
		Twp., City, County Lines
Existing R.O.W. Line	PROPOSED R.O.W. LINE	Right of Way Lines (Access Permitted)
Existing R.O.W. & No Access Line	PROP. R.O.W. & NO ACCESS LINE	Right of Way Lines (No Access)
		Easements
℄		Property Line
X X		Fence (Size & Type)
		Reset Fence
		Beam Guide Rail
		Reset Beam Guide Rail
		Noise Walls
		Wetland Limit Line
		Silt Fence
Ditch	DITCH	Ditches
		Railroad Tracks
		Tree Line

Topographical Features

Existing	PROPOSED	
		Inlets (Label Type)
"ES"	"ES"	Inlets (Type ES)
		Manholes (Label Type or Utility)
		Reset (Inlets or Manholes)
		Reconstructed (Inlets or Manholes)
		Cast Iron Extension (Frame or Ring) (Inlet or Manhole)
		New Manhole Casting, Square Frame, Circular Cover
		R.C. End Section or C.M. Headwall
		Headwalls
		Headwalls & Aprons
W		Water Gate Valves
		Reset Water Gate Valves
		Gas Gate Valves
		Reset Gas Gate Valves
Hyd.		Hydrants
		Reset Hydrants
		Utility Pole (Type & Number)
	TEMP	Temporary Utility Pole
		Traffic Signal
J.B.	J.B.	Junction Box
		Fiber Optic Junction Box
J.B. & Light	J.B.	Junction Box Foundation
		Signs
		Vertical Panels
		Camera
DMS	DMS	Dynamic Message Sign (DMS)

Topographical Features

Existing	PROPOSED	
		Guide Rail End Terminals
		Beam Guide Rail Anchorages
Mon.		Monuments
		ROW Monument (ROW Control Points)
	TEST PIT NUMBER	Test Pit
Boring Number	BORING NUMBER	Borings (Boring Number)
		Decidous Tree (Size, Kind)
		Evergreens
		Bush
		Hedges
		Swamp

Double Reference Codes

EDQR	ESTIMATE AND DISTRIBUTION OF QUANTITIES - ROADWAY
TS	TYPICAL SECTIONS
PSI	PLAN SHEET INDEX
C	CONSTRUCTION PLANS
EP	ENVIRONMENTAL PLANS & SOIL EROSION & SEDIMENT CONTROL PLANS
D	DRAINAGE PLANS
DTL	CONSTRUCTION DETAILS
P	PROFILES
T	TIES
G	GRADES
TC	TRAFFIC CONTROL AND STAGING PLANS
E	ELECTRICAL PLANS
TSP	TRAFFIC SIGNAL PLANS
HL	HIGHWAY LIGHTING PLANS
ITS	- INTELLIGENT TRANSPORTATION SYSTEM PLANS
SL	SIGN LOCATION PLANS
TSS	TRAFFIC SIGNING AND STRIPING PLANS
STD	SIGN TEXT DETAILS
L	LANDSCAPE PLANS
MS	METHOD OF CROSS SECTIONS
X	CROSS SECTIONS
EQB	ESTIMATE OF QUANTITIES - BRIDGE
B	BRIDGE PLANS

Miscellaneous Symbols

- Items With No Alternate
- Alternate Items OR — For Alternate Pipe Items (C) = Concrete (M) = Metal
- Milling
- Building to be Demolished
- Removal of Concrete Base Course & Concrete Surface Courses
- Building to be Removed & Paid for Under Clearing Site
- PARCEL — Demolition No. & Parcel No. of Building to be Demolished
- PROFILE +% LEVEL LINE −%
- High Point
- Low Point
- B.M. — Bench Mark

ABBREVIATIONS USED IN THIS CONTRACT

AH., BK.	AHEAD, BACK	IP	IRON PIN	RCCP, R.C.C.P.	REINFORCED CONCRETE CULVERT PIPE
℄, B.L.	BASELINE	J.B.	JUNCTION BOX	RCP, R.C.P.	REINFORCED CONCRETE PIPE
B.M.	BENCH MARK	LT., RT.	LEFT, RIGHT	RMC, R.M.C.	RIGID METALLIC CONDUIT
B.T.	BELL TELEPHONE	L.O.P.	LIMIT OF PAVEMENT (PAVING)	RNMC, R.N.M.C.	RIGID NON-METALLIC CONDUIT
BIT., BITUM.	BITUMINOUS	L.O.M.	LIMIT OF MILLING	ROW, R.O.W.	RIGHT OF WAY
BLDG.	BUILDING	M.B.	MAILBOX	R.R.	RAILROAD
℄, C.L.	CENTERLINE	M.P.	MILE POST	RTE., RT.	ROUTE
C.I.P.	CAST IRON PIPE	MAX.	MAXIMUM	SAN.	SANITARY
CSP, C.S.P.	CORRUGATED STEEL PIPE	MIN.	MINIMUM	SDWK.	SIDEWALK
C.M.P.	CORRUGATED METAL PIPE	NO.	NUMBER	S.H.D.	STATE HIGHWAY DEPARTMENT
CONC.	CONCRETE	N.T.S.	NOT TO SCALE	SHLD.	SHOULDER
CULV.	CULVERT	PAV'T.	PAVEMENT	℄, S.L.	SURVEY LINE
D, DIA.	DIAMETER	PERF.	PERFORATED	S.O.D.	SUBBASE OUTLET DRAIN
D.C.	DROP CURB	P.G.L.	PROFILE GRADE LINE	STY.	STORY
DE	DITCH EXCAVATION	℄, P.L.	PROPERTY LINE, PROFILE LINE	T	TANGENT
DEP., DP	DEPRESSED CURB	PK	PARKER KAYLON MASONRY NAIL	TBA	TO BE ABANDONED
DH	DRILL HOLE	POC, P.O.C.	POINT ON CURVE	TBR	TO BE REMOVED
DWY	DRIVEWAY	POL, P.O.L.	POINT ON LINE	TEL.	TELEPHONE
E.B., W.B., N.B., S.B.	EASTBOUND, WESTBOUND NORTHBOUND, SOUTHBOUND	POT, P.O.T.	POINT ON TANGENT	TEMP.	TEMPORARY
		PRC, P.R.C.	POINT OF REVERSE CURVE	THK., TH.	THICK
EL., ELEV.	ELEVATION	PROP.	PROPOSED	TYP.	TYPICAL
EXIST.	EXISTING	PT, P.T.	POINT OF TANGENCY	U.D.	UNDERDRAIN
GR.	GRATE	PVC, P.V.C.	POLYVINYL CHLORIDE PIPE, POINT OF VERTICAL CURVATURE	UP, U.P.	UTILITY POLE
HT.	HEIGHT			VAR.	VARIABLE, VARIES
H.W.	HEADWALL	PVI, P.V.I.	POINT OF VERTICAL INTERSECTION	W.C.V.C.	WHITE CONCRETE VERTICAL CURB
HYD.	HYDRANT	PVT, P.V.T.	POINT OF VERTICAL TANGENCY, PAVEMENT	WM	WATER METER
INV.	INVERT	R	RADIUS	X-SECT	CROSS SECTION

N.J. Plane Coordinate System

North Arrow To Be Used On Standard Construction Sheets Where Bearings Refer To N. J. Plane Coordinate System

N.T.S.

C-1 / G-4

DRAFT

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN — DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

4 / 14

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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION

COUNTY OF UNION

NEW DRIVEWAY ACCESS

23' D.C.

50' D.C.

SAYRE ROAD

VAUXHALL ROAD

REVOKE DRIVEWAY ACCESS

MEET EXISTING PAVEMENT

PROPOSED ROW

PROPOSED SIDEWALK

REVOKE DRIVEWAY ACCESS

PROPOSED R.O.W.

REVOKE DRIVEWAY ACCESS

END PROJECT
ROUTE 22 ℄
STA. 253+85

END FEDERAL PROJECT
STP - 0040 (172)
ROUTE 22 ℄
STA. 253+85

PROPOSED R.O.W.

R=45'

R=36.5'

Blvd.

36' D.C.

36' D.C.

37' D.C.

18" R.C.P.

18" R.C.P.

18" R.C.P.

18" R.C.P.

18" R.C.P.

18" R.C.P.

31'

39'

41'

41'

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

253+46.77

253+00

252+00

251+00

250+00

249+00

248+00

247+00

94+46.93

MEET EXISTING CURB & PAVEMENT

MATCH LINE 246+00

PLAN SHEET NO. C-3

30' 20' 10' 0 30' 60'

DRAFT

C-2 / C-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION **COUNTY OF UNION**

PLAN SHEET NO. C-2
MATCH LINE 246+00

PLAN SHEET NO. C-4
MATCH LINE 237+50

MEET EXISTING PAVEMENT

RAMP B

RAMP A

MEET EXISTING PAVEMENT

REVOKE DRIVEWAY ACCESS

LIMITS OF GRADING

AERIAL EASEMENT

31' D.C.

50' D.C.

36' D.C.

MODIFY DRIVEWAY

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

U.S. Route 22 (Westbound)

U.S. Route 22 (Eastbound)

VAUXHALL ROAD

18" R.C.P.

244+00

243+00

242+00

241+00

240+00

239+00

238+00

245+00

30' 20' 10' 0 30' 60'

DRAFT

C-3 / C-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION

COUNTY OF UNION

PLAN SHEET NO. C-3
MATCH LINE 237+50

GARY ROAD

Elizabeth River

MEET EXISTING PAVEMENT

BEGIN PROJECT
ROUTE 22 ℄
STA. 231+04

LIMITS OF GRADING

SIGN TO BE RELOCATED

40' D.C.

45' D.C.

44' D.C.

39' D.C.

R=250'

R=125'

R=158'

R=136'

R=107'

18" R.C.P.

18" R.C.P.

39'

15'

11'

11'

45'

39'

42'

37'

237+00

236+00

235+00

234+00

233+00

232+00

231+00

230+00

229+00

U.S. Route 22
(Eastbound)

Existing ℄

STATE ROUTE 22 E.B.

STATE ROUTE 22 W.B.

MEET EXISTING PAVEMENT & CURB

U.S. Route 22
(Eastbound)

HIGHLAND AVENUE

N. SUNSET PL.

ERHARDT STREET

30' 20' 10' 0 30' 60'

DRAFT

C-4
C-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

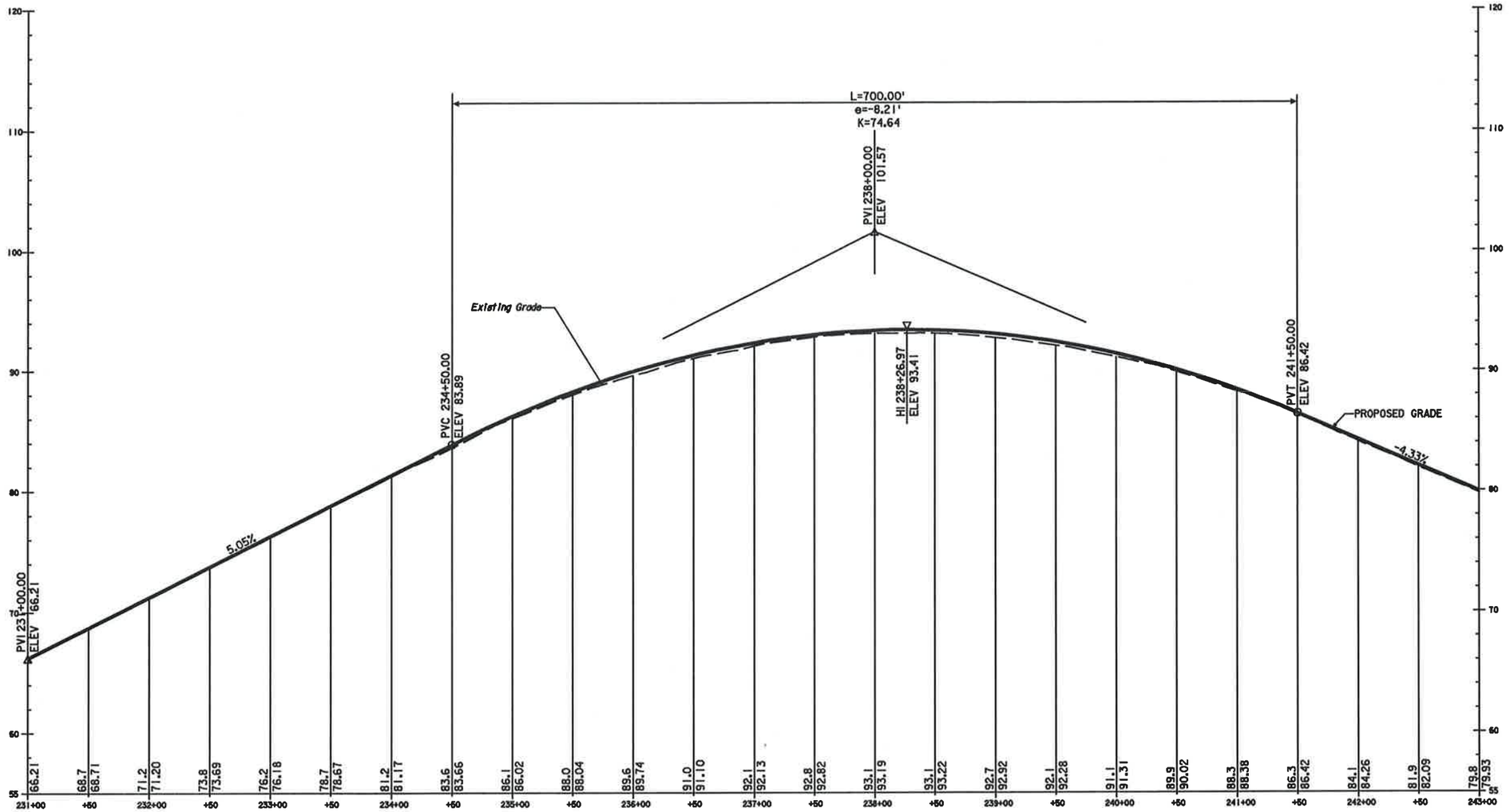
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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION

COUNTY OF UNION



Route 22 WB Design Speed 50 MPH

VERTICAL 5' 0 5' 10'

HORIZONTAL 50' 0 50' 100'

P-1 / P-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

ROUTE 22 WESTBOUND PROFILE

ROUTE 22 WESTBOUND
FROM GARY ROAD TO SAYRE ROAD
SAFETY IMPROVEMENTS
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

DRAFT

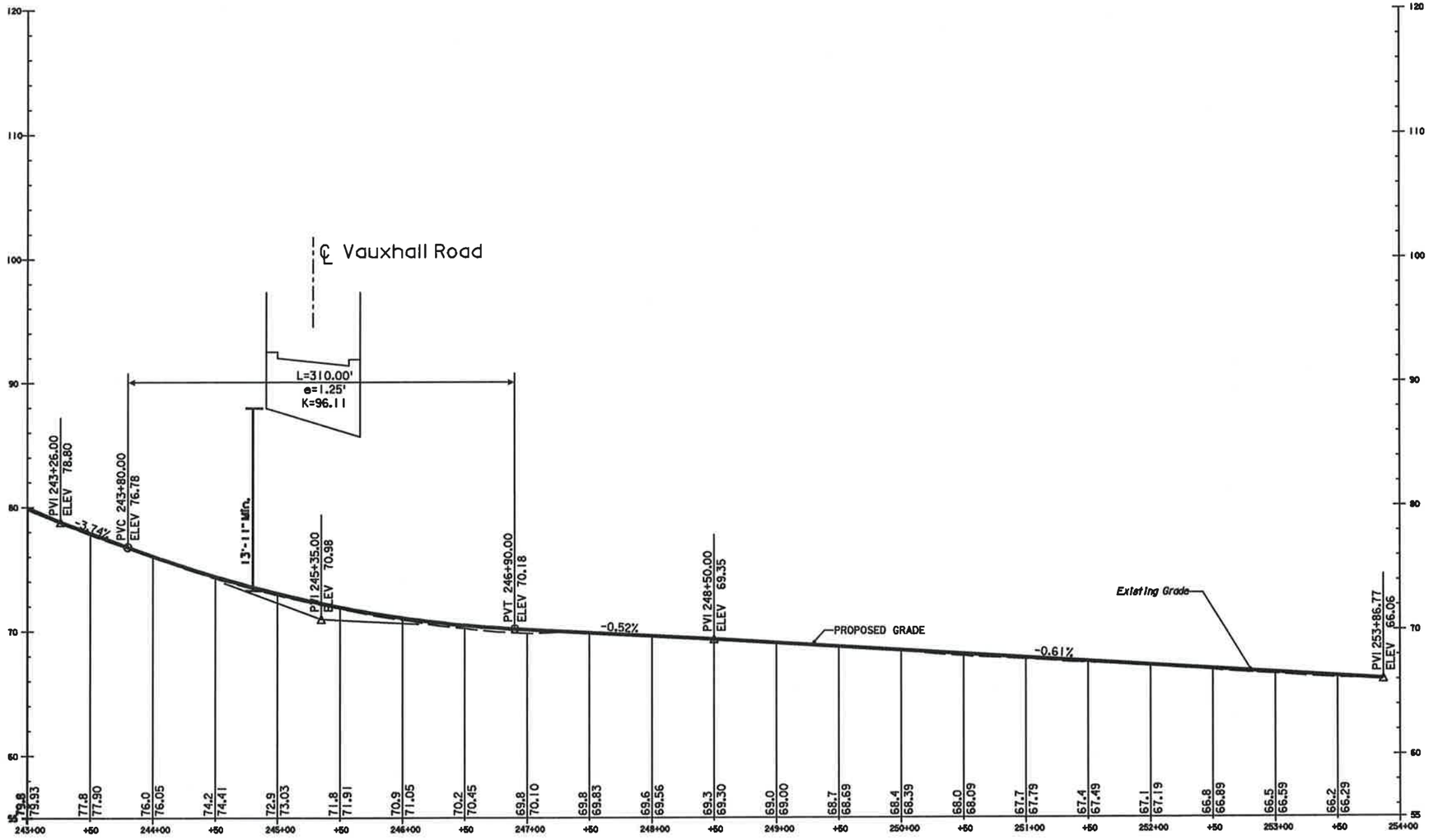
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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION

COUNTY OF UNION



Route 22 WB Design Speed 50 MPH

VERTICAL 5' 0 5' 10'

HORIZONTAL 50' 0 50' 100'

P-2 / P-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

ROUTE 22 WESTBOUND PROFILE

ROUTE 22 WESTBOUND
FROM GARY ROAD TO SAYRE ROAD
SAFETY IMPROVEMENTS
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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STATE	FEDERAL PROJECT NO.
NJ	

TOWNSHIP OF UNION

COUNTY OF UNION

LIMITS OF GRADING

SAYRE ROAD

VAUXHALL ROAD

MEET EXISTING PAVEMENT

LIMITS OF GRADING

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

MEET EXISTING GRADES

MEET EXISTING GRADES

PLAN SHEET NO. G-2

MATCH LINE 246+00

NOTES:

1. XX.XX-EXISTING PAVEMENT ELEVATION TO BE VERIFIED BY THE CONTRACTOR IN THE FIELD.
2. ELEVATIONS SHOWN AT CURBLINE ARE FOR THE BOTTOM OF THE CURB.

DRAFT

30' 20' 10' 0 30' 60'

G-1
G-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

GRADES

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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14

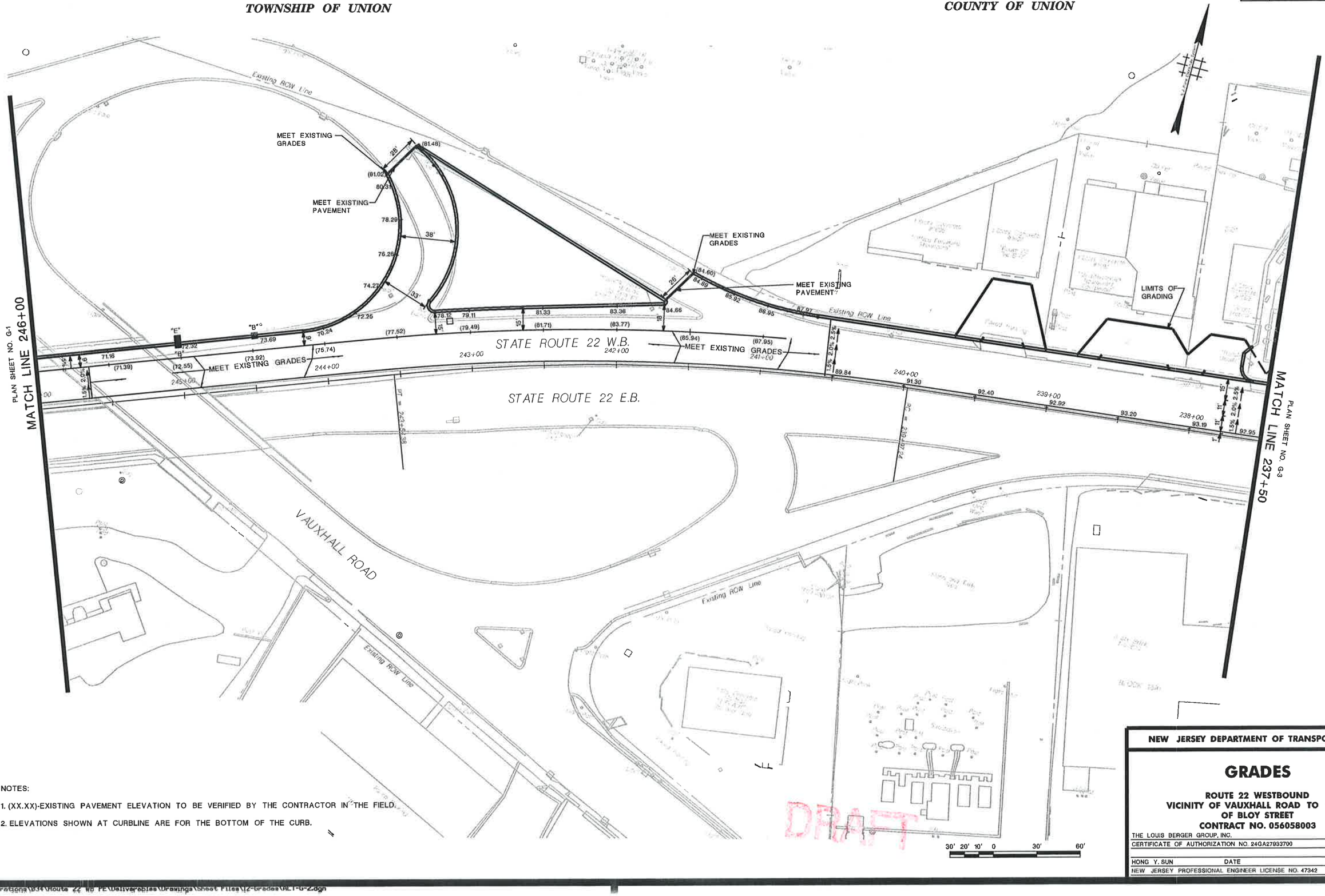
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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION

COUNTY OF UNION



NOTES:

1. (XX.XX)-EXISTING PAVEMENT ELEVATION TO BE VERIFIED BY THE CONTRACTOR IN THE FIELD.
2. ELEVATIONS SHOWN AT CURBLINE ARE FOR THE BOTTOM OF THE CURB.

DRAFT

G-2
G-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

GRADES

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION **COUNTY OF UNION**

PLAN SHEET NO. G-2

MATCH LINE 237+50

GARY ROAD

Elizabeth River

LIMITS OF GRADING

MEET EXISTING PAVEMENT

MEET EXISTING PAVEMENT

MEET EXISTING PAVEMENT

27'

18'

17'

2.5%

5'

18'

"B"

"E"

"F"

STATE ROUTE 22 W.B.

237+00 92.95 92.29 91.34 236+00 89.97 88.31 235+00 86.24 84.03 234+00 81.60 79.16 233+00 76.68 74.13 232+00 71.65 68.79 231+00 230+00 229+00

1.5% 2.0% 2.5% 1' 11' 15'

Existing ℄

STATE ROUTE 22 E.B.

HIGHLAND AVENUE

N. SUNSET PL.

ERHARDT STREET

NOTES:

1. (XX.XX)-EXISTING PAVEMENT ELEVATION TO BE VERIFIED BY THE CONTRACTOR IN THE FIELD.

2. ELEVATIONS SHOWN AT CURBLINE ARE FOR THE BOTTOM OF THE CURB.

DRAFT

30' 20' 10' 0 30' 60'

G-3

G-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

GRADES

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27693700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION

COUNTY OF UNION

SAYRE ROAD

VAUXHALL ROAD

MEET EXISTING STRIPING

SAFE CORRIDOR	SIGN "A" 72"x48"
FINES DOUBLED	
SPEEDING AND OTHER VIOLATIONS	
AS OF FEB 15 2004	SIGN "B" 72"x12"

4" DOUBLE YELLOW

YIELD

R1-2 36"x36"x36"

W1-4R 36"x36"

VAUXHALL RD HILLSIDE →	SIGN "C" 84"x30"
U TURN →	SIGN "D" 72"x18"

MEET EXISTING STRIPING STA. 253+85.00

RPM, MONO-DIRECTIONAL WHITE LENS

4" DASHED WHITE

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

253+00 252+00 251+00 250+00 249+00 248+00 247+00

253+16.77

94+46.93

RPM, MONO-DIRECTIONAL AMBER LENS

4" SOLID YELLOW

MATCH LINE 246+00

PLAN SHEET NO. TSS-2

DRAFT

30' 20' 10' 0 30' 60'

TSS-1 / TSS-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNING AND STRIPING PLANS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

12/14

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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION

COUNTY OF UNION

W1-8R

W1-8R 18"x24"

Existing ROW Line

RAMP 10 M.P.H. W13-7 24"x42"

R1-2 36"x36"x36" YIELD

GSP-1 24"x24"

NEXT RIGHT

NORTH M3-1 24"x12"

12" SOLID WHITE

RPM, MONO-DIRECTIONAL WHITE LENS

4" SOLID WHITE

4" DASHED WHITE

SIGN "E" 74"x53" UNION MILLBURN NEXT RIGHT

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

PLAN SHEET NO. TSS-1

MATCH LINE 246+00

245+00

244+00

243+00

242+00

241+00

240+00

239+00

238+00

237+50

MATCH LINE 237+50

PLAN SHEET NO. TSS-3

RPM, MONO-DIRECTIONAL AMBER LENS

4" SOLID YELLOW

VAUXHALL ROAD

Existing ROW Line

Existing ROW Line

Existing ROW Line

BLOCK 1514

DRAFT

30' 20' 10' 0 30' 60'

TSS-2
TSS-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNING AND STRIPING PLANS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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14

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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION

COUNTY OF UNION

PLAN SHEET NO. C-2
MATCH LINE 237+50

GARY ROAD

Elizabeth River

M4-5
24"x12"
TO
M3-1
24"x12"
NORTH
GSP-1
24"x24"
NEXT RIGHT

W1-2
36"x36"

30
W13-1P
18"x18"

R1-2
36"x36"x36"
YIELD

RIGHT LANE FOR EXIT ONLY
W(NJ)9-3B
30"x48"

RELOCATE SIGN

RPM, MONO-DIRECTIONAL
WHITE LENS

4" DASHED
WHITE

Existing ROW Line

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

RPM, MONO-DIRECTIONAL
AMBER LENS

MEET EXISTING
STRIPING
STA. 231+00.00

4" SOLID YELLOW

237+00
236+00
235+00
234+00
233+00
232+00
231+00
230+00
229+00

39'
15'
11'
11'

HIGHLAND AVENUE

N. SUNSET PL.

ERHARDT STREET

30' 20' 10' 0 30' 60'

DRAFT

TSS-3
TSS-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNING AND STRIPING PLANS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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APPENDIX D

ALTERNATIVES ANALYSIS REPORT

A. EXECUTIVE SUMMARY

The New Jersey Department of Transportation is proposing improvements to the Route 22 westbound and Vauxhall Road Interchange in Union Township, Union County, New Jersey. The project is referred to as the Route 22 Vicinity of Vauxhall Road to West of Bloy Street Improvements. Vauxhall Road is designated as County Route 630 and is oriented in a northwest-southeast direction and crosses over N.J. Route 22 at a skew angle of 44 degrees. The existing overpass structure is in good condition and has been rated not deficient requiring normal maintenance.

The purpose and need for the project is the substandard geometry of the interchange ramps, particularly the absence of ramp acceleration and deceleration lanes along Route 22 that contribute significantly to the 5.13 accident rate along this segment of Route 22 which is higher than the 4.35 statewide rate. This Alternative Analysis Report studied various alternative interchange improvements and reconfigurations to upgrade the ramp geometry to conform to current engineering design standards and alleviate unsafe conditions while minimizing socio-economic impacts to the existing businesses that surround this interchange area.

One alternative plan was developed for improving the interchange ramp geometry and another to reconfigure the westbound interchange connections to eliminate access impacts to commercial properties. Both alternative interchange reconfiguration plans required acquisition of commercial property and were opposed by Union Township. A third alternative plan was developed focusing on an eastbound acceleration lane for the entry ramp from Vauxhall Road that could be constructed within the existing Route 22 ROW. The lack of an eastbound acceleration lane along Route 22, directly or indirectly contributes to 67 percent of the crashes being experienced along this segment of Route 22. Subsequently, a foreshortened 240-feet long deceleration lane was added to the eastbound roadway of the third alternative plan. The deceleration lane extends from the east side of the Vauxhall Road bridge abutment to the exit ramp terminal. These Route 22 eastbound auxiliary lane improvements construction complete in spring 2012 .

Based on the comments from FHWA, alternative plans were developed focusing on the westbound auxiliary lane between Gary Road and the Vauxhall Road northbound exit ramp. The lack of westbound auxiliary lane along Route 22 directly or indirectly contributes to 64 percent of the crashes being experienced along this segment of Route 22 westbound. Subsequently, a foreshortened 270-foot long deceleration lane and a foreshortened 370-foot long acceleration lane was added to the Route 22 westbound roadway at Sayre Road.

The study of proposed improvements to the Route 22 and Vauxhall Road Interchange evaluated geometric, safety and operation issues and did not address capacity issues along Route 22 or Vauxhall Road. The “Route 22 Needs Assessment/Concept Development Study” published in June, 2003 performed a capacity analysis for the existing Route 22 corridor between the GSP and Meeker Avenue in the City of Newark that indicated the eastbound and westbound roadway of Route 22 presently operate and will continue to operate in the year 2025 at a failing Level of Service in the AM and PM peak hours, respectively.

The Community Involvement Program included three (3) meetings, two meeting with representatives of Union Township to review alternative improvement plans for the interchange and one Public Information Center (PIC). Union County representatives attended the initial meeting held with Union Township. Township representatives were in agreement with the

presented Preliminary Preferred Alternative for the Route 22 Vicinity of Vauxhall Road to West of Bloy Street.

B. INTRODUCTION

1.0 ALTERNATIVES ASSESSMENT

Various alternatives studied for upgrading the Route 22 WB and Vauxhall Road Interchange ramp geometry to conform to current engineering design standards and alleviate unsafe conditions while minimizing socio economic impacts to the existing businesses that surround the interchange area. The existing Vauxhall Road bridge over Route 22 is in good condition. The bridge is not structurally deficient and has a sufficiency rating of 76.6. All the alternative studies retained the existing bridge structure without altering the existing width or vertical clearance of the bridge. The substandard interchange geometry, particularly the absence of ramp deceleration and acceleration lanes along Route 22 WB, significantly contribute to the 3.79 accident rate along this segment of Route 22 WB that is higher than the 2.93 statewide average. The interchange deficiencies identified in the Transportation Problem Statement for the Route 22 Corridor Study, prepared in 2003, are summarized as:

- The interchange ramps are substandard.
- The entry ramps from Vauxhall Road have no acceleration lanes.
- The deceleration lanes are short.
- Pedestrian stairways at the Vauxhall Road overpass are not in good condition and need maintenance.
- The accident rate at this section of Route 22 is higher than the statewide average.
- The Sayre Road off-ramp from westbound Route 22 is projected to operates (2025) at Level of Service “E” during the PM peak hour.

The proposed project improvements evaluated geometric, safety, and operational issues as the primary concerns and do not address capacity issues.

2.0 PROJECT DEVELOPMENT REPORTS

The “Route 22 Needs Assessment/Concept Development Study”, prepared in June, 2003, documented needs and deficiencies for the segment of the Route 22 corridor between the Garden State Parkway (MP 55.3) in Union Township at the west end and Meeker Avenue (MP 59.4) in the City of Newark at the east end. The Route 22 and Vauxhall Road Interchange is situated at MP 56.2 along Route 22.

Collision Diagrams were prepared for Route 22 westbound roadway within the limits of the interchange. The diagrams were compiled from police accident reports over a three (3) year period from January 1, 2006 to December 31, 2008. The Collision Diagrams are presented in Appendix Q.

3.0 PROJECT DESCRIPTION

Existing Route 22 at the Vauxhall Road interchange has a Posted Speed Limit of 45 MPH. The existing roadway Typical Section is comprised of a 6-foot median with a 2-foot median barrier, two (2) 12-foot wide travel lanes and a 7-foot right shoulder in each direction with a 9-foot border area for utility poles and a pedestrian sidewalk. The existing Route 22 ROW width outside the interchange area is 86 feet.

The existing Vauxhall Road bridge over Route 22 has pedestrian stairways on both sides of Route 22 along the west side of the bridge and sidewalks are provided along both sides of the bridge. Sidewalks are intermittently provided along each side of Route 22 within the project limits and pedestrian activity was observed to be sporadic. The existing stairways are in need of maintenance, however; repairs to the stairways are not the purpose and need for the project.

Vauxhall Road crosses over the eastbound and westbound lanes of Route 22 and is oriented in a northwest-southeast direction. A topographic map of the interchange area is presented on the following page. On the north side of the bridge, Vauxhall Road has a raised median separating the northbound and southbound lanes to prohibit left turns. A median opening is provided north of the interchange for southbound left turns to access the GSP Vauxhall Service Area. The raised median does not extend south of the bridge and left turns are permitted to and from the Route 22 eastbound ramp connections.

Ramp connections are provided in the southeast and northeast quadrants of the interchange. In the southeast quadrant a finger entry ramp and exit ramp loop provide access between eastbound Route 22 and Vauxhall Road. The ramp intersections at Vauxhall Road permit traffic movements to and from both the northbound and southbound lanes of Vauxhall Road. A stop sign controls the entry ramp to Route 22 EB from Vauxhall Road. No acceleration lane is provided for the entry ramp and a deceleration lane is not provided for the exit ramp. The exit ramp geometry is substandard causing large vehicles to track over the curb.

In the northeast quadrant a finger exit ramp provides a connection from Route 22 westbound to Vauxhall Road northbound. The ramp intersection with Vauxhall Road is controlled by a stop sign. A deceleration lane is not provided for the exit ramp. A entry loop ramp provides a connection from Vauxhall Road northbound to Route 22 westbound. A yield sign controls the entry ramp from Vauxhall Road and no acceleration lane is provided along Route 22.

The raised median along Vauxhall Road prohibits traffic movements between the southbound lanes and the ramps in the northeast quadrant. Connections between the southbound lane and Route 22 westbound are accommodated by right in and right out traffic movements along Sayre Road situated in the northwest quadrant of the interchange. Both right turns from Sayre Road are controlled by a stop sign. Neither an acceleration lane nor deceleration lane is provided for the right turn from or and to Sayre Road.

Numerous commercial establishments line the Route 22 eastbound and westbound roadways in the northeast, southwest and northwest quadrants of the interchange with driveway access from Route 22. The commercial developments in the southeast quadrant have property access from Vauxhall Road.

According to the NJDOT Problem Statement, the Vauxhall Road interchange ramps are substandard and the absence of entry ramp acceleration lanes and exit ramp deceleration lanes

contribute significantly to the 3.79 accident rate along this segment of Route 22 WB which is higher than the 2.93 statewide average.

The alternatives study methodology was to develop alternatives for addressing the interchange deficiencies identified in the Problem Statement, identifying alternatives for further development by meeting with stakeholders within the host community and preparing an Alternatives Analysis to identify an Preliminary Preferred Alternative (PPA) for the improvement project.

The NJDOT presented two (2) alternative improvement plans to Union Township at a February 15, 2006 meeting. Alternative 1 reconfigured the eastbound ramp connections in the southeast quadrant to current geometric standards and provides appropriate acceleration and deceleration lanes while impacting a minimum number of commercial properties. Figure 1 presents the proposed Alternative Interchange ramp reconfiguration. The westbound ramp connections in the northeast quadrant generally maintained their current alignment with the addition of appropriate length acceleration and deceleration lanes. Traffic signals were proposed at both sets of the ramp intersections with Vauxhall Road and Sayre Road proposed to be cul-de-sac in the northwest quadrant to eliminate conflict with the proposed westbound acceleration lane. Gary Road would be extended to the rear of the commercial establishments fronting Route 22 along the proposed deceleration lane in the northeast quadrant to provide alternate access.

Alternative 2 maintains the same ramp improvements in the southeast quadrant as Alternative 1 and reconfigures the ramps in the northeast quadrant into a Service Road concept extending from Gary Road to Vauxhall Road. Figure 2 presents the proposed Alternative 2 Interchange ramp reconfiguration. Ramps to the GSP Vauxhall Service Area and northbound roadway and Route 22 westbound roadway would connect to the Service Road. Alternative 2 would eliminate the access revocation proposed along the westbound deceleration lane in Alternative 1.

Union Township representatives expressed strong opposition to the relocation of the restaurant in the southeast quadrant of the interchange improvements proposed in Alternatives 1 and 2 and the business access revocation along the Route 22 westbound roadway proposed in Alternative 1. Township representatives suggested the NJDOT reconsider the proposed improvements and the relocation of the restaurant.

Alternatives 3A and 3B were developed in response to the Union Township objections to the ROW impacts to commercial properties caused by Alternatives 1 and 2. Alternatives 3A and 3B scaled back the proposed interchange improvements to include the addition of an acceleration lane along the Route 22 eastbound roadway to reduce conflicts and the incidents of traffic accidents between through traffic and the eastbound entry traffic from Vauxhall Road. Alternatives 3A and 3B were presented to the Union Township representatives at a March 5, 2007 meeting and Alternative 3B was favorably received by the Township with comment on the proposed closure of the Highland Avenue/Route 22 intersection. Subsequently, Alternative 3C was developed to maintain the Highland Avenue/Route 22 intersection with channelization improvements.
Alternative 3D incorporates a foreshortened 240-foot long deceleration lane along the eastbound roadway between the east side of the Vauxhall Road bridge abutment to the ramp terminal. The existing bridge span over the eastbound roadway is insufficient to extend the eastbound deceleration lane under the bridge.

FHWA suggested similar safety improvements be evaluated within the interchange limits for WB Route 22. The accident rate at this section of Route 22 is higher than the statewide average

rate. This Fact Sheet describes the evaluation of safety improvements along the Route 22 WB roadway at the Vauxhall Road interchange.

Two (2) alternatives were investigated to determine the impacts associated with improvements to westbound Route 22 east of Vauxhall Road to provide an auxiliary lane to improve the weaving and reducing conflicts caused by vehicle speed differentials. Subsequently, Route 22 WB crash data compiled west of the Vauxhall Road bridge identified weaving and merging conflicts caused by traffic movements to and from Sayre Road. Studies were performed to address the Sayre Road conflicts. Three (3) alternatives were developed that addressed safety issues west of the Vauxhall Road bridge at the Sayre Road intersection.

Design standards for the development of the alternative improvement plans and preliminary design of the Initially Preferred Alternative are in accordance with the NJDOT and American Association of State Highway and Transportation Officials (AASHTO) design standards for roadways and bridges, except; the auxiliary lane length of the proposed eastbound deceleration lane which is foreshortened to avoid reconstruction of the existing Vauxhall Road bridge.

4.0 ENVIRONMENTAL SCREENING

The environmental constraints within the Vauxhall Road Interchange were identified from the Categorical Exclusion Document prepared by NJDOT. Based on these findings, it has been determined that there might be a potential for involvement with hazardous waste or contaminated sites. The Categorical Exclusion Document is included in this report.

The project is in an urban area and the land use is primarily commercial with some intermittent residential development. Route 22 crosses the Elizabeth River at MP 56.5. Wetlands and a documented flood prone area are situated adjacent the north and south side of Route 22 at the Elizabeth River crossing. The wetlands are located within the Elizabeth River Park which is a protected open space resource that provides a narrow buffer to the Elizabeth River. Based on the “National Heritage Priority Sites” database, none of the habitats, threatened or endangered species or natural communities have been identified within the project area. Also, the project area does not traverse through any historic districts nor does it contain any archaeological sites. Several properties within the project area have uses that are regulated by the NJDEP. Several properties have been identified as having potential contamination though there are no direct conflicts foreseen with underground storage tanks.

C. ALTERNATIVE ANALYSES

The alternatives study for upgrading the Route 22 westbound roadway geometry from Gary Road to Sayre Road to conform to current engineering design standards and alleviate unsafe conditions while minimizing ROW impacts to the commercial establishment surrounding the interchange. Similar studies were developed for the Route 22 EB roadway. The EB studies were graduated to final design and completed the construction in spring 2012. The strong objection of Union Township to any ROW impact that would decrease the municipal tax base resulted in the selection of a WB improvement plan as the IPA that has minor ROW impacts and substantially improves the existing operating condition that significantly contributes to the high accident rate at this segment of Route 22.

1.0 SUMMARY OF EVALUATED ALTERNATIVES

Plans and Typical Sections of the evaluated alternatives are presented on Figures 3.

Alternatives East of the Vauxhall Road Bridge

Alternative 1 – Provides a minimum Route 22 WB roadway cross section for adding a 15-foot auxiliary lane between Gary Road and Vauxhall Road. Improve the geometry of the Northbound Vauxhall Road ramp to Route 22 WB.

Alternative 2 – Provides a minimum Route 22 WB roadway cross section for adding a 12-foot auxiliary lane between Gary Road and Vauxhall Road. Improve the geometry of the Vauxhall Road ramp to Route 22 WB.

Alternatives West of the Vauxhall Road Bridge

Sayre Road Alternative 1 – Provides a minimum Route 22 WB roadway cross section for adding a short deceleration lane and short acceleration lane along Route 22 WB at the Sayre Road intersection.

Sayre Road Alternative 2 – Provides a minimum Route 22 WB roadway cross section for adding a short acceleration lane along Route 22 WB at the Sayre Road intersection. Provide a traffic signal on Vauxhall Road for left turn movement to Vauxhall Road SB from the Route 22 WB exit ramp.

Sayre Road Alternative 3 – Provides a cul-de-sac on Sayre Road at the Route 22 WB intersection. Provides a traffic signal along Vauxhall Road at the Route 22 WB ramp and Vauxhall Road intersection to provide the traffic movements from Route 22 WB to Vauxhall Road SB and from SB Vauxhall Road to Route 22 WB.

2.0 DISCUSSION OF EVALUATED ALTERNATIVES

This section of the alternative analysis describes each evaluated alternative in detail and discusses components of each alternative's construction, such as major geometric design elements, property access issues, ROW impacts and community support. A construction cost estimate was prepared for all the alternatives. Environmental impacts were not assessed. The land use within the project is primarily commercial with some intermittent residential development. The only natural resources are associated with the Elizabeth River that crosses under Route 22 at the eastern limit of the project study area.

Alternatives East of the Vauxhall Road Bridge

2.1 Alternatives 1 and 2

- **Proposed Improvement**

Alternative 1 improvement includes the addition of an auxiliary lane along the Route 22 westbound roadway between Gary Road and the Vauxhall Road exit ramp. The auxiliary lane will reduce conflicts between through traffic and traffic exiting Route 22 westbound at Vauxhall Road and the several commercial establishments that front along the westbound roadway.

Two (2) typical sections were studied for adding the westbound auxiliary lane. Alternative 1 provided a roadway cross section comprised of a 1-foot left shoulder, two (2) 11-foot wide through lanes, a 15-foot wide auxiliary lane and a 4-foot wide border area for utility poles. This cross section requires the ROW line to be located 43 feet from the centerline which coincides with the existing ROW line.

Alternative 2 provided a roadway cross section comprised of a 1-foot left shoulder, two (2) 11-foot wide through lanes, a 12-foot wide auxiliary lane and a 7-foot wide border area for utility poles. This cross section requires the ROW line to be located 43 feet from the centerline which coincides with the existing ROW line.

Alternatives 1 and 2 also include improve the turning radius of the Northbound Vauxhall Road entry ramp to Route 22 westbound to allow large design vehicles to negotiate the turn without mounting the ramp curbing. The triangular islands along the Route 22 westbound roadway at the Gary Road intersection and the Vauxhall Road exit terminal would be upgraded to current design standards.

- **Vauxhall Road Bridge**

The existing bridge would be unaffected by the Alternative 1 and Alternative 2 proposed improvements

- **Drainage**

Construction of Alternatives 1 or 2 will require construction of a new pavement to provide the full length acceleration lane and improve the turning radius of the westbound exit ramp. Construction of the improvements is not expected to disturb one or more acre of land nor increase the area of impervious surface by more than one-quarter acre. Therefore; either

improvement alternative will not be required to attenuate the peak stormwater runoff or remove 50% - 80% of the Total Suspended Solids in the runoff.

The existing system of drainage inlets and storm drains will be maintained and modified to accommodate the proposed improvements.

- **Access Issues**

Access changes are referred to as revocations, modifications or adjustments. Revocation of access is defined as terminating existing access after a determination that alternative access is available for use. Modification of access is changes to access in conjunction with a highway improvement which results in changing the number of access points, the width of the access point by more than five (5) feet or the location of the access point by more than ten (10) feet. Access adjustment results in changing the width of the access point by five (5) feet or less or changing the location of the access point by ten (10) feet or less.

Driveway access to properties along the proposed auxiliary lane would have to be grandfathered or the driveway access denied which would landlocked the properties necessitating total acquisition. The driveway access situated on Lot 1, Block 1806 at the Route 22 westbound exit ramp terminal has to be revoked for safety.

- **Right-of-Way**

The Alternative 1 improvements will require right-of-way acquisition from one (1) property, Block 1806, Lot 3.02 and easement from six (6) properties; Block 1806, Lots 1, 2, 3.01, 3.02, 3.03 and 4. The Alternative 2 improvements will require the same right-of-way acquisition as Alternative 1.

- **Environmental Impacts**

Based on the environmental constraints identified in the “Route 22 Needs Assessment/Concept Development Study”, construction of the Alternative 1 and Alternative 2 improvements may result in potential involvement with hazardous waste or contaminated sites.

- **Community Support**

Alternative 1 and Alternative 2 were presented to the NJDOT representatives at an April 27, 2009 meeting and the NJDOT representatives recommended selection of Alternative 1. Alternative 1 was subsequently presented to representatives of Union Township and a Resolution of Support was obtained from the Township.

Alternatives West of the Vauxhall Road Bridge

2.2 Sayre Road Alternative 1

- **Proposed Improvement**

Sayre Road Alternative 1 provides a short deceleration lane and short acceleration lane along Route 22 WB at the Sayre Road intersection for right in and right out traffic movements. The

typical section for Route 22 WB would consist of a 2-foot left shoulder, two (2) 11 foot through lanes, 13 foot acceleration and deceleration lane and 6-foot border area for utility poles that can be constructed within the existing ROW. The deceleration lane will reduce conflicts between through traffic exiting to southbound Vauxhall Road with traffic exiting and entering the liquor store situated between the Vauxhall Road Overpass and Sayre Road. The acceleration lane will reduce conflicts between southbound Vauxhall Road to Route 22 westbound traffic with traffic exiting and entering the commercial establishments situated along westbound Route 22 west of Sayre Road.

- **Vauxhall Road Bridge**

The existing bridge would be unaffected by the Sayre Road Alternative 1 proposed improvements.

- **Drainage**

Construction of Sayre Road Alternative 1 requires construction of a new pavement to provide a short acceleration lane and short deceleration lane. Construction of the improvements is not expected to disturb one or more acre of land nor increase the area of impervious surface by more than one-quarter acre. Therefore the proposed improvements will not be required to attenuate the peak stormwater runoff or remove 50% - 80% of the Total Suspended Solids in the runoff.

The existing system of drainage inlets and storm drains will be maintained and modified to accommodate the proposed improvements.

- **Access Issues**

Access changes are referred to as revocations, modifications or adjustments. Revocation of access is defined as terminating existing access after a determination that alternative access is available for use. Modification of access is changes to access in conjunction with a highway improvement which results in changing the number of access points, the width of the access point by more than five (5) feet or the location of the access point by more than ten (10) feet. Access adjustment results in changing the width of the access point by five (5) feet or less or changing the location of the access point by ten (10) feet or less.

Driveway access to properties along the proposed acceleration and deceleration lanes would have to be grandfathered. Driveway access to the property situated in Block 1703 Lot 1 is to be consolidated from three driveways along Route 22 westbound to one driveway providing right in and right out traffic movements.

- **Right-of-Way**

The Sayre Road Alternative 1 improvements will require easement from one (1) property; Block 1703, Lot 1.

- **Environmental Impacts**

Based on the environmental constraints identified in the "Route 22 Needs Assessment/Concept Development Study", construction of the Sayre Road Alternative 1 improvements will not result in any environmental impacts.

- **Community Support**

Sayre Road Alternatives were presented to the NJDOT representatives at June 1, 2010 core group meeting. The NJDOT representatives recommended selection of alternative which was subsequently presented to representatives of Union Township and a Resolution of Support was obtained from the Township.

2.3 Sayre Road Alternative 2

- **Proposed Improvement**

Sayre Road Alternative 2 eliminates the right turn movement from Route 22 WB onto Sayre Road and provides a traffic signal on Vauxhall Road for left turns from the Route 22 WB exit ramp to Vauxhall Road SB. The alternative also provides a short acceleration lane from Sayre Road to Route 22 WB. The typical section for Route 22 WB would consists of a 2-foot left shoulder, two (2) 11 foot through lanes and a 13 foot acceleration lane and 6-foot border area for utility poles that can be constructed within the existing ROW.

Traffic analysis indicates the proposed traffic signal on Vauxhall Road will operate at LOS B in the Design Year 2013 and Future Design Year 2033. The traffic analysis also indicates the Route 22 EB exit ramp to Vauxhall Road presently fails and will operate with a longer failing delay in the Future Design Year 2033.

- **Vauxhall Road Bridge**

The existing bridge would be unaffected by the Sayre Road Alternative 2 proposed improvements.

- **Drainage**

Construction of Sayre Road Alternative 2 requires construction of a new pavement to provide a short acceleration lane along Route 22 WB and a left turn lane to Vauxhall Road SB from the Route 22 WB exit ramp. Construction of the improvements is not expected to disturb one or more acre of land nor increase the area of impervious surface by more than one-quarter acre. Therefore the proposed improvements will not be required to attenuate the peak stormwater runoff or remove 50% - 80% of the Total Suspended Solids in the runoff.

The existing system of drainage inlets and storm drains will be maintained and modified to accommodate the proposed improvements.

- **Access Issues**

Access changes are referred to as revocations, modifications or adjustments. Revocation of access is defined as terminating existing access after a determination that alternative access is

available for use. Modification of access is changes to access in conjunction with a highway improvement which results in changing the number of access points, the width of the access point by more than five (5) feet or the location of the access point by more than ten (10) feet. Access adjustment results in changing the width of the access point by five (5) feet or less or changing the location of the access point by ten (10) feet or less.

Driveway access to properties along the proposed Sayre Road acceleration lane would have to be grandfathered.

- **Right-of-Way**

The Sayre Road Alternative 2 improvement does not require any right-of-way acquisition.

- **Environmental Impacts**

Based on the environmental constraints identified in the "Route 22 Needs Assessment/Concept Development Study", construction of the Sayre Road Alternative 2 improvements will not result in any environmental impacts.

- **Community Support**

Sayre Road Alternatives were presented to the NJDOT representatives at June 1, 2010 core group meeting. The NJDOT representative raised concerns about the installation of a new traffic signal along Vauxhall Road. The Sayre Road alternative 2 was not presented to Union Township.

2.4 Sayre Road Alternative 3

- **Proposed Improvement**

Sayre Road Alternative 3 provides a Cul-de-sac on Sayre Road at the Route 22 WB intersection to eliminate the entry and exit to and from Route 22 WB and Sayre Road. A traffic signal is provided at the Route 22 WB exit ramp intersection with Vauxhall Road to provide left turn traffic movements from Route 22 WB to Vauxhall Road SB and SB Vauxhall Road to Route 22 WB. Traffic analysis indicates the proposed traffic signal on Vauxhall Road will operate at LOS F in the Design Year 2013 and Future Design Year 2033 thereby eliminating Alternative No. 3 from further consideration. Traffic Analysis report is presented in Appendix Q.

3.0 ALTERNATIVE PLANS AND TYPICAL SECTIONS

Plans of Route 22 WB improvement Alternatives 1 and 2 were initially presented to the NJDOT representatives in April, 2009, and plans of Sayre Road Alternative 1, Sayre Road Alternative 2, and Sayre Road Alternative 3 were presented to the NJDOT in June 1, 2010. Alternative plans are presented in this section as Figures 3 through 7. Also included in this section are typical sections, Figures 8 and 9, of the desirable and minimum Route 22 WB roadway section used in the development of the alternative plans. Alternative analysis matrix is presented in the next page.

D. PRELIMINARY PREFERRED ALTERNATIVE

1.0 PROPOSED ALTERNATIVE

The Preliminary Preferred Alternative (PPA) for improving the Route 22 westbound roadway at the Vauxhall Road Interchange was identified after evaluating the socioeconomic impacts of the alternative improvement plans and assessing the operational aspects of each plan as it relates to the Project Purpose and Need. The recommended PPA for the Route 22 WB roadway improvements from Gary Road to Sayre Road combines Alternative 1 from the alternatives east of the Vauxhall Road Bridge and Alternative 1 from the alternatives west of the Vauxhall Road Bridge. A plan of the PPA is presented on the following page.

2.0 GEOMETRICS

The proposed Route 22 WB roadway interchange improvements were developed using NJDOT geometric design standards presented in the NJDOT Design Manual. A design speed of 50 MPH was used for Route 22 westbound with a design speed for the interchange ramps was based on the horizontal geometry.

3.0 EXISTING AND DESIGN YEAR LOS ANALYSIS

The study of proposed improvements to the Route 22 westbound roadway and Vauxhall Road Interchange ramps evaluated safety and operation issues and did not address capacity issues along Route 22 westbound or Vauxhall Road. The “Route 22 Needs Assessment/Conceptual Development Study” published in June, 2003 calculated a future No-Build condition background traffic growth rate for the Route 22 corridor through 2025 based upon the analysis of data sets obtained from various sources. The year 2025 was selected as the estimated time of completion (ETC) of proposed long-term recommendations. The sources included demographic data and projections, studies conducted within the vicinity of the Route 22 corridor, discussions with Union County, and knowledge of developments proposed within the municipalities surrounding the Route 22 corridor. Based upon the information analyzed, an annual 0.25% compounded No-Build background traffic growth rate through 2025 was considered reasonable for the Route 22 corridor.

Applying a compounded annual growth rate of 0.25% for twenty-five years to the existing 2000 baseline traffic volumes yields the projected 2033 No Build condition traffic volumes. This assumes that no capacity improvements are made to the roadway, intersections or interchanges in the Route 22 corridor. Detailed capacity analyses were conducted at the critical unsignalized intersections, ramp junctures, weaving segments, and multilane highway sections in the Route 22 study corridor for 2033 conditions without the implementation of the proposed project improvements. The following segments of Route 22 are projected to operate at a poor Level of Service in the year 2025.

<u>Route 22 between Vauxhall Road and Bloy Street</u>

- The eastbound direction is projected to operate at LOS “F” during the AM and PM peak hours.

- The westbound direction is projected to operate at LOS “F” during the PM peak hour.

Eastbound Route 22 and Vauxhall Road

- The ramp junction is projected to operate at a LOS “E” during the AM and PM peak hours.

Westbound Route 22 and Sayre Road

- The ramp junction is projected to operate at a LOS “E” during the PM peak hour.

4.0 POTENTIAL ROW IMPACTS

ROW lines were obtained using the Route 22 centerline, which was re-established by field survey, combined with information from record drawings.

The proposed PPA improvements require ROW acquisition of small parcels from two properties situated in Block 1703, Lot 1, and Block 1806, Lot 3.02. Aerial utility easement are required from seven properties situated in Block 1703, Lot 1, and Block 1806, Lots 1, 2, 3.01, 3.02, 3.03 and 4.

5.0 STRUCTURAL DESIGN

The proposed PPA improvements do not affect the existing Vauxhall Road bridge over Route 22 nor the existing Route 22 bridge over the Elizabeth River.

6.0 ACCESS IMPACTS

The proposed improvements do change present access to properties within the project limits. Driveway access to properties along the proposed, deceleration and acceleration lanes would have to be grandfathered. There are five driveway access locations that are to be revoked without impact to the present operation of the property. They are Block 1702, Lot 2.01, three (3) on Block 1703, Lot 1 and Block 1806, Lot 1. Two drive access locations are to be modified on Block 1703, Lot 1 and Block 1806, Lot 2. One new driveway access is to be provided on Block 1702, Lot 2.01.

Revocation of the south driveway access along Sayre Road on Block 1703, Lot 1 cannot be done until the proposed building expansion takes place. The delivery truck has to use this driveway to make deliveries.

7.0 PROPOSED TRAFFIC STAGING AND MPT

The operational characteristics of the Route 22 WB exit and entry ramps require the proposed improvements be constructed adjacent active travel lanes with the work zone being protected by construction barrier. Construction barrier can be placed to provide 24 feet between the median barrier and construction barrier and provide a 16-foot wide work zone. Pavement milling and final paving of the improvement must be performed by nighttime construction to provide sufficient work area and ensure the quality of the new bituminous concrete surface course.

8.0 UTILITY IMPACTS

The deceleration and acceleration lanes construction along the Route 22 WB roadway will impact existing utility poles within the border area. Fifteen (15) utility poles will require relocation. No other overhead utility impacts are anticipated. Underground utility impacts are to be investigated during final design.

9.0 DRAINAGE

The existing system of drainage inlets and storm drains will be maintained and modified to accommodate construction of the acceleration and deceleration lanes and exit ramp improvements. The improvements are not expected to disturb one or more acre of land nor increase the area of impervious surface by more than one-quarter acre. Therefore; the improvements will not be required to attenuate the peak stormwater runoff or remove 50% - 80% of the Total Suspended Solids in the runoff.

10.0 GEOTECHNICAL ENGINEERING

Geotechnical engineer investigations were not performed as part of the Alternative Analysis. A subsurface investigation program will be initiated during the final design of the project.

11.0 CONSTRUCTIBILITY

The general staged construction sequencing described in Section D-7.0, Proposed Traffic Staging and MPT, indicates the proposed improvements are constructible while maintaining traffic through the project area. The urban environment of the project makes construction access, construction and material storage more complicated, however, these conditions are not uncommon for construction work zones in the State of New Jersey.

12.0 SURVEY/BASE PLANS

Survey and photogrammetric services for the development of topographic mapping for study of improvement plans as part of the alternatives analysis were performed by GEOD Corporation. The services included establishing primary horizontal and vertical control for the aerial mapping of the project corridor and compiling topographic digitized mapping at 30-scale for use in the 100-scale engineering studies of alternative improvements to the Vauxhall Road interchange.

Primary horizontal and vertical control was established for the project control to locate points for the spatial orientation of the aerial photography. Existing 1st and 2nd order monuments were recovered to serve as primary control and to establish horizontal traverse points and vertical benchmarks for control of the project.

The topographic mapping was digitized at scale 1” = 30’ with one-foot contour intervals using Digital Terrain Modeling (DTM) procedures. The 30-scale base mapping was reduced to 100-scale in the CADD files for use in the alternative improvement studies. The planimetric detail

contains all land use features visible on or interpretable from the aerial photography. The features shown are consistent with the detail mapping requirements of the NJDOT and are shown on separate CAD levels with symbols and line types identical to the NJDOT standard legend for engineering plans.

Municipal tax maps were obtained from Union Township and the property lines added to the topographic base mapping on a “best fit” basis, holding the ROW line of Route 22 and local roads.

13.0 JURISDICTIONAL ISSUES

There are no jurisdictional issues related to the proposed improvements.

14.0 PEDESTRIAN AND BICYCLE COMPATIBILITY

Pedestrian activity along Route 22 is sporadic in the vicinity of the Vauxhall Road interchange. Sidewalks are intermittently provided along both sides of Route 22 within the project limits. There are no at-grade pedestrian crossings of Route 22 within the 4-mile corridor from the Garden State Parkway in Union Township to Meeker Avenue in the City of Newark. Pedestrian walkways are provided on all roads crossing over or under Route 22 including the Vauxhall Road overpass. Stairways are provided at the Vauxhall Road overpass however, these stairways are not in good condition and require maintenance. A new sidewalk is added along Route 22 westbound from west of Vauxhall Road bridge to Sayre Road.

No bicycle facilities are provided along the 4-mile Route 22 corridor limits noted above. The average annual daily traffic (AADT) volumes within the corridor range from approximately 80,000 to 95,000 vehicles depending upon the section of Route 22. These volumes represent a high level of traffic activity within the corridor. Travel speeds are generally high with a corridor-wide speed limit of 45 miles per hour. Physically, the Route 22 corridor has many sections with limited or no shoulders. In addition, because of the number of driveways accessing properties fronting on Route 22 and the number of high volume ramps, potential for conflict between bicycles and motor vehicles is high. All of these factors limit the potential for bicycles to operate safely within the corridor.

15.0 CONTEXT SENSITIVE DESIGN

Context Sensitive Design (CSD) is an approach to transportation projects that looks beyond the pavement to the role the facility plays in enhancing communities and surrounding natural environment. The Route 22 and Vauxhall Road Interchange Improvement studies included CSD through project planning and conceptual design process by collaborating with the local community, elected officials, and various other local stakeholders to respond to their needs and values while improving safety and mobility.

The recommended PPA was developed to minimize impacts to adjacent properties. During the community involvement process, it was indicated that minimizing right-of-way impacts was an important concern. The basis for selection of the PPA included not only traffic operations, safety and cost factors but also impacts to the local community and input received at the public outreach, stakeholder meetings.

16.0 COMMUNITY SUPPORT

During development of the Alternative Analysis for the Route 22 WB roadway safety improvements from Vauxhall Road to West of Bloy Street, public information meetings were held with representatives of Union Township and Union County. Three (3) meetings were held with Township representatives. On February 15, 2006 two (2) alternative plans were presented for upgrading and/or reconfiguring the interchange ramps to improve safety and mobility. The strong opposition expressed by the Township representatives to the ROW impact to commercial property surrounding the interchange resulted in the NJDOT downsizing of the proposed improvements.

At the September 10, 2010 meeting a Preliminary Preferred Alternative was presented for adding an auxiliary lane along the Route 22 WB roadway between Gary Road and Vauxhall Road northbound exit ramp and a short deceleration lane and short acceleration lane along Route 22 WB at the Sayre Road intersection for right in and right out traffic movements. At the July 13, 2011 Public Information Center, held at the Union Township building, the Preliminary Preferred Alternative was presented to the public.

17.0 CONFORMANCE WITH STATE DEVELOPMENT AND REDEVELOPMENT PLAN

The purpose of the New Jersey State Development and Redevelopment Plan (the State Plan) is to coordinate planning activities and establish statewide planning objectives in the following areas: land use, housing, economic development, transportation, natural resource conservation, agriculture and farmland retention, recreation, urban and suburban redevelopment, historic preservation, public facilities and services, and intergovernmental coordination (N.J.S.A. 52:18A-200(f)). There are 24 statewide transportation polices, the first of which is concerned with maintenance and repair and states that *"The maintenance and repair of the existing transportation network is the highest transportation priority."* The proposed improvements to the Route 22 WB roadway at the Vauxhall Road Interchange are consistent with this statewide policy.

The State Plan's statewide policies are applied to the natural and built resources of the state through the designation of five Planning Areas. These Planning Areas reflect distinct geographic and economic units within the state and serve as an organizing framework for application of the Statewide Policies of the State Plan. The Project Study Area is entirely within the Metropolitan Planning Area (PA-1) as designated in the "State Development and Redevelopment Plan" (SDRP), adopted in 2001. Urban Centers and suburbs that are fully or almost fully developed characterize the PA 1 area. As a result, most of the future development within this planning area will be through redevelopment and reuse of properties. The SDRP envisions the creation of cooperative regional programs aimed at addressing traffic congestion management in PA I areas. The SDRP also identified public and private investment and reinvestment as a high priority in the PA area to support the existing infrastructure, facilities, and

services. The proposed improvements to the Route 22 WB roadway at the Vauxhall Road Interchange are consistent with the SDRP.

18.0 ENVIRONMENTAL CONCERNS, IMPACTS, CONSTRAINTS, MITIGATION AND COSTS

The environmental constraints within the Vauxhall Road Interchange were identified from the Categorical Exclusion Document prepared by NJDOT. Based on these findings, it has been determined that there might be a potential for involvement with hazardous waste or contaminated sites. Categorical Exclusion Document is presented in Appendix A.

19.0 COORDINATION WITH STAKEHOLDERS

As part of the Community Involvement component of the project development, two (2) meetings were held with representatives of Union Township to review alternative improvement plans for the Route 22 and Vauxhall Road Interchange. The Union Township representatives included the Township Administrator, Assistant Administrator, Engineer, Police and Planning Director.

The first Township Meeting was held on Wednesday, February 15, 2006 at 1:30 PM at the Union Township municipal building. The purpose of the meeting was to present two (2) alternative plans for improving the Vauxhall Road Interchange to address the project Purpose and Need. The Township representatives objected to both alternatives plans because of ROW and driveway access impacts to several commercial establishments surrounding the interchange including the taking of a restaurant facility.

The second meeting was held on Friday, September 10, 2010 at 2:00 P.M. at the Union Township municipal building. The purpose of the meeting was to present the Preliminary Preferred Alternative to the Township representatives. The Preliminary Preferred Alternative was favorably received by the Township representatives. NJDOT requested if the Township could provide support in getting the ROW required from Block 1806 Lot 3.02. The Township indicated if it is not a franchise business then the Township could potentially support. Township confirmed from the Tax Department that the gas station is owned by Exxon franchise located in Houston, Texas.
NJDOT requested a Resolution of Support from the Township for the Preliminary Preferred Alternative. The Township stated it is the Township policy that the Resolution of Support will not be issued until the Public information Center (PIC) is completed. Subsequently, the PIC was conducted on Wednesday July 13, 2011 at Union Township Building.

20.0 DESIGN EXCEPTIONS

The recommended PPA does not satisfy all the roadway controlling design elements contained in the NJDOT Roadway Design Manual. Design exception approval will be required for the 2-foot left shoulder width of a land service highway, lack of a right shoulder, vertical clearance beneath the Vauxhall Road bridge, the westbound deceleration lane length at Sayre Road required to avoid reconstruction of the existing Vauxhall Road bridge, the westbound acceleration lane length at Sayre Road to avoid ROW taking and relocation of a commercial and

a substandard cross slope on Route 2 westbound business. The Design Exception Report will be prepared for the improvements.

21.0 PROJECT COMMITMENTS

There are no specific project commitments.

22.0 MAJOR OBSTACLES AND ISSUES

There are no major obstacles or issues relative to the construction of the recommended PPA.

23.0 PROJECT COST AND ROW ACQUISITION

The NJDOT Construction Cost Estimation Preparation Manual for Preliminary Design was used as the basis for developing the construction cost estimates in the Alternative Analysis. The cost estimate form for Reconstruction, Widening and Dualization in English Units was used for the proposed improvements. This form applies 7% of the Project Cost Subtotal for Maintenance of Traffic. The cost estimate summary for west of Vauxhall Road Sayre Road Alternative 1, Sayre Road Alternative 2 and Sayre Road Alternative 3 is included in the Alternatives Matrix.

The proposed improvement does require ROW acquisition.

The total estimated probable construction cost of the recommended PPA is $2.6 million, including overhead utility relocations, contingencies and construction engineering costs.

APPENDIX E

RIGHT-OF-WAY REPORT
&
ACESS IMPACT PLAN AND ACCESS IMPACT SUMMARY

NEW JERSEY DEPARTMENT OF TRANSPORTATION
ROUTE 22 WB FROM GARY ROAD TO WEST OF SAYRE ROAD SAFETY IMPROVEMENTS MILEPOST 56.0 TO MILEPOST 56.4

RIGHT OF WAY REPORT

Submitted to:

New Jersey Department of Transportation
P.O. Box 600
Trenton, NJ 08625-0600

Submitted by:

The Louis Berger Group, Inc.
412 Mount Kemble Avenue, P.O. Box 1946
Morristown, New Jersey 07962-1960

April, 2013

Route 22 WB from Gary Road to West of Sayre Road

Safety Improvements

Union Township, Union County

Right of Way Report

1. Project Location

The project location is the Vauxhall Road (CR 630) bridge (Structure No. 2004150) over NJ Route 22 (MP 56.2) located within the Township of Union in Union County. Existing Vauxhall Road is oriented in a northwest-southeast direction and crosses over Route 22 at a skew angle of 44 degrees. The existing overpass structure is in good condition and is rated not structurally deficient with a sufficiency rating of 76.6 in 2008. The project study limits extend along Route 22 in a west to east direction from 875 feet west of Vauxhall Road to the Gary Road intersection situated 1300 feet east of the bridge. Route 22 crosses the Elizabeth River at MP 56.5.

2. Proposed Improvements

Proposed improvements provide an auxiliary lane along Route 22 WB from Gary Road to the Vauxhall Road exit ramp. Typical section for Route 22 WB would consist of a 1 foot left shoulder, two (2) 11-foot through lanes and a 15-foot auxiliary lane and a 4-foot border area. A 4-inch gas main is located within the border area. A 10-foot wide Utility Easement is proposed adjacent to the existing ROW line for utility pole relocation with cross arms.

The improves also include provide a short deceleration lane and short acceleration lane along Route 22 WB at the Sayre Road intersection for right in and right out traffic movements. The typical section for the Route 22 WB deceleration lane would consist of a 1 foot left shoulder, two (2) 11-foot through lanes, 15-foot deceleration lane and 10-foot border area for utility poles and 4-foot sidewalk that requires ROW acquisition. The typical section for the Route 22 WB acceleration lane would consist of a 1 foot left shoulder, two (2) 11-foot through lanes, 13-foot acceleration lane and 7-foot border are for utility poles that can be constructed within the existing ROW.

3. ROW Description

Aarti's World Discount Liquor store is situated at Block 1703 and Lot 1. The typical section of Route 22 along this lot consist of a 1 foot left shoulder, two (2) 11-foot through lanes, 15-foot deceleration lane and 10-foot border area for utility poles and 4-foot sidewalk. This cross section requires the ROW line to be located 50 feet from the centerline which is 5 feet beyond the existing ROW line. Two utility poles are to be relocated along this property. The deceleration lane will reduce conflicts between through traffic exiting to southbound Vauxhall Road with traffic exiting and entering the liquor store situated between the Vauxhall Road overpass and Sayre Road. Proposed sidewalk will improve the safety of the pedestrians that use Vauxhall Road bridge to cross Route 22. Impacts to the property include relocation of the existing

business sign and a reduction in the building setback distance by five feet. Relocation of the existing business sign requires a construction easement.

Following improvements are proposed along the Block 1806, Lots 1, 2, 3.01, 3.02, 3.03 and 4 between Gary Road and Vauxhall Road.

This improvement includes the addition of an auxiliary lane along the Route 22 WB roadway between Gary Road and the Vauxhall Road exit ramp. Proposed roadway cross section along this segment of Route 22 WB is comprised of a 1-foot left shoulder, two (2) 11-foot wide through lanes, a 15-foot wide auxiliary lane, a 4-foot wide border area and a 10-foot Utility Easement for utility poles. The auxiliary lane will reduce conflicts between through traffic and traffic exiting Route 22 westbound at Vauxhall Road and the several commercial establishments that front along the westbound roadway.

Block 1806, Lot 1 has a Bar-B-Q restaurant and an Office furniture store. There are three utility poles along this lot. Two utility poles can be relocated within the existing ROW would require a Utility Easement for utility facilities to overhang this property. The third utility pole relocation requires a Utility Easement because of the existing 4-inch gas line between the proposed curb and the existing ROW that occupies the border area. A Utility Easement is required for the utility pole, utility facilities to overhang, including the right to construct, maintain, repair and replace overhead utility facilities and appurtenances, including the right to trim trees and remove vegetation as far as the line marked “Utility Easement Line”

Block 1806, Lot 2 has a Mediterranean Restaurant supply store. A Utility Easement is required for utility facilities to be located beyond the existing ROW line.

Block 1806, Lot 3.01 has Boost Mobile store. There is one utility pole along this lot. This utility pole has a cross arm, transformers and cables that transverse to another pole. Relocation of the utility pole requires a Utility Easement for utility facilities to be located beyond the existing ROW line and overhang the property.

Block 1806, Lot 3.02 has an Exxon gas station. There is one utility pole and a Guide Sign along this lot. Utility pole has a cross arm and transformer. Relocation of the utility pole requires a Utility Easement for utility facilities to be located beyond the existing ROW line and overhang the property. Relocation of the Guide Sign requires fee parcel. Impacts to the property include relocation of the gas price sign.

Block 1806, Lot 3.03 has a Crib and Teen Outlet store and a Steak House. There is one utility pole and a fire hydrant along this lot. This utility pole has a cross arm and transformers. Relocation of the utility pole and the fire hydrant requires Utility Easement for utility facilities to be located beyond the existing ROW line and overhang the property.

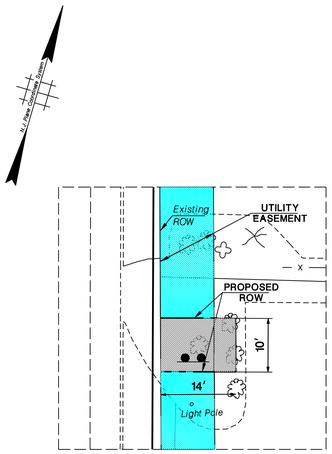
Block 1806, Lot 4 has Moore-Tec Industries Inc. There is one utility pole along this lot with a cross arm. Relocation of the utility pole can be done within the existing ROW. A Utility Easement is required for utility facilities to overhang this property.

ROW Impact Plan, Typical Sections and the utility photographs are attached.

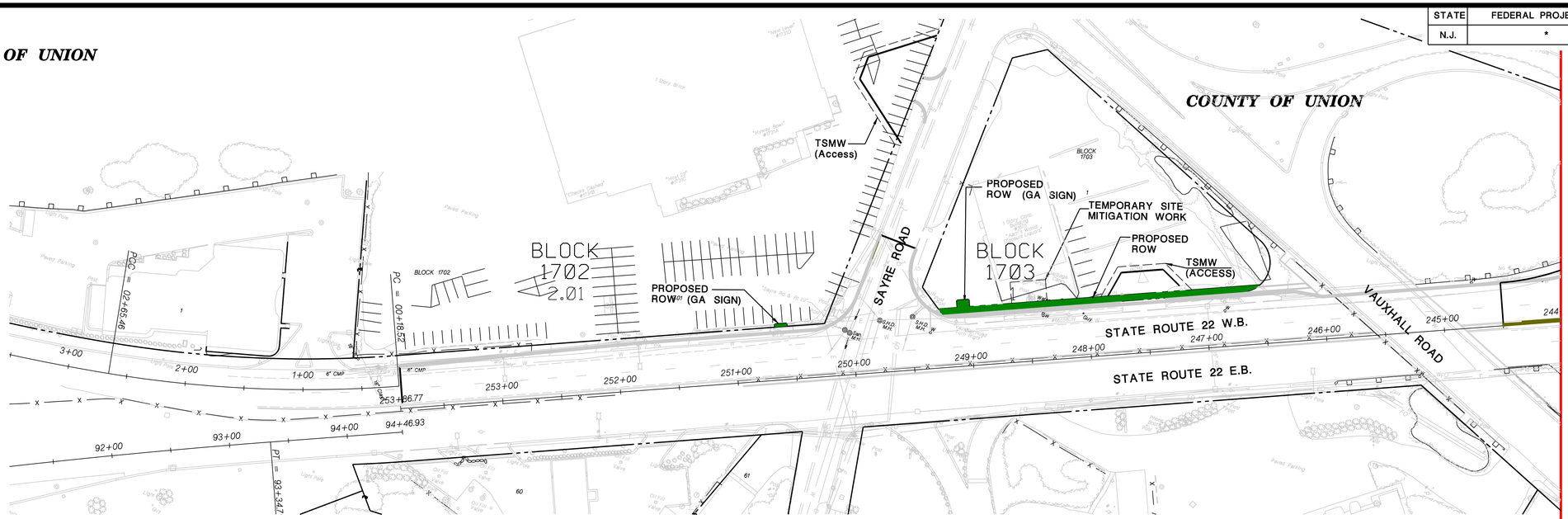
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N.J.	*

TOWNSHIP OF UNION

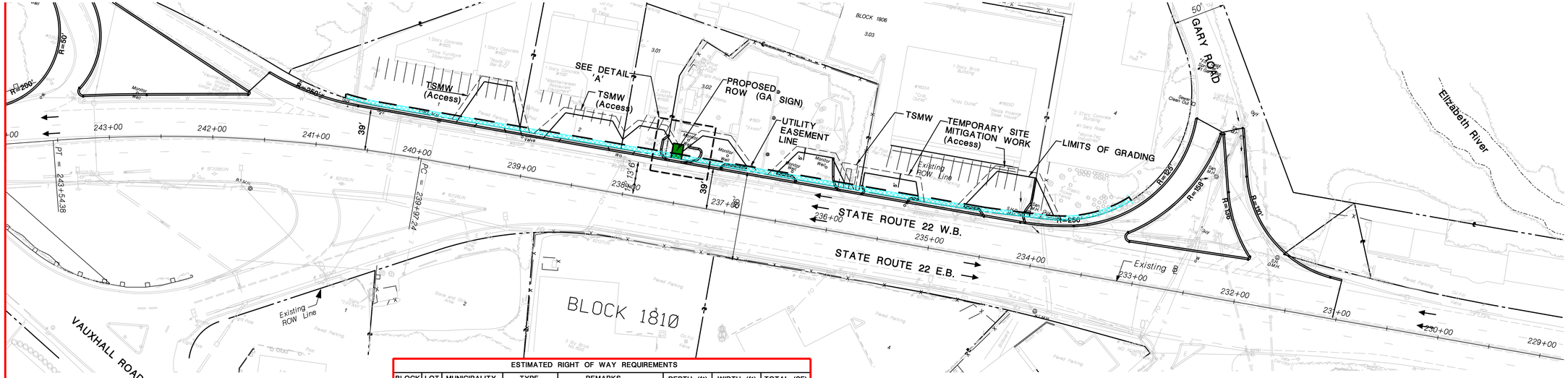
COUNTY OF UNION



DETAIL 'A'
N.T.S.



MATCH LINE STA. 244+00



MATCH LINE STA. 244+00

LEGEND

- PROPOSED RIGHT-OF-WAY
- PROPOSED UTILITY EASEMENT
- TEMPORARY SITE MITIGATION WORK LINE

ESTIMATED RIGHT OF WAY REQUIREMENTS

BLOCK	LOT	MUNICIPALITY	TYPE	REMARKS	DEPTH (ft)	WIDTH (ft)	TOTAL (SF)
1702	2.01	TWP. OF UNION	COMMERCIAL	PARTIAL ACQUISITION	2.5	10	25
				TSMWA (Access)	52	105	3392
1703	1	TWP. OF UNION	COMMERCIAL	PARTIAL ACQUISITION	5	274	1370
			COMMERCIAL	PARTIAL ACQUISITION	6	10	60
			COMMERCIAL	TSMW	18	30	540
			COMMERCIAL	TSMW (Access)	24	78	1423
1806	1	TWP. OF UNION	COMMERCIAL	UTILITY EASEMENT	10	172	1720
				TSMW (Access)	41	66	2408
	2	TWP. OF UNION	COMMERCIAL	UTILITY EASEMENT	10	100	1000
				TSMW (Access)	25	86	2242
	3.01	TWP. OF UNION	COMMERCIAL	UTILITY EASEMENT	10	43	430
				TSMW (Access)	30	43	1217
	3.02	TWP. OF UNION	COMMERCIAL	PARTIAL ACQUISITION	14	10	140
				UTILITY EASEMENT	10	190	1900
				TSMW (Access)	31	91	2001
				TSMW (Access)	32	89	2037
				TSMW	24	15	361
	3.03	TWP. OF UNION	COMMERCIAL	UTILITY EASEMENT	10	167	1670
				TSMW (Access)	23	64	1385
				TSMW (Access)	45	72	2520
	4	TWP. OF UNION	COMMERCIAL	UTILITY EASEMENT	10	99	990
				TSMW (Access)	43	28	722
						TOTAL	29,553

DRAFT

50 0 50 100

C-
C-

NEW JERSEY DEPARTMENT OF TRANSPORTATION

ROW IMPACT PLAN

ROUTE 22 WESTBOUND
FROM GARY ROAD TO W. OF SAYRE ROAD
SAFETY IMPROVEMENTS
(FROM M.P. 56.0 TO M.P. 56.4)

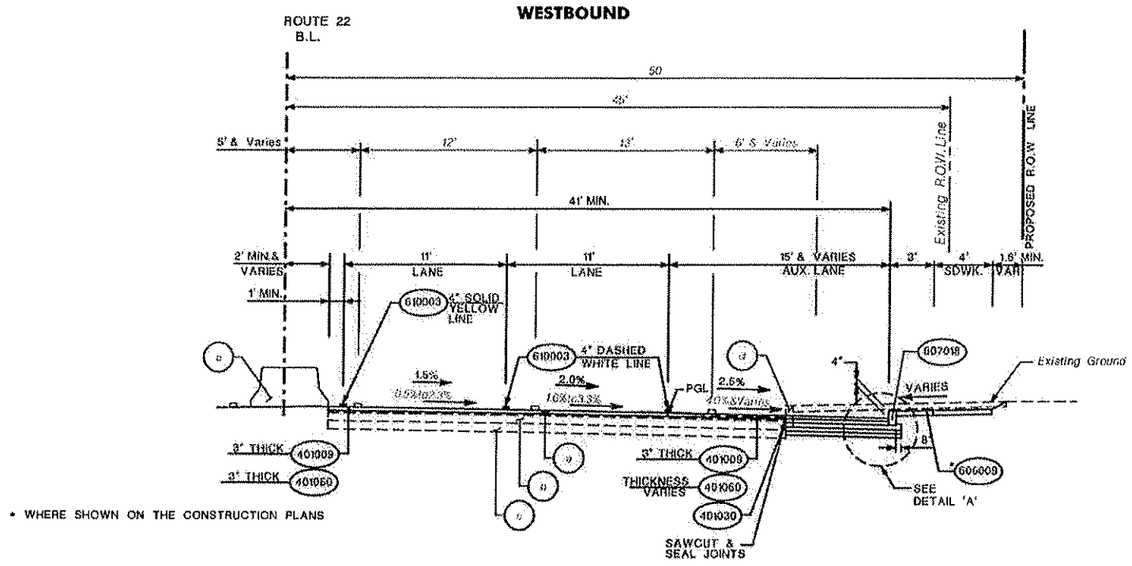
THE LOUIS BERGER GROUP, INC.
MORRISTOWN, NEW JERSEY

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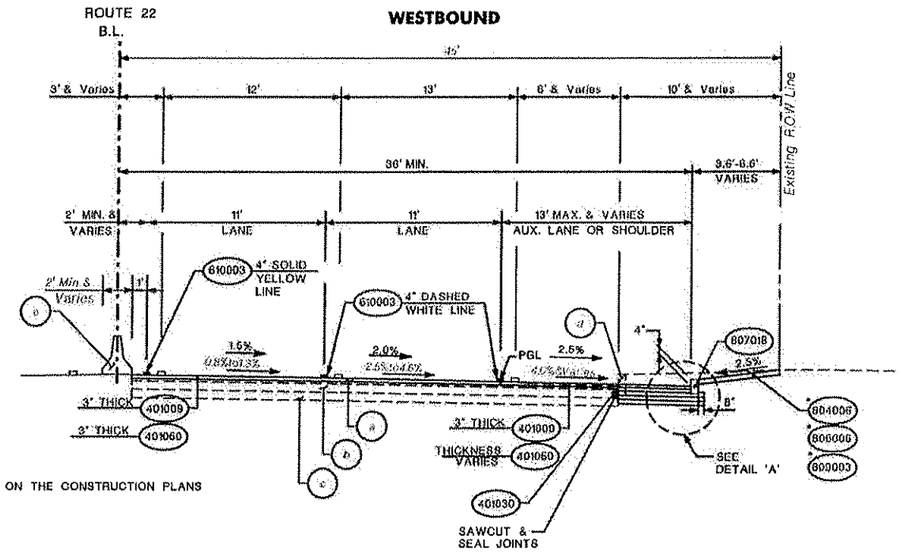
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STATE	FEDERAL PROJECT NO.
N.J.	



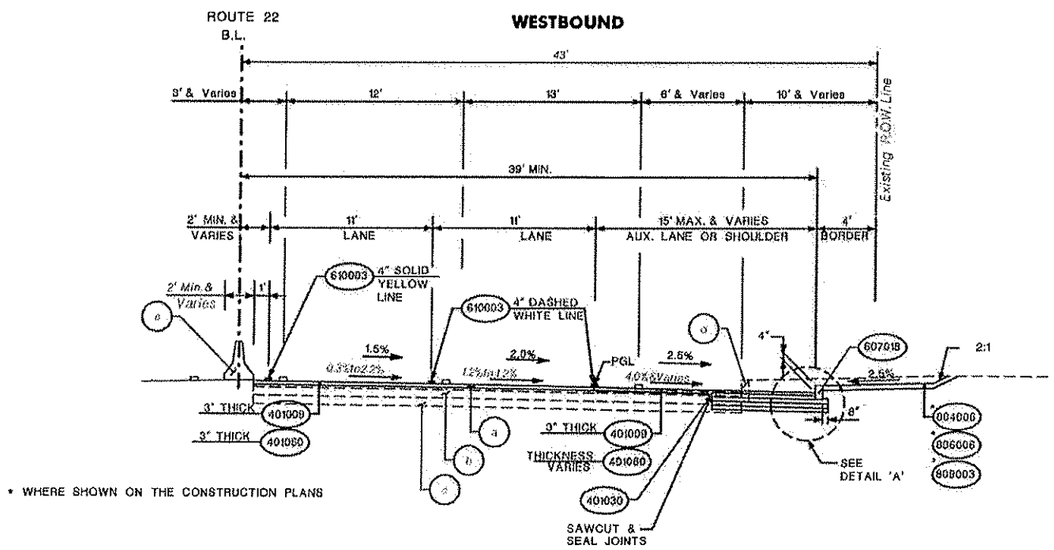
* WHERE SHOWN ON THE CONSTRUCTION PLANS

ROUTE 22 WESTBOUND AT VAUXHALL RD
STA. 246+09± TO STA. 249+32±
N.T.S.

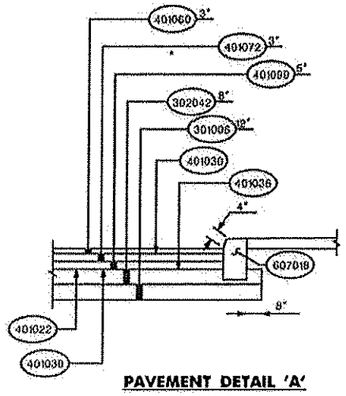


* WHERE SHOWN ON THE CONSTRUCTION PLANS

ROUTE 22 WESTBOUND AT VAUXHALL RD
STA. 249+32± TO STA. 253+85±
N.T.S.



* WHERE SHOWN ON THE CONSTRUCTION PLANS



PAVEMENT DETAIL 'A'
N.T.S.

Existing Materials	
Item No.	Description
a	Pavement Type MA-8C Top Course, 4" and Variable Thickness
b	Pavement Type Concrete Base Course, 10" Thick
c	Subbase
d	9"x16" Concrete Vertical Curb
e	Existing 23"x32" Concrete Barrier Curb

PROPOSED MATERIALS

ITEM NO.	DESCRIPTION
202021P	REMOVAL OF PAVEMENT
305008P	SUBBASE
302042P	DENSE-GRADED AGGREGATE BASE COURSE, 8" THICK
401009P	HMA MILLING, 3" OR LESS
401022M	GEOTEXTILE, PAVING FABRIC
401030M	TACK COAT
401036M	PRIME COAT
401060M	HOT MIX ASPHALT 12.5M76 SURFACE COURSE
401072M	HOT MIX ASPHALT 12.5M64 INTERMEDIATE COURSE
401099M	HOT MIX ASPHALT 25M64 BASE COURSE
606009P	HOT MIX ASPHALT SIDEWALK, 5½" THICK
607018P	9"x16" CONCRETE VERTICAL CURB
610003M	TRAFFIC STRIPES, LONG LIFE EPOXY RESIN 4"
804006P	TOPSOILING, 4" THICK
806006P	FERTILIZING AND SEEDING, TYPE A-3
809003M	STRAW MULCHING

DRAFT

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27033700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

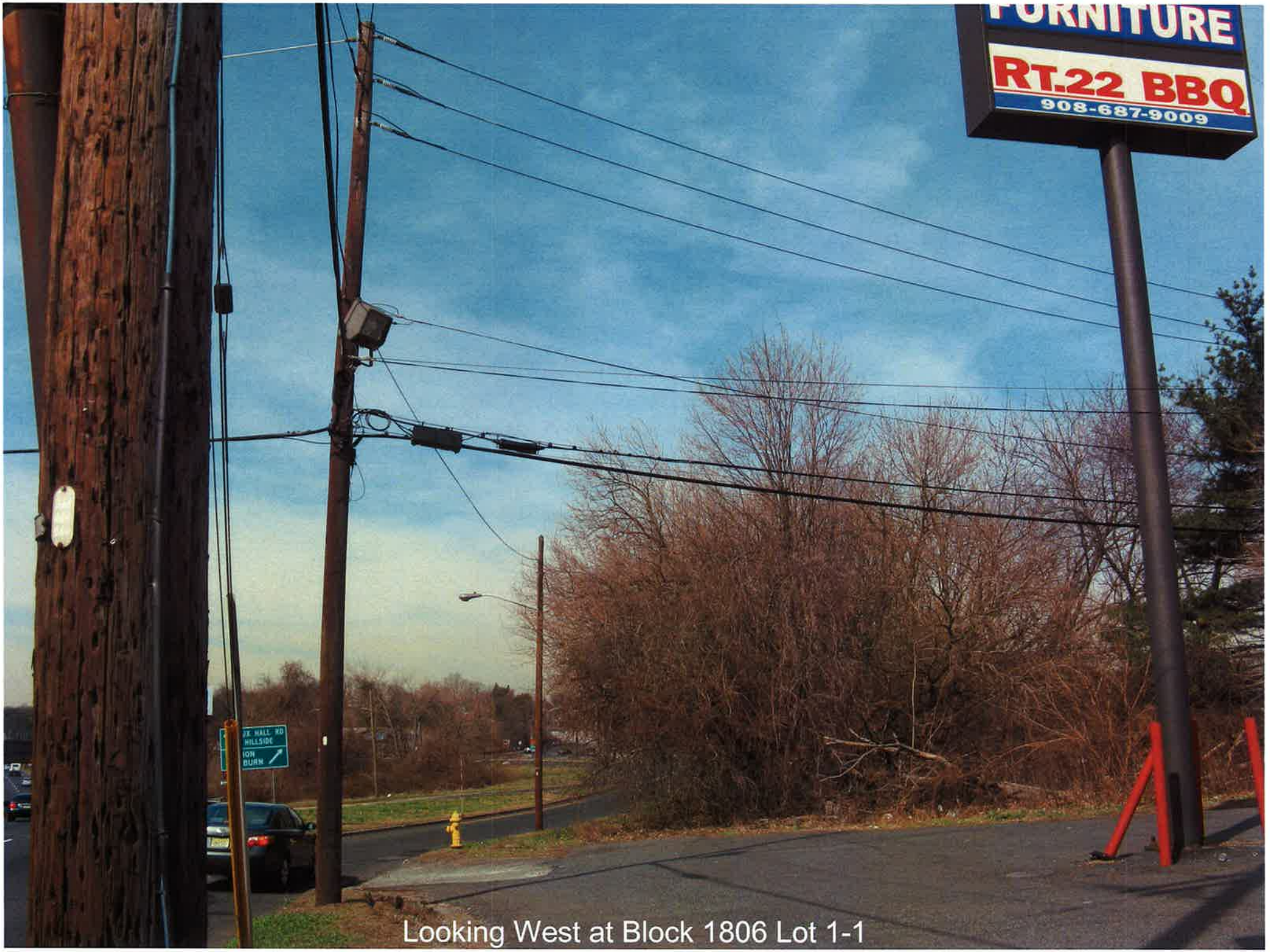
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Looking West at Block 1703 Lot 1



Looking West at Block 1703 Lot 1-2



Looking West at Block 1806 Lot 1-1



Looking West at Block 1806 Lot 1-2



Looking West at Block 1806 Lot 1-3



Looking West at Block 1806 Lot 3.01



Looking West at Block 1806 Lot 3.02-1


EXXON
Diesel
1.89
209
219
Looking West at Block 1806 Lot 3.03



Looking West at Block 1806 Lot 3.03-2



Looking West at Block 1806 Lot 4

U.S. Route 22 Union Township

Contract No. 560058003

Access Impact Summary

Route 22 Westbound Vicinity of Vauxhall Road to West of Bloy Street, Safety Improvements

No	Block	Lot	Name Of The Owner Of Record And Address	Lot Address	Tenant Name And Address	Lot Type / Use	No. Of Allowable Access Points	Type Of Access Alteration	Access Level	No. Of Existing Driveways	Location Of Existing Driveways	Baseline Sta. Of Existing Driveways	Existing Access Violations	Corresponding Access Code	Number Of Proposed Driveway	Location Of Proposed Driveway	Baseline Sta. Of Proposed Driveway	Proposed Driveway Work Beyond The State ROW Line	Auto Turn Check Vehicle	Required Waivers For The Proposed Recommended Driveways	Discussion On 1) Overall Access Impact To The Property, 2) Justification For The Required Waivers For Proposed Recommended Driveways (Attach Separate Word Document If Needed)
1	1806	3.03	Samuel Casternovia 1599 Route 22, West, Union, NJ 07083	1565 Route 22 West Union, NJ 07083	Kids Outlet / Crib Outlet / Reida Picanna Steak House	Non-conforming/ Commercial	1- Two Way OR 2-One Way	Adjustment of Access	3	2	Route 22 Westbound	234+29.00	Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	16:47-3.5 (a.4), (e.6) 16:47-3.8 (l.1)	2	Route 22 Westbound	234+31.78	Yes	SU	Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	1) Property driveways need to be adjusted for proposed widening. The lot is currently being used as a commercial property. Site impacts will not affect exisitng parking stalls or internal circulation. 2) The distance between the centerline of the existing developed lot and the centerline of the adjacent existing developed lot is less than the minimum conforming spacing distance. Proposed driveway slopes are greater than 4%.
											Route 22 Westbound	235+53.87	Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	16:47-3.5 (a.4), (e.6) 16:47-3.8 (l.1)		Route 22 Westbound	235+51.00		SU	Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	
2	1806	3.02	Keshav 3, Inc. 1575 Route 22, West, Union, NJ 07083	1575 Route 22 West Union, NJ 07083	Exxon	Non-conforming/ Commercial	1- Two Way OR 2-One Way	Adjustment of Access	3	2	Route 22 Westbound	236+10.90	Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	16:47-3.5 (a.4), (e.6) 16:47-3.8 (l.1)	2	Route 22 Westbound	236+15.80	Yes	SU	Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	1) Property driveways need to be adjusted for proposed widening. The lot is currently being used as a commercial property. Site impacts will not affect exisitng parking stalls or internal circulation. The existing guide sign needs to be relocated. The existing Exxon sign will also need to be relocated. 2) The distance between the centerline of the existing developed lot and the centerline of the adjacent existing developed lot is less than the minimum conforming spacing distance. Proposed driveway slopes are greater than 4%, but match or are better than existing driveway slopes.
											Route 22 Westbound	237+30.98	Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	16:47-3.5 (a.4), (e.6) 16:47-3.8 (l.1)		Route 22 Westbound	237+29.64		SU	Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	
3	1806	3.01	Twenty Two 201, LLC 1599 Route 22, West, Union, NJ 07083	1585 Route 22 West Union, NJ 07083	Boost Mobile	Non-conforming/ Commercial	1- Two Way OR 2-One Way	Adjustment of Access	3	1	Route 22 Westbound	237+79.60	Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	16:47-3.5 (a.4), (e.6) 16:47-3.8 (l.1)	1		237+79.25	Yes	SU	Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	1) Property driveways need to be adjusted for proposed widening. Distance from the face of the building to edge of travel lane will be reduced from 46-foot to 40-foot. The lot is currently being used as a commercial property. Site impacts will not affect exisitng parking stalls but there will be an impact to Non-Encroaching parking stalls. 2) The distance between the centerline of the existing developed lot and the centerline of the adjacent existing developed lot is less than the minimum conforming spacing distance. Proposed driveway slopes are greater than 4%, but match or are better than existing driveway slopes.
4	1806	2	Spartans 3, LLC 1597 Route 22, West, Union, NJ 07083	1597 Route 22 West Union, NJ 07083	Mediterranean Restaurant Equipment	Non-conforming/ Commercial	1- Two Way OR 2-One Way	Modification of Access	3	1	Route 22 Westbound	238+44.66	Spacing Distance, Driveway Width is greater than 50', Driveway Slope, Access Point in Auxiliary Lane	16:47-3.5 (a.4), (e.6) 16:47-3.8 (l.1)	1	Route 22 Westbound	238+44.66	Yes	SU	Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	1) Property driveways need to be adjusted for proposed widening. Distance from the face of the building to edge of travel lane will be reduced from 44-foot to 38-foot. The lot is currently being used as a commercial property. Site impacts will not affect exisitng parking stalls but there will be an impact to Non-Encroaching parking stalls.. 2) The distance between the centerline of the existing developed lot and the centerline of the adjacent existing developed lot is less than the minimum conforming spacing distance. Proposed driveway slopes are greater than 4%, but match or are better than existing driveway slopes.
5	1806	1	Valdir Rizardi 1605 Route 22, West, Union, NJ 07083	1605 Route 22 West Union, NJ 07083	Route 22 Bar-B-Q / Office Furniture Showroom	Non-conforming/ Commercial	1- Two Way OR 2-One Way	Adjustment of Access	3	2	Route 22 Westbound	239+35.21	Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	16:47-3.5 (a.4), 16:47-3.8 (l.1)	1	Route 22 Westbound	239+36.80	Yes	SU	Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	1) Property driveways need to be adjusted for proposed widening. The lot is currently being used as a commercial property. Site impacts will not affect exisitng parking stalls or internal circulation. The lot exceeds the number of allowable access points. Access to the driveway on the Route 22 WB ramp to be revoked. 2) The distance between the centerline of the existing developed lot and the centerline of the adjacent existing developed lot is less than the minimum conforming spacing distance. Proposed driveway slopes are greater than 4%, but match or are better than existing driveway slopes.
								Revocation of Access			Route 22 Westbound Ramp to Vauxhall Road	240+99.36	Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	16:47-3.5 (a.4), (e.6) 16:47-3.8 (l.1)						Spacing Distance, Driveway Slope, Access Point in Auxiliary Lane	

U.S. Route 22 Union Township

Contract No. 560058003

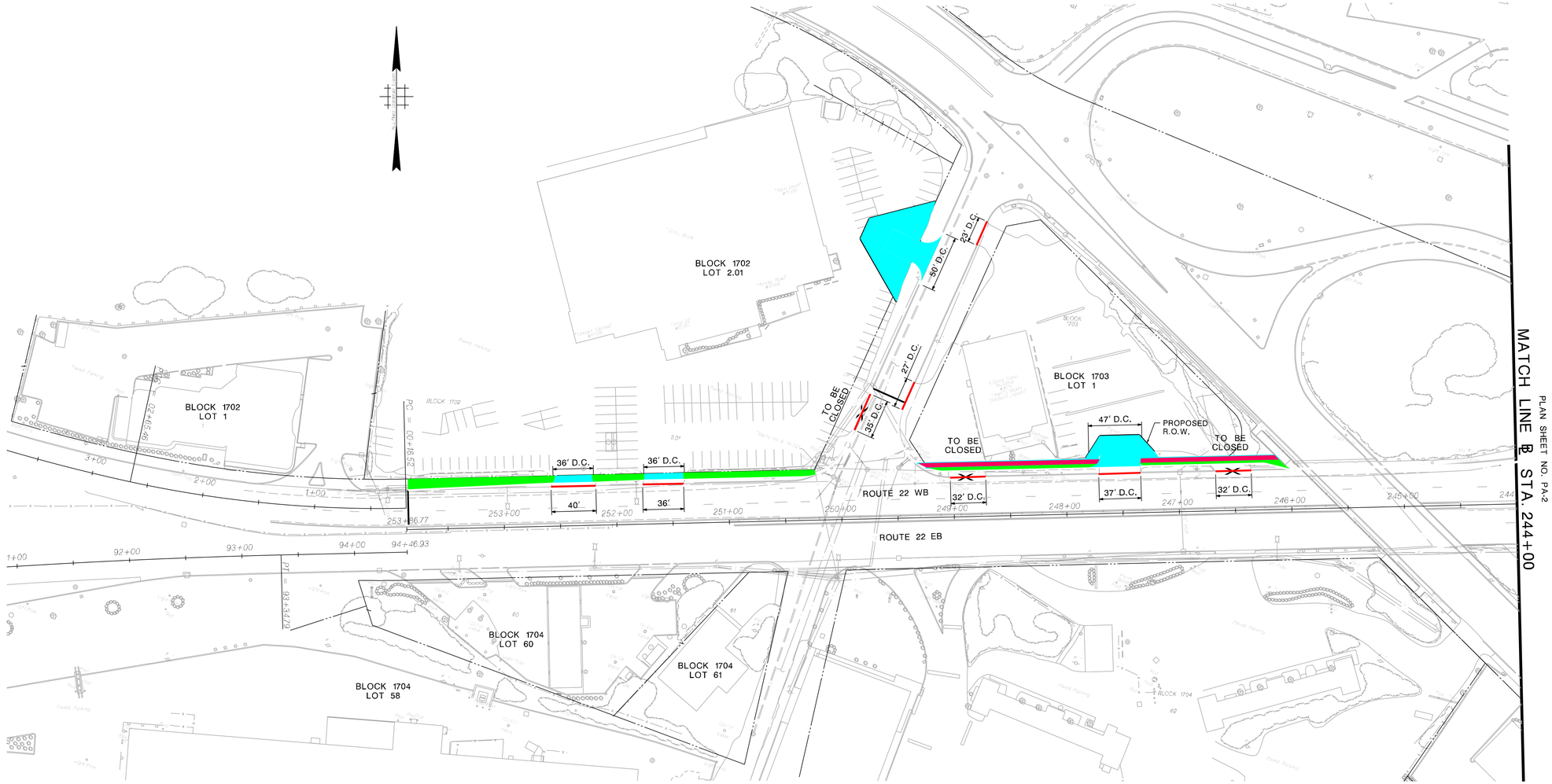
Access Impact Summary

Route 22 Westbound Vicinity of Vauxhall Road to West of Bloy Street, Safety Improvements

No	Block	Lot	Name Of The Owner Of Record And Address	Lot Address	Tenant Name And Address	Lot Type / Use	No. Of Allowable Access Points	Type Of Access Alteration	Access Level	No. Of Existing Driveways	Location Of Existing Driveways	Baseline Sta. Of Existing Driveways	Existing Access Violations	Corresponding Access Code	Number Of Proposed Driveway	Location Of Proposed Driveway	Baseline Sta. Of Proposed Driveway	Proposed Driveway Work Beyond The State ROW Line	Auto Turn Check Vehicle	Required Waivers For The Proposed Recommended Driveways	Discussion On 1) Overall Access Impact To The Property, 2) Justification For The Required Waivers For Proposed Recommended Driveways (Attach Separate Word Document If Needed)
6	1703	1	RT, Inc. 1675 Route 22, West, Union, NJ 07083	1675 Route 22 West Union, NJ 07083	Aarti's World Discount Liquors	Non-conforming/ Commercial	1- Two Way OR 2-One Way (Route 22)	Revocation of Access	3	5	Route 22 Westbound	246+51.28	Driveway Slope	16:47-3.5 (a.4), 16:47-3.8 (l.1)	3			Yes			1) Property driveways need to be adjusted for proposed widening. The lot is currently being used as a commercial property. Site impacts will not affect existing parking stalls or internal circulation, but will affect the delineation pad in the driveway. The non-conforming lot exceeds the number of allowable access points. Access to eastermost and westernmost driveways on Route 22 WB to be revoked. 2) The property owner has approved site improvement plans that include driveway improvements that are currently on hold. The owner has requested that existing driveways on Sayre Road remain for delivery vehicles until site improvements are made. Proposed driveway slope on Route 22 is greater than 4%, but matches the existing driveway slope. The northernmost existing driveway slope on Sayre Road exceeds 8%. The northernmost existing driveway curbline opening on Sayre Road is less than 24'.
								Modification of Access			Route 22 Westbound	247+52.39	Driveway Slope, Access Point in Deceleration Lane	16:47-3.8 (l.1), 16:47-3.5 (e.6)		Route 22 Westbound	247+55.68 (Rt. 22)		WB-40	Driveway Slope, Access Point in Deceleration Lane	
								Revocation of Access			Route 22 Westbound	248+87.27	Driveway Slope	16:47-3.5 (a.4), 16:47-3.8 (l.1)							
							1- Two Way OR 2-One Way (Sayre Road)				Sayre Road	248+69.82 (Rt. 22)	Spacing Distance, Curbline Opening, Driveway Slope	16:47-3.5 (a.4), 16:47-3.8 (d.2), 16:47-3.8 (l.1)		Sayre Road	248+69.82 (Rt. 22)	No		Spacing Distance, Curbline Opening, Driveway Slope	
											Sayre Road	249+38.48 (Rt. 22)	Spacing Distance	16:47-3.5 (a.4)		Sayre Road	249+38.48 (Rt. 22)	No		Spacing Distance	
7	1702	2.01	Hy-Way Bowl Corp % D Williams 1731 Route 22 West Union, NJ 07083	1731 Route 22 West Union, NJ 07083	Hyway Bowl / Crecks Cashed / Hoyt 22 / Next Level	Non-conforming/ Commercial	1- Two Way OR 2-One Way (Route 22)	Adjustment of Access	3	3	Route 22 Westbound	251+58.15	Driveway Slope, Access Point in Acceleration Lane	16:47-3.8 (l.1), 16:47-3.5 (e.6)	3	Route 22 Westbound	251+57.05	Yes	SU	Driveway Slope, Access Point in Acceleration Lane	1) Property driveways need to be adjusted for proposed widening. The lot is currently being used as a commercial property. The driveway on Sayre Road violates spacing requirements and is proposed to be moved further away from Route 22. Existing parking stalls at the proposed driveway location will be moved to the site of the existing driveway location. 2) Proposed roadway work on Route 22 WB to meet at existing driveway. The existing Route 22 driveway slopes currently exceed 4%. The proposed Sayre Road driveway slope is 8% to minimize site impacts to parking stalls and internal circulation.
								Adjustment of Access			Route 22 Westbound	252+37.86	Driveway Slope, Access Point in Acceleration Lane	16:47-3.8 (d.2), 16:47-3.5 (e.6)		Route 22 Westbound	252+37.86		SU	Driveway Slope, Access Point in Acceleration Lane	
							1- Two Way OR 2-One Way (Sayre Road)	Change of Access (Revoke & New)			Sayre Road	249+79.63 (Rt. 22)	Spacing Distance, Driveway Slope	16:47-3.5 (a.4), 16:47-3.8 (l.1)		Sayre Road	249+15.02 (Rt. 22)	Yes	SU	Driveway Slope	

UNION TOWNSHIP

UNION COUNTY



LEGEND:

- EXISTING DRIVEWAY
- PROPOSED DRIVEWAY
- TOP SOIL AND SEEDED AREA
- PROPOSED SIDEWALK
- D.C. DEPRESSED CURB
- EXISTING RIGHT OF WAY
- L.O.P. LIMIT OF PAVEMENT
- PROPOSED RIGHT OF WAY

50′ 0 50′ 100′

NEW JERSEY DEPARTMENT OF TRANSPORTATION

PROJECT ACCESS PLAN

ROUTE 22
CONTRACT NO. 560058003

SCALE 1" = 50′ APRIL 2013

PREPARED BY: Hong Y. Sun

New Jersey Professional Engineer License No. 47342

PREPARED FOR:

1

ID= $USER$ date= 8/22/2013 1:52:33 PM scale: AS SHOWN

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UNION TOWNSHIP

UNION COUNTY

GARY ROAD

BLOCK 1806
LOT 5

BLOCK 1806
LOT 8

BLOCK 1806
LOT 3.03

BLOCK 1806
LOT 4

BLOCK 1806
LOT 3.01

BLOCK 1806
LOT 3.02

UTILITY
EASEMENT

BLOCK 1806
LOT 2

PROPOSED
R.O.W.

45' D.C.

44' D.C.

BLOCK 1806
LOT 1

TO BE
CLOSED

L.O.P.

31'

59'

35' D.C.

40' D.C.

45' D.C.

44'

36'

ROUTE 22 WB

ROUTE 22 EB

MATCH LINE ℄ STA. 244+00
PLAN SHEET NO. PA-1

239+00
240+00
241+00
242+00
243+00
231+00
232+00
233+00
234+00
235+00
236+00
237+00
238+00

BLOCK 1810
LOT 5

BLOCK 1806
LOT 1

BLOCK 1806
23

BLOCK 1806
LOT 3

N. SUNSET PL.

HIGHLAND AVENUE

BLOCK 1810
LOT 2

BLOCK 1810
LOT 3

BLOCK 1810
LOT 4

BLOCK 1810
LOT 1

VAUX HALL ROAD

LEGEND:

	EXISTING DRIVEWAY
	PROPOSED DRIVEWAY
	TOP SOIL AND SEEDED AREA
	PROPOSED SIDEWALK
D.C.	DEPRESSED CURB
	EXISTING RIGHT OF WAY
L.O.P.	LIMIT OF PAVEMENT
	PROPOSED RIGHT OF WAY

50′ 0 50′ 100′

NEW JERSEY DEPARTMENT OF TRANSPORTATION

PROJECT ACCESS PLAN

ROUTE 22
CONTRACT NO. 560058003

SCALE 1" = 50′ APRIL 2013

PREPARED BY: Hong Y. Sun

New Jersey Professional Engineer License No. 47342

PREPARED FOR:

2

ID= $USER$ date= 8/22/2013 2:23:13 PM scale: AS SHOWN

file= V:\Operations\034\Route 22 WB PE\Deliverables\Drawings\Sheet Files\23-Project Access Plans\Access-2.dgn

APPENDIX F

INITIAL RIGHT-OF-WAY ESTIMATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MEMORANDUM

TO: Robert Britton,
Project Funding Section

FROM: Feraidoon Kashani, Manager
Northern District (prepared by Mr. Robert J. Mc Gill)

DATE: August 13, 2013

PHONE: 973-601-6746

SUBJECT: Right of Way Cost Estimate
Route 22 Westbound & Vauxhall Road, Safety Improvements
Job No. 2200168

Attached is the report requested.

The estimated amount is $303,000. This estimate assumes that the temporary site mitigation work area on Block 1806, Lots 3.03, 3.01, 2 and 1 do not affect the parking. That this work will be done during off hours for these businesses and that those businesses will not lose any parking during business hours. This also applies to Block 1703, Lot 1 and Block 1702, Lot 2.01. Please add this language to the description of taking. Based upon information provided to me, the sign on Block 1806, Lot 3.02 (Exxon gas station), will be moved by the State's contractor at the State's expense, if it needs to be moved. Also, the sign on Block 1703, Lot 1 (the liquor store) will be moved by the State's contractor at the State's expense. Also, this sign appears to be in poor physical condition and may have to be replaced with a new ID sign.

Relocation:
Please Note: The ID signs on the Exxon gas station and the parcel that is improved with a liquor store will be moved by the State's contractor, if it needs to be moved.

Environmental:

Block 1806, Lot 3.02 is a gas station.

Maps:

The maps are too small. It is difficult to tell where the buildings and signs are located. The maps should be more clear.

Vacant Land Sales

1. Address: 1305 - 1313 Morris Avenue, Union, Book 5817/5833, Page 126/128 , Consideration $1,200,000 + $500,000 plus $15,000 estimated demolition costs which reflects $23.22/SF plus remediation & demolition costs (contamination) closed gas station, Deed Date 5/10/10 / 10/19/11

2. Address: 1789 Springfield Avenue, New Providence, Book 5958, Page 614, Consideration $450,000 plus $20,000 estimated demolition costs which reflects $23.32/SF (contamination, former gas station), Block 10, Lot 5, Deed Date 6/17/13

3. Address: 555 South Avenue, Cranford, Book 5946, Page 819, Consideration $4,218,000 which reflects $19.18/SF, Deed Date 3/25/13, Block 511, Lot 1

4. Address: 440 North Avenue, Westfield, Book 5774, Page 200, Consideration $502,000 plus $30,000 estimated demolition costs which reflects $29.56/SF, Block 3202, Lot 7, Deed Date 7/29/09

5. Address: 1224 Route 22, Mountainside, Book 5834, Page 7, Consideration $950,000 which reflects $31.95/SF, Block 16A, Lot 42, Deed Date 09/03/2010

6. Address: 555 ST. George's Avenue, Rahway, Book 5913, Page 783, Consideration $287,000 which reflects $28.13/SF, Deed Date 6/29/12, Block 70, Lot 2

7. Address: 2420 Route 22 Center, Union, Book 5758, Page 804, Consideration $100,000 which reflects $16.26/SF, Deed Date 03/18/09 has a small telephone relay building on it

8. Address Route 22, Hillside, Deed Date 5/9/13, Book 5953, Page 15, Block 802, Lot 27, Consideration $185,000 plus $15,000 estimated demolition costs which reflects $17.78/SF

9. Address: 575 – 581 Spring Street (Route 1 & 9), Elizabeth, Deed Date 2/28/11, Book 5855, Page 845, Consideration $1,250,0000 which reflects $38.57/SF, Zone Community Commercial

10. Address: 583 – 597 Spring Street (Route 1 & 9), Elizabeth, Deed Date 8/3/12, Book 5920, Page 39, Consideration $2,150,000 which reflects $47.37/SF, Zone Community Commercial

11. Address: 302 – 308 Morris Avenue, Union, Deed Date 3/4/2011 & 08/13/2009, Book 5856/5777, Page 163 / 185, Consideration $375,000 ($200,000 + $175,000) which reflects $27.67/SF, Zone General Commercial

Improved Sales

1. **A gas station located at 2200 Springfield Avenue, Union sold on 1/5/10 for $1,434,900 for a 42,500+/-SF lot with a 240+/- kiosk**

2. **An auto dealership located at 2675 Route 22, West, Union was sold on 6/4/10 for $3,400,000 with a 3.04+/-AC lot and buildings with areas of 33,727+/-SF and 21,005+/-SF**

3. **A retail store located at 2269 Route 22, Union was sold on 3/27/09 for $1,665,704.50 on a 24,962+/-SF lot with a 8,844+/-SF building**

4. **A gas station with a convenience store was sold on 10/08/09 for $505,000 on a 10,230+/-SF lot and a 836+/-SF building located at 2570 Route 22, Union**

5. **A gas station was sold on 8/8/8 for $625,000 that is located at 1597 Route 22, Union on a 14,850+/-SF lot and a 7,100+/-SF building**

6. **A building with an area of 46,278+/-SF on a 3.535+/-AC lot was sold for $7,400,000 on 8/18/8 and its address is 2438 Route 22, Union**

7. **A gas station that is located at 2515 Route 22, Union was sold for $880,000 on 5/16/08 on a 20,250+/-SF lot and 1,824+/-SF building**

8. **A gas station was sold for $1,040,700 on 1/15/10 and is located at 2446 Route 22, Union, Center and has a 34,848+/-SF lot and a 900+/-SF building**

9. **A furniture store was sold for $840,000 on 11/8/10 on a 30,300+/-SF lot and a 19,367+/-SF building (a portion of it was demolished for a day care center. Address is 2230 Morris Avenue, Union**

Route 22 Westbound & Vauxhall Road
Township of Union – County of Union
JOB NO: 2217510

PARCEL	OWNER ADDRESS	ACQUISITION ACRES/SF	ESTIMATED VALUE
Block 1703, Lot 1	RT, Inc. 1675 Route 22, West Union, NJ 07083 1675 Route 22, Union	Partial fee acquisition of 1,430+/-SF, a temporary site mitigation work area of 1,963+/-SF, paving, etc.	$50,000
Block 1806, Lot 1	Valdir Rizardi 1605 Route 22, West Union, NJ 07083 1605 Route 22, Union	Utility easement of 1,720+/-SF & a temporary site mitigation work area of 2,408+/-SF	$8,000
Block 1806, Lot 2	Spartans 3, LLC 1597 Route 22, West Union, NJ 07083 1597 Route 22, Union	Utility easement of 1,000+/-SF & a temporary site mitigation work area of 2,242+/-SF	$5,000
Block 1806, Lot 3.01	Twenty Two 301, LLC 1599 Route 22, West Union, NJ 07083 1585 Route 22, Union	Utility easement of 430+/-SF & a temporary site mitigation work area of 1,217+/-SF	$4,000
Block 1806, Lot 3.02	Keshav 5 Inc. 1575 Route22 Union, NJ 1575 Route 22, Union	Partial fee acquisition of 140+/-SF, a utility easement of 1,900+/-SF & a temporary site mitigation work area of 4,399+/-SF, landscaping, etc.	$15,000
Block 1806, Lot 3.03	Samuel Casternovia 1599 Route 22, West Union, NJ 07083 1565 Route 22, Union	Utility easement of 1,670+/-SF & a temporary site mitigation work area of 3,909+/-SF	$10,000
Block 1702, Lot 2..01	Hy-Way Bowl Corp C/O D. Williams 1731 Route 22 West Union, NJ 07083	Partial fee acquisition of 25+/-SF & a temporary site mitigation work area of 3,392+/-SF	$5,000
Block 1806, Lot 4	Gilaur Holdings, LLC 1 Gary Road Union, NJ 07083 1 Gary Road, Union	A utility easement of 990+/-SF & a temporary site mitigation work area of 722+/-SF	$4,000
		Total	$101,000

RIGHT OF WAY COST ESTIMATE SUMMARY
Route 22 Westbound & Vauxhall Road
Township of Union – Union County
JOB NO: 2200168

RIGHT OF WAY COSTS		**$**	101,000
REPLACEMEMT HOUSING OWNER		**$**	0
REPLACEMENT HOUSING TENANT		**$**	0
RESIDENTIAL MOVING PAYMENT		**$**	0
BUSINESS AND FARM PAYMENTS		**$**	0
SIGNS & BUILDBOARDS note included in estimate		**$**	
DEMOLITION COSTS		**$**	0
LAST RESORT HOUSING		**$**	0
APPRAISAL FEES (8) SPECIALIST(0)		**$**	24,000
AWARDS & JUDGEMENTS (35 %)		**$**	35,000
CONTINGENCIES (03%)		**$**	3,000
TOTAL		**$**	163,000
COST TO ACQUIRE (10k)	$140,000		
RELOCATION SERVICES COST	$0		
INCIDENTAL COSTS		**$**	140,000
GRAND TOTAL CAPITAL & INCIDENTALS		**$**	**303,000**

Relocation Cost Estimate

Parcel	Owner	Housing Payment Owner	Housing Payment Tenant	Moving Payment	Business Payment	Signs Billboards	Demolition	Last Resort Housing
		$0	0	0	$0	$	$0	$0
Total		$0	$0	$0	$0	$	$0	$0

RELOCATION RECAPITULATION
Route 22 Westbound & Vauxhall Road
Township of Union, Union County

NO. OF PAYMENTS	TYPE OF RELOCATION	RELO CODE	AMOUNT
	REPLACEMENT HOUSING PAYMENT --OWNERS	RHO	$0
	REPLACEMENT HOUSING PAYMENT-- TENANT	RHT	$0
	RESIDENTIAL MOVING PAYMENT	RMP	$0
	BUSINESS OR FARM PAYMENT	BFP	$0
	SIGNS & BILLBOARDS RELOCATION	SBR	$0
		SUB TOTAL	$0
	RELOCATION SERVICE COSTS	RSC	$
		TOTAL	$
	DEMOLITION COSTS	DEMO	$0
	LAST RESORT HOUSING	LRH	$0

OCCUPANTS TO BE RELOCATED		BUILDINGS TO BE DEMOLISHED	
RESIDENTIAL OWNERS	0	DWELLINGS	0
RESIDENTIAL TENANTS	0	GARAGES & BARNS	0
BUSINESSES	0	SHEDS	0
NON-PROFIT ORGANIZATIONS	0	COMMERCIAL BUILDINGS	0
TOTAL	**0**	TOTAL	0
		BILLBOARDS TO BE PURCHASED	0
		SIGNS TO BE RELOCATED	0

APPENDIX G

CONSTRUCTION COST ESTIMATE

JOB ESTIMATE REPORT

JOB NUMBER : 058003 SPEC YEAR: 07
DESCRIPTION: ROUTE 22 WB FROM M.P. 56 TO M.P. 56.4

ITEMS FOR JOB 058003

LINE	ITEM	ALT	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
0001	151003M		LS	PERFORMANCE BOND AND PAYMENT BOND	1.000	27000.00	27000.00
0002	152003P		LS	OWNER'S AND CONTRACTOR'S PROTECTIVE LIAB	1.000	10000.00	10000.00
0003	152009P		LS	POLLUTION LIABILITY INSURANCE	1.000	10000.00	10000.00
0004	153003P		LS	PROGRESS SCHEDULE	1.000	10000.00	10000.00
0005	153006P		U	PROGRESS SCHEDULE UPDATE	4.000	500.00	2000.00
0006	153012P		HOUR	TRAINEES	1.000		
0007	154003P		LS	MOBILIZATION	1.000	190000.00	190000.00
0008	155006M		U	FIELD OFFICE TYPE B SET UP	1.000	25000.00	25000.00
0009	155024M		MO	FIELD OFFICE TYPE B MAINTENANCE	20.000	2500.00	50000.00
0010	155039M		LS	TELEPHONE SERVICE	1.000	3500.00	3500.00
0011	157003M		LS	CONSTRUCTION LAYOUT	1.000	45000.00	45000.00
0012	158006M		LF	SILT FENCE	1000.000	4.00	4000.00
0013	158030M		U	INLET FILTER TYPE 2, 2' X 4'	15.000	200.00	3000.00
0014	158063P		LS	CONCRETE WASHOUT SYSTEM	1.000	10000.00	10000.00
0015	158072M		U	OIL ONLY EMERGENCY SPILL KIT, TYPE 1	2.000	1000.00	2000.00
0016	158084M		CY	EROSION CONTROL SEDIMENT REMOVAL	10.000	40.00	400.00
0017	159003M		U	BREAKAWAY BARRICADE	25.000	1000.00	25000.00
0018	159006M		U	DRUM	60.000	50.00	3000.00
0019	159012M		SF	CONSTRUCTION SIGNS	1200.000	15.00	18000.00
0020	159015M		U	CONSTRUCTION IDENTIFICATION SIGN, 4' X 8	2.000	1000.00	2000.00
0021	159021P		LF	CONSTRUCTION BARRIER CURB	1800.000	100.00	180000.00
0022	159027M		U	FLASHING ARROW BOARD, 4' X 8'	4.000	3500.00	14000.00
0023	159029M		U	PORTABLE VARIABLE MESSAGE SIGN W/REMOTE	2.000	15000.00	30000.00
0024	159108M		U	TRAFFIC CONTROL TRUCK WITH MOUNTED CRASH	1.000		
0025	159114M		LF	REMOVABLE BLACK LINE MASKING TAPE, 6"	1500.000	2.00	3000.00
0026	159138M		T	HMA PATCH	1.000		
0027	159141M		HOUR	TRAFFIC DIRECTOR, FLAGGER	1000.000	60.00	60000.00
0028	159144M		U	EMERGENCY TOWING SERVICE	10.000	240.00	2400.00
0029	160004M		DOLL	FUEL PRICE ADJUSTMENT	1.000	1000.00	1000.00
0030	160007M		DOLL	ASPHALT PRICE ADJUSTMENT	1.000		
0031	161003P		LS	FINAL CLEANUP	1.000	7500.00	7500.00
0032	201003P		LS	CLEARING SITE	1.000	40000.00	40000.00
0033	202003P		ACRE	STRIPPING	1.000		
0034	202009P		CY	EXCAVATION, UNCLASSIFIED	1056.000	40.00	42240.00
0035	202021P		SY	REMOVAL OF PAVEMENT	1821.000	20.00	36420.00
0036	301006P		CY	SUBBASE	2371.000	80.00	189680.00
0037	302042P		SY	DENSE-GRADED AGGREGATE BASE COURSE, 8" T	2371.000	10.00	23710.00
0038	401009P		SY	HMA MILLING, 3" OR LESS	9937.000	7.00	69559.00

JOB ESTIMATE REPORT

0039	401021M	SY	HOT MIX ASPHALT PAVEMENT REPAIR	1.000	0.00	0.00
0040	401022M	SY	GEOTEXTILE, PAVING FABRIC	1802.000	10.00	18020.00
0041	401024M	LF	SEALING OF CRACKS IN HOT MIX ASPHALT SUR	1.000		
0042	401027M	LF	POLYMERIZED JOINT ADHESIVE	1.000		
0043	401030M	GAL	TACK COAT	90.000	2.00	180.00
0044	401060M	T	HOT MIX ASPHALT 12.5 M 76 SURFACE COURSE	2190.000	85.00	186150.00
0045	401072M	T	HOT MIX ASPHALT 12.5 M 64 INTERMEDIATE C	315.000	132.00	41580.00
0046	401099M	T	HOT MIX ASPHALT 25 M 64 BASE COURSE	525.000	153.00	80325.00
0047	401105M	LF	SAWING AND SEALING JOINTS IN HOT MIX ASP	200.000	1.50	300.00
0048	401108M	U	CORE SAMPLES, HOT MIX ASPHALT	10.000	150.00	1500.00
0049	453006M	SY	FULL DEPTH CONCRETE PAVEMENT REPAIR, HMA	1.000		
0050	456003M	LF	SEALING EXISTING JOINTS IN CONCRETE PAVE	700.000	50.00	35000.00
0051	601122P	LF	15" REINFORCED CONCRETE PIPE	15.000	75.00	1125.00
0052	601124P	LF	18" REINFORCED CONCRETE PIPE	820.000	87.00	71340.00
0053	601408P	LF	6" CORRUGATED STEEL UNDERDRAIN PIPE	1.000		
0054	601670M	LF	CLEANING EXISTING PIPE, 12" TO 24" DIAME	1.000		
0055	602009M	U	INLET, TYPE A	1.000	2100.00	2100.00
0056	602012M	U	INLET, TYPE B	10.000	3308.00	33080.00
0057	602018M	U	INLET, TYPE E	9.000	3500.00	31500.00
0058	602054M	U	MANHOLE, 4' DIAMETER	1.000		
0059	602096M	U	INLET CONVERTED TO MANHOLE	3.000	1500.00	4500.00
0060	602216M	U	CLEANING DRAINAGE STRUCTURE	1.000		
0061	606003P	SY	HOT MIX ASPHALT SIDEWALK, 2" THICK	1.000		
0062	606041P	SY	HOT MIX ASPHALT DRIVEWAY, 10 1/2" THICK	1223.000	100.00	122300.00
0063	606054P	SY	CONCRETE DRIVEWAY, 8" THICK	91.000	75.00	6825.00
0064	606075P	SY	CONCRETE ISLAND, 4" THICK	1.000		
0065	607018P	LF	9" X 16" CONCRETE VERTICAL CURB	3174.000	35.00	111090.00
0066	607069P	LF	9" X VARIABLE HEIGHT CONCRETE VERTICAL C	444.000	36.00	15984.00
0067	610003M	LF	TRAFFIC STRIPES, 4"	7358.000	1.00	7358.00
0068	610012M	U	RPM, MONO-DIRECTIONAL, WHITE LENS	126.000	25.00	3150.00
0069	610018M	U	RPM, MONO-DIRECTIONAL, AMBER LENS	29.000	24.00	696.00
0070	610021M	U	RPM, BI-DIRECTIONAL, AMBER LENS	1.000		
0071	610024M	U	REMOVAL OF RPM	40.000	10.00	400.00
0072	610036M	LF	REMOVAL OF TRAFFIC STRIPES	3000.000	1.00	3000.00
0073	611312M	U	CRASH CUSH, COMP BAR, TYPE 3, NARROW	4.000	5000.00	20000.00
0074	612003P	SF	REGULATORY AND WARNING SIGN	173.000		
0075	651246M	U	FIRE HYDRANT	2.000	10000.00	20000.00
0076	653084M	U	RESET GAS VALVE BOX	5.000	200.00	1000.00
0077	703024M	U	UNDERDECK LIGHTING TYPE W	1.000		
0078	804006P	SY	TOPSOILING, 4" THICK	2398.000	3.00	7194.00
0079	806006P	SY	FERTILIZING AND SEEDING, TYPE A-3	2398.000	1.00	2398.00
0080	809003M	SY	STRAW MULCHING	2398.000	1.00	2398.00

ITEM TOTAL 1969902.00

JOB ESTIMATE REPORT

INFLATED ITEM TOTAL	1969902.00

TOTALS FOR JOB 058003

ESTIMATED COST:	1969902.00
CONTINGENCY PERCENT (0.0):	0.00
ESTIMATED TOTAL:	1969902.00

ROUTE 22 WB From GARY ROAD to WEST of SAYRE ROAD, SAFETY IMPROVEMENTS

Union Township, Union County, New Jersey

PRELIMINARY UTILITY CONSTRUCTION & ENGINEERING COST ESTIMATE

APRIL 01, 2014

UTILITY COMPANY	ESTIMATED CONSTRUCTION COST	ESTIMATED ENGINEERING COST
Public Service Electric and Gas Company (Elec.)	$250,000	$30,000
Verizon- New Jersey, Inc. (Telephone)	$220,000	$25,000
Comcast (CATV)	$10,000	$1,000
New Jersey American Water Company (Water)	$30,000	$4,000
Elizabethtown Gas (Gas)	$110,000	$6,000
Township of Union (Sanitary Sewer)	$1,000	$1,000
Sunesys (Fiber Optic)	$1,800	$1,000
		-
Sub-total	**$622,800**	**$68,000**

TOTAL PRELIMINARY UTILITY CONSTRUCTION & ENGINEERING COST ESTIMATE: $690,800

APPENDIX H

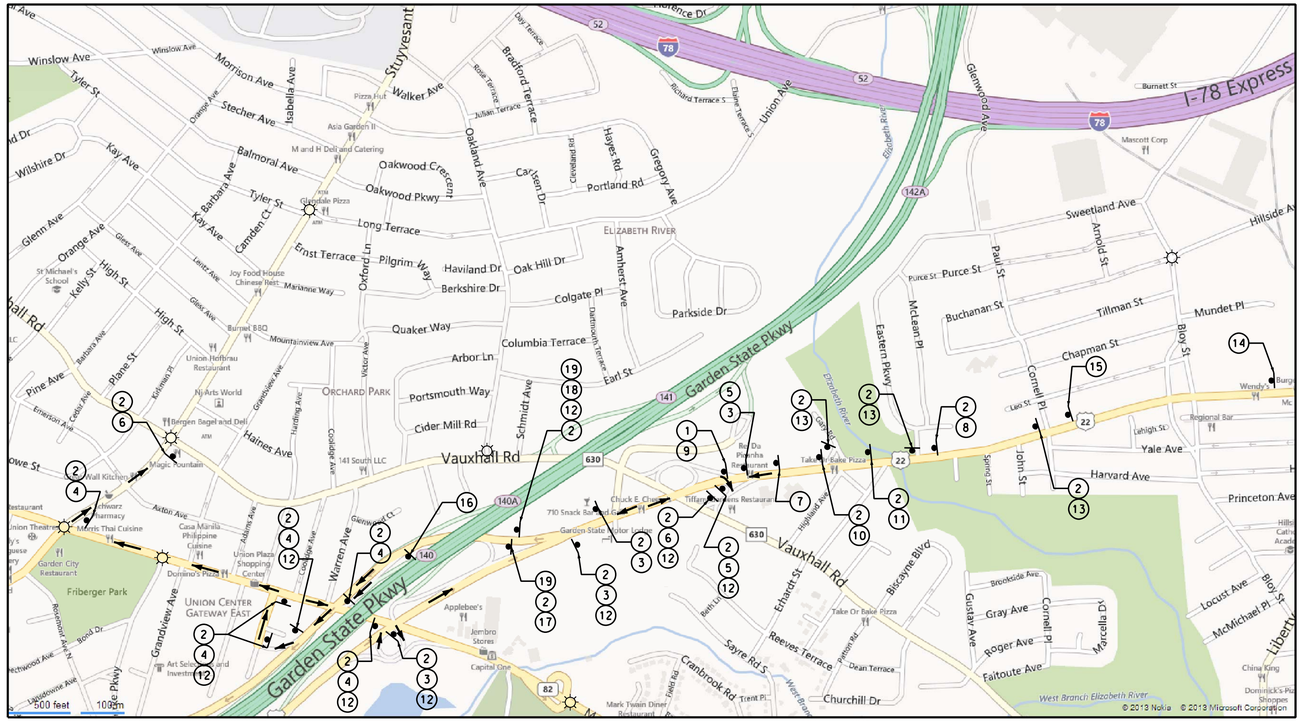
DETOUR AND CONSTRUCTION STAGING PLANS

STATE	FEDERAL PROJECT NO.
N.J.	

CONSTRUCTION SIGN TABLE FOR DETOUR

IDENT. No.	SIGN	MESSAGE	CAPS	VERTICAL SPACE (in)	SIZE (INCLUDES BORDER)	AREA (SF)	REQUIRED QUANTITY IN NUMBER	TOTAL AREA (SF)
1	R11-2A	RAMP CLOSED	7"C 7"C	5 6 5 7 7	42"x30"	8.8	1	8.8
2	M4-9N	VAUXHALL ROAD	4"C 4"C	6 4 4 4 6	36"x24"	6	19	114
3	M4-9X	DETOUR ↑			30"x24"	5	4	20
4	M4-9R	DETOUR →			30"x24"	5	6	30
5	*	VAUXHALL RD. EXIT UNION/ELIZABETH CLOSED FOLLOW DETOUR	4"C 4"C 4"C 4"C	2.5 3 3 1 1 2.5 4 4 4 4 4	60"x30"	12.5	1	12.5
6	M4-8a	END DETOUR			24"x18"	3	2	6
7	*	ON OR ABOUT _____ THIS RAMP TO BE CLOSED FOR REPAIR PLAN ALT. ROUTE	4"C 6"C 6"C 6"C	3 3 3 3 3 4 6 6 1 6	84"x42"	24.5	1	24.5
8	W20-3 (MOD.)	RAMP CLOSED 1500 FT			48"x48"	16	1	16
9	M4-10L	← DETOUR			48"x18"	6	1	6
10	W20-2C	DETOUR 500 FT			48"x48"	16	1	16
11	W20-2B	DETOUR 1000 FT			48"x48"	16	1	16
12	M4-4 BLACK ON ORANGE	TRUCK			24"x12"	2	8	16
13	W20-2	DETOUR AHEAD			48"X48"	16	3	48
14	W20-1A	ROAD WORK 1 MILE			48"x48"	16	1	16
15	W20-1D	ROAD WORK ½ MILE			48"x48"	16	1	16
16		DETOUR 22 WB NO TRUCK →	6"C 6"C	9 2.5 2.5 6 1 6	60"x36"	15	1	15
17	R3-5b	LEFT LANE	4"C	4 4 4	30"x12"	2.5	1	2.5
18	R3-5f	RIGHT LANE	4"C	4 4 4	30"x12"	2.5	1	2.5
19	M4-8	DETOUR	8"B	3.5 8 3.5	30"x15"	3.1	2	6.2
					CONSTRUCTION SIGN TOTAL			392.0 SF

* Black On Orange - Install 2 weeks prior to closing.


I-78 Express
Garden State Pkwy
Vauxhall Rd
Cider Mill Rd
Haines Ave
Winslow Ave
Morrison Ave
Stuyvesant
Walker Ave
Bradford Terrace
Oakland Ave
Hayes Rd
Gregory Ave
Union Ave
Glenwood Ave
Stecher Ave
Isabella Ave
Balmoral Ave
Oakwood Crescent
Oakwood Pkwy
Long Terrace
Ernst Terrace
Pilgrim Way
Haviland Dr
Oak Hill Dr
Berkshire Dr
Colgate Pl
Amherst Ave
Parkside Dr
Quaker Way
Columbia Terrace
Arbor Ln
Portsmouth Way
Earl St
Schmidt Ave
Wilshire Dr
Kay Ave
Glenn Ave
Orange Ave
Kelly St
High St
Plane St
Pine Ave
Tyler St
Camden Ct
Barbara Ave
Oxford Ln
Carleen Dr
Portland Rd
Sweetland Ave
Arnold St
Purce St
Buchanan St
Tillman St
Mundet Pl
Chapman St
Bloy St
Yale Ave
Harvard Ave
Princeton Ave
Lehigh St
Regional Bar
Wendy's
Eastern Pkwy
McLean Pl
Paull St
Cornell Pl
John St
Spring St
Leo St
Highland Ave
Richard Terrace S
Diane Terrace S
Julian Terrace
Rose Terrace
Dairy Terrace
Florence Dr
Burnett St
Mascott Corp
Pizza Hut
Asia Garden II
M and H Deli and Catering
Glendale Pizza
Joy Food House Chinese Rest
Burnett BBQ
Union Hellenau Restaurant
NJ Arts World
Bergen Bagel and Deli
Magic Fountain
Wall Kitchen
Schwarz Pharmacy
Akton Ave
Casa Manila Philippine Cuisine
Domino's Pizza
Union Plaza Shopping Center
Garden City Restaurant
Friberger Park
UNION CENTER GATEWAY EAST
Art Sebastian Investments
Applebee's
Jembro Stores
Capital One
Mark Twain Diner Restaurant
Cranbrook Rd
Trent Pl
Sayre Rd S
Reeves Terrace
Dean Terrace
Churchill Dr
Ellis Rd
Erhart St
Biscayne Blvd
Gustav Ave
Gray Ave
Roger Ave
Faitoute Ave
Brookside Ave
Marcella Dr
Locust Ave
McMichael Pl
Bloy St
China King
Dominick's Pizza Shoppes
West Branch Elizabeth River
ELIZABETH RIVER
ORCHARD PARK
Rio Do Pinecha Restaurant
Talk O' Bake Pizza
Chuck E. Cheese
710 Snack Bar
Garden State Visitor Center
Tiffany Sons Restaurant
Take Or Bake Pizza
St Michael's School
Rosemary Ave
Bond Dr
Edgewood Ave
Emerson Ave
Kossuth Ave
Barbara Ave
Glenn Ave
Mountainview Ave
Victor Ave
Grandview Ave
Hartford Ave
Goodale Ave
Warren Ave
Glenwood Ave
Dartmouth Terrace
Elizabeth River
Lenz Ave
Marianne Way
Bayard Terrace
Julian Terrace
Richard Terrace S
Diane Terrace S
Florence Dr
Burnett St
Mascott Corp
Pizza Hut
Asia Garden II
M and H Deli and Catering
Glendale Pizza
Joy Food House Chinese Rest
Burnett BBQ
Union Hellenau Restaurant
NJ Arts World
Bergen Bagel and Deli
Magic Fountain
Wall Kitchen
Schwarz Pharmacy
Akton Ave
Casa Manila Philippine Cuisine
Domino's Pizza
Union Plaza Shopping Center
Garden City Restaurant
Friberger Park
UNION CENTER GATEWAY EAST
Art Sebastian Investments
Applebee's
Jembro Stores
Capital One
Mark Twain Diner Restaurant
Cranbrook Rd
Trent Pl
Sayre Rd S
Reeves Terrace
Dean Terrace
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Roger Ave
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Edgewood Ave
Emerson Ave
Kossuth Ave
Barbara Ave
Glenn Ave
Mountainview Ave
Victor Ave
Grandview Ave
Hartford Ave
Goodale Ave
Warren Ave
Glenwood Ave
Dartmouth Terrace
Elizabeth River
Lenz Ave
Marianne Way
Bayard Terrace
Julian Terrace
Rose Terrace
Dairy Terrace

APPENDIX I

PAVEMENT RECOMMENDATION

ROUTE 22 WESTBOUND
FROM GARY ROAD TO SAYRE ROAD
SAFETY IMPROVEMENTS PAVEMENT RESURFACING
RECOMMENDATIONS AND REPORT
TOWNSHIP OF UNION, UNION COUNTY, NEW JERSEY

PAVEMENT DESIGN REPORT

Prepared for:

New Jersey Department of Transportation
1035 Parkway Avenue
Trenton, New Jersey 08625

Prepared by:

The Louis Berger Group, Inc.
412 Mount Kemble Ave.,
Morristown, New Jersey 07962

November 2012

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Appendix F Laboratory Test Results
Appendix G DARWin® Computer Outputs

1.0 INTRODUCTION – PROJECT DESCRIPTION

The project area is located as shown on the Site Location Map (Figure 1.1), located within the Township of Union in Union County, New Jersey.

The purpose and need of this project is to improve the public safety of travel on Route 22 Westbound from Gary Road to Sayre Road between M.P. 55.9 and M.P. 56.4. The accident rate at this section of Route 22 is reported as higher than the statewide rate.

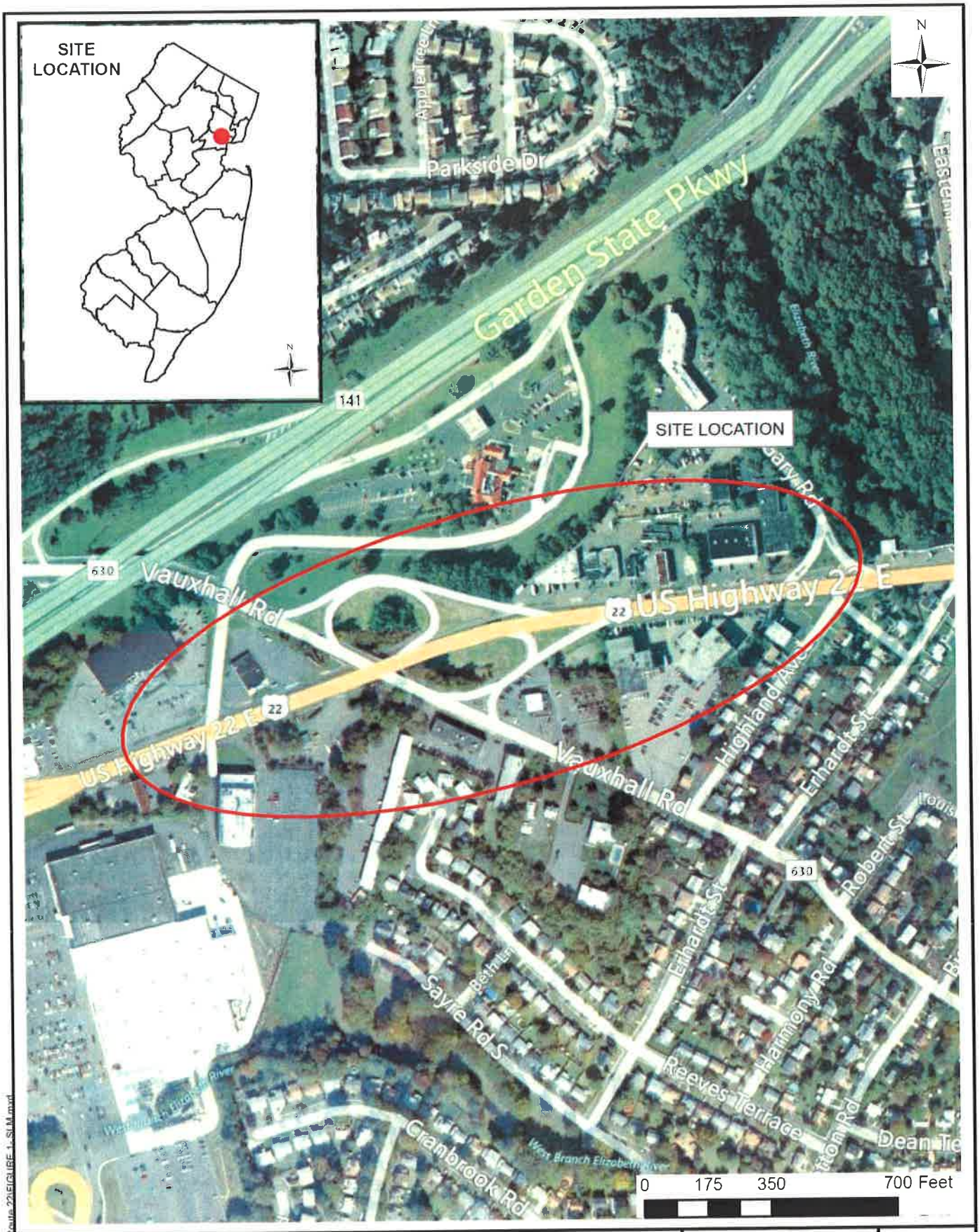
The proposed project is based on the Initially Preferred Alternative 1 (IPA) recommended in the Feasibility Assessment Report (cf. Ref.1). The recommended Alternative for the Route 22 Westbound roadway improvements is from Gary Road to Sayre Road.

The New Jersey Department of Transportation (NJDOT) Straight Line Diagram, which shows the mileposts along Route 22 Westbound included in this project, is provided in Appendix A.

The portions of pavement included in the project are illustrated graphically in Appendix B, and a typical roadway section is presented in Appendix C.

A subsurface exploration program was developed and carried out by TRC Engineers, Inc. in September 2012. At completion, the program included one roadway boring and three pavement cores. The as-drilled boring location plan is presented in Appendix B. A Visual Distress Identification Survey and typical Pavement Distress Photographs are presented in Appendix D. The boring and pavement core logs are presented in Appendix E, and laboratory tests results conducted on selected samples are presented in Appendix F.

This Pavement Design Report has been prepared to support the Design Phase of the project and is based on parameters regarding the subgrade condition and existing pavement structure. These parameters are in turn supported by the results of the subsurface exploration program. The pavement design computer outputs are presented in Appendix G.



N.J. Department of Transportation

SITE LOCATION MAP
ROUTE 22 WESTBOUND FROM GARY ROAD TO SAYRE ROAD
SAFETY IMPROVEMENTS

The Louis Berger Group, Inc.
412 MT KEMBLE AVE
MORRISTOWN, NJ

FIGURE 1.1

G:\MB\ask\n\Route 22\FIGURE 1- SLM.mxd

2.0 METHODOLOGY AND DESIGN DATA

2.1 Methodology

The design follows the 1993 American Association of State Highway and Transportation Officials' (AASHTO's) *Guide for Design of Pavement Structures* (cf. Ref. 2) and uses DARWin® 3.1 (cf. Ref. 3), the companion design software in the 1997 version. An overlay design option is considered for this project. Specifically two types of pavements, namely, Asphalt Concrete (AC) Overlay of AC/PCC Portland Cement Concrete) and AC full depth pavement on unpaved sections are considered applicable and are used in the pavement design for this project. Computer software DARWin® 3.1 (cf. Ref. 3) was used to analyze the selected typical sections. The following section presents the pavement design data used in the analysis.

2.2 Design Data

2.2.1 General

As mentioned above, two types of pavement designs, AC Overlay of AC/PCC Pavement and full depth AC pavement on unpaved sections are carried out. The design data used in the respective overlay design is briefly presented below:

Flexible Pavement Sections:

Design input parameters required in the AASHTO flexible pavement design procedure include initial and terminal serviceability, reliability level, overall standard deviation, subgrade resilient modulus, structural coefficients of the pavement layers, and drainage coefficients.

Design parameters, such as initial serviceability, reliability, and overall standard deviation and layer structural coefficients, are governed by the project specifics or have generally established values, and will not be discussed at length. They are selected for the design as follows:

- Initial serviceability: 4.2
- Reliability level: 95%
- Overall standard deviation: 0.44
- Terminal serviceability: 3
- Pavement layer structural coefficients:
  - HMA surface course: 0.44
  - HMA Intermediate course: 0.44
  - HMA Base Course: 0.44
  - Dense Graded Aggregate Base 0.14
  - Subbase (I-3) 0.08

Composite Pavement Sections: AC Overlay of AC/PCC Pavement

For Future Traffic

- Initial serviceability: 4.2
- Reliability level: 95%

- Overall standard deviation: 0.44
- Terminal serviceability: 3
- PCC Modulus of Rupture: 880 psi
- PCC Elastic Modulus: 9,000,000 psi
- Static k-value: 300 psi/in
- Load Transfer Coefficient, J: 3.2
- Overall Drainage Coefficient, Cd: 1

Effective Pavement Thickness – Condition Survey Method

- Rut Depth: - in
- Durability Adjustment Factor: 0.99
- Fatigue Damage Adjustment Factor: -
- AC Quality Adjustment Factor: 0.92
- Number of Deteriorated Joints: - per mi
- Number of Deteriorated Cracks: 0 per mi
- Number of Unrepaired Punchouts: 0 per mi
- Number of Expansion Joints: -
- Exceptionally Wide Joints, or AC Full Depth Patches: 0 per mi

2.2.2 Traffic Data

The pavement resurfacing is designed for a performance period of 10 years and full depth reconstruction of the shoulder and ramp for a performance period of 20 years with 2013 being the anticipated initial year of service.

The one-way design ADTs for Year 2023 with a 1.0 % annual compound growth rate and the percentages of trucks were provided by NJDOT Traffic Division (cf. Ref. 4). Using this data, the 2013 two-way ADTs were back-calculated, to use as input for the DARWin® 3.1 software. The percentages of trucks to be used in the design are given below:

- Heavy Trucks: 8 %
- Total Trucks: 13 %

The 18-kip equivalency factors (ESALs/vehicle) for light and heavy trucks for flexible pavement are taken as 0.323 and 1.122, respectively, and 0.355 and 1.885 for rigid pavement, respectively, as provided by the NJDOT website for flexible pavements (cf. Ref. 5). For lower vehicle classes, a factor of 0.0006 is considered adequate.

All 18-kip equivalency factors are considered constant throughout the performance period.

Given the geometry of the proposed roadway, the percentage of trucks in the design lane is 95%, and the directional distribution is 50%.

ESALs (equivalent 18-kip axles)

Based on the above data, "rigorous" ESAL calculations have been conducted using the DARWin® software (cf. Ref. 3). The computer calculations are provided in Appendix G. Based on the calculations, the cumulated number of ESALs (equivalent 18-kip axles) for Route 22 Westbound for 10 years design service life slated for resurfacing

for the composite section is on the order of 22 million and for the unpaved section slated for full depth reconstruction is on the order of 29 million.

2.2.3 Subgrade

To investigate the subsurface conditions in general and in particular to assess the subgrade conditions which will provide the pavement support, searches were made on the NJDOT website. However, no record of boring information was found from this source.

The engineering soil survey of Union County carried out by Rutgers University (Report No. 5, September 1952) indicates that the project area consists of glacial marginal and recessional moraine composed of non-residual, usually unstratified, materials deposited during the Wisconsin glaciations. The general characteristics are: unassorted and heterogeneous, composed of intermixed soil fractions ranging in size from clay to boulders, with sand- and silt-sized particles in predominance. Although the various materials are usually unassorted, local stratification may occur, especially near the borders of the deposits. Lenses and pockets of silt are particularly frequent. The materials are derived from red sandstone, quartz, and gneiss, with small quantities of other rock. Colors range from red brown to brown. In the vicinity of Kenilworth, the till is underlain by, or intermingled with, stratified materials which are usually similar in character. The underlying formations are fine, red shale, occurring at depths usually in excess of 50 feet, and need not be considered in ordinary road construction. The land form is continuous, elevated area which usually rises (on the south and west sides) rather noticeably from adjacent outwash plains and merges gradually (on the north and east sides) into adjacent till plains. The land form becomes subordinate to that of the underlying basaltic ridges where it crosses over the Watchung ridges. The soil type is silts, sands, sandy silts, silty sands, and silty gravels, with silty clays and clays occurring in the numerous undrained depressions. Depth to bedrock is usually greater than 50 feet. However, in some areas, bedrock may be found at as little as 10 feet. The category is GMM-24ig in the Engineering Soil Survey of New Jersey for Union County (cf. Ref. 6), as reproduced on Figure 2.1.

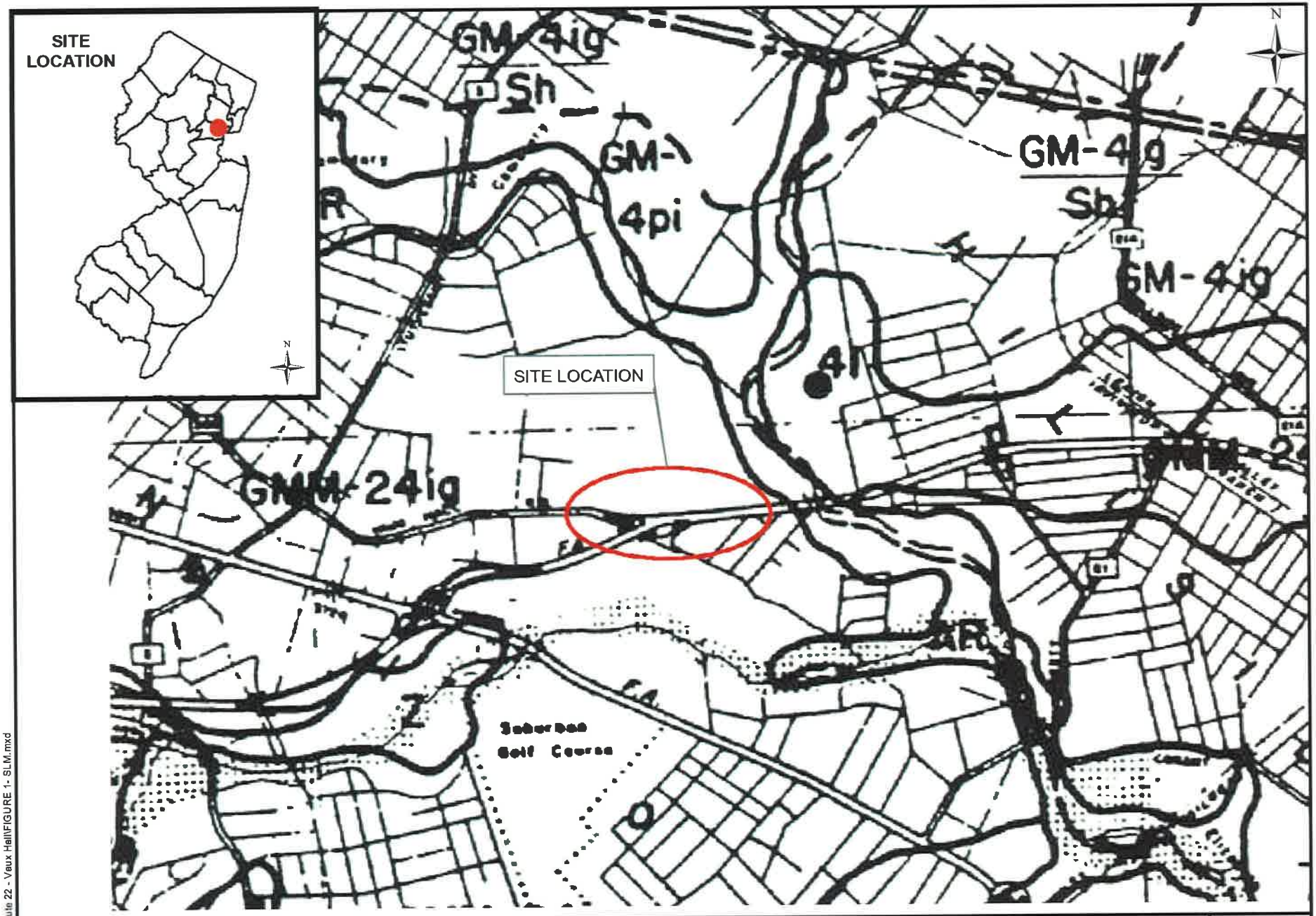
It is to be noted that the proposed new roadway profile remains at the same grade as the existing pavement, with minor adjustments during the final design phase. As a result, the existing subsurface conditions as indicated by the Boring BC-1 (Appendix E) and the representative material beneath the pavement cores (Appendix E) tend to confirm the above and indicate, near the surface, predominantly coarse-grained soil (sand) with varying amounts of silt, of generally medium dense compactness, with an average Standard Penetration Test N-value (blows per foot) on the order of 25±.

Based on the above, it is considered adequate to adopt, for the pavement subgrade support, a value for CBR of 5%. This corresponds to a resilient modulus of 7, 500 psi, which is used in the design.

2.2.4 Groundwater and Drainage Coefficients

During the investigation, groundwater was not encountered within the depth drilled at the time of drilling. Considering the generally good quality of roadbed soils, the quality of drainage will be at least fair from a pavement design viewpoint, and the amount of time the pavement will be exposed to near saturation levels will be short.

- Based on the above, it is considered adequate to adopt in design, for the granular pavement layers, a drainage coefficient equal to 1.0.



N.J. Department of Transportation

SOIL SURVEY MAP

Route 22 WB from Gary Road to Sayre Road, Safety Improvments

The Louis Berger Group, Inc.
412 MT KEMBLE AVE
MORRISTOWN, NJ

FIGURE 2.1

G:\MRaskin\Route 22 - Vaux Hall\FIGURE 1- SLM.mxd

3.0 EXISTING PAVEMENT ASSESSMENT

3.1 Existing Pavement Condition

As part of the existing pavement condition assessment, three (3) pavement cores, designated PC-1 through PC-3, were taken of the existing pavement during the field investigations carried out in September 2012. The locations of the pavement cores are presented in Appendix B. PC-1 and PC-3 pavement cores were located at the existing shoulder and cores were taken from these locations, while the PC-2 was located within the roadway and core was taken at this location. PC-1 is located approximately 140 ft west of Sayre Road, PC-2 is located between Sayre Road and the Vauxhall Road overpass, and PC-3 was located between the Gary Road Ramp and the Vauxhall Road exit. The photographs of the cores with the visual identification are presented in Appendix D. Based on visual identification; these cores indicated four and quarter (4¼) inch to six (6) inch of asphalt concrete overlay over ten (10) to ten and half (10½) inch of PCC concrete. Existing subgrade material underneath the pavement cores was also collected for visual identification. The visual identification indicated that the subgrade material predominantly consists of coarse-grained soil (sand and gravel) similar to those obtained at the Boring BC-1 location.

Based on the above, the exiting pavement section is a composite pavement with Asphalt Concrete (AC) over Portland Cement Concrete (PCC). Based on the data collected, the following pavement section is assumed for the majority of the existing pavement:

- Asphalt concrete (AC) surface layer of an approximate average thickness of 4¼ to 6 inches;
- Portland cement concrete (PCC) base course (approximate thickness 10 to 10½ inches); and
- Subbase layer of consisting coarse-grained soil (gravel and sand) of unknown thickness.
- In addition, a visual distress identification survey was performed on October 8, 2012, to determine the condition of the existing pavement within the project area, which encompassed the westbound lane of Route 22 approximately between M.P. 55.9 and M.P. 56.4 located in Union Township, Union County, New Jersey.
- As part of the existing pavement condition assessment, a visual distress identification survey was performed on October 8, 2012, to determine the condition of the existing pavement within the limits of the project, which is between Gary Road and Sayre Road on Route 22 Westbound. The limits of the project with the location of the pavement cores are depicted in 'As-Cored Pavement Location Plan' in Appendix B. The total length of the project is approximately one-half (½) mile.
- The survey was performed in accordance with the guidelines outlined in the Strategic Highway Research Program (SHRP-P-338-1993) manual on distress identification for asphalt pavements (cf. Ref. 7). The survey consisted of gathering data on various distress types by visual inspection, aided by photographs of typical distresses as seen from the edge of the existing pavement. The survey data, in general, indicated that the asphalt pavement distresses consisted of predominantly:

    - Low-to-moderate severity level of rutting in wheel path
    - Low severity level of Raveling
    - Low severity level of Bleeding near shoulder

In addition, following asphalt pavement distresses were noted at localized locations:

- Moderate severity level of Pothole
- Low severity level of transverse cracking
- Low severity level of longitudinal cracking

- High severity level of Fatigue Cracking
- Moderate severity level of Polished Aggregate
- Moderate severity level of patch deterioration
- Moderate severity level of Block Cracking

The visual survey indicates that the major distress appears to be due to low to moderate severity level of rutting, low severity level of raveling, and low severity level of bleeding near shoulder.

A summary of the Visual Distress Identification Survey is presented in the Summary Table 3.1-1. Pictures of pavement sections illustrating typical distresses are presented in Appendix D.

Table 3.1-1 Distress Summary Table

Table 3.1-1
SUMMARY TABLE
Route 22 Westbound from Gary Road to Sayre Road
Pavement Resurfacing Recommendations and Report
Township of Union, Union County, New Jersey

Picture No.	Location[a]	Distress Feature Type [b]	Severity Levels[b]
1	*East of Gary Rd*	Pothole	Moderate
		Longitudinal Cracking	Moderate
		Transverse cracking	Low
		Raveling	Low
		Bleeding	Low
2	*East of Gary Rd*	Rutting in wheel path	Low
		Raveling	Low
3	*Gary Rd Rt 22 WB Entrance Ramp*	Fatigue cracking (chicken wire/alligator pattern)	High
		Longitudinal cracks	Moderate
		Polished Aggregate	Moderate
		Water bleeding	Low
4	*Gary Rd. Rt 22 WB Entrance Ramp*	Raveling	Moderate
5	*Gary Rd. Rt 22 WB Exit Ramp*	Patch Deterioration	Moderate
		Raveling	Moderate
6	*Gary Rd. Rt 22 WB Entrance Ramp*	Fatigue Craking	Moderate
		Pothole	Moderate
7	*Gary Rd. Rt 22 WB Exit Ramp*	Block Cracking	Moderate
		Pothole	Moderate
8	*Rt 22 WB Sta. 233 - 234*	Rutting in wheel path	Moderate
		Longitudinal Craking	Low
		Bleeding near shoulder	Low
9	*Rt 22 WB Sta. 234 - 235*	Raveling near shoulder	Low
		Bleeding near shoulder	Low
10	*Rt 22 WB Sta. 235 - 236*	Rutting in wheel path	Moderate
		Raveling	Low
11	*Rt 22 WB Sta. 236 - 237*	Rutting in wheel path	Low
		Raveling	Low
12	*Rt 22 WB Sta. 236 - 237*	Rutting in wheel path	Moderate
		Raveling	Low
		Bleeding near shoulder	Low
13	*Rt 22 WB Sta. 238 - 239*	Raveling	Low
		Potholes	Low
14	*Rt 22 WB Sta. 239 - 240*	Rutting in wheel path	Low
		Raveling	Low
15	*Rt 22 WB Sta. 240 - 241*	Rutting in wheel path	Low
		Raveling	Low
16	*Rt 22 WB Sta. 240 - 241*	Raveling near shoulder	Low
		Bleeding near shoulder	Low
17	*Rt 22 WB Sta. 241 - 242*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
18	*Vauxhall Rd Rt 22 WB Exit ramp*	Raveling	Low
		Bleeding	Low

(a) Approximate locations

(b) Distress Identification Mannual for the Long-Term Pavement Performance Project, Strategic Highway Research Program, National Research Councilo, 1993

Table 3.1-1 Continued Next Page

Table 3.1-1
SUMMARY TABLE
Route 22 Westbound from Gary Road to Sayre Road
Pavement Resurfacing Recommendations and Report
Township of Union, Union County, New Jersey

Picture No.	Location[a]	Distress Feature Type [b]	Severity Levels[b]
19	*Rt 22 WB Sta. 242 - 243*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
20	*Vauxhall Rd RT 22 WB Entrance Ramp*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
21	*Rt 22 WB Sta. 243 - 244*	Rutting in wheel path	
		Raveling	Low
		Bleeding near shoulder	Low
22	*Rt 22 WB Sta. 244 - 245*	Rutting in wheel path	Low
		Raveling	Low
23	*Rt 22 WB Sta. 246 - 247*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
24	*Rt 22 WB Sta. 246 - 247*	Rutting in wheel path	Low
		Raveling	Low
25	*Rt 22 WB Sta. 246 - 247*	Raveling	Low
		Bleeding near shoulder	Low
26	*Rt 22 WB Sta. 247 - 248*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
27	*Rt 22 WB Sta. 247 - 248*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
28	*Rt 22 WB Sta. 248 - 249*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
29	*Rt 22 WB Sta. 248 - 249*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
30	*Rt 22 WB Sta. 249 - 250*	Rutting in wheel path	Low
		Raveling	Low
31	*Sayre Rd*	Raveling	Low
		Bleeding	Low
32	*Rt 22 WB Sta. 251 - 252*	Rutting in wheel path	Low
		Raveling	Low
33	*Rt 22 WB Sta. 253 - 254*	Rutting in wheel path	Low
		Raveling	Low

(a) Approximate locations
(b) Distress Identification Mannual for the Long-Term Pavement Performance Project, Strategic Highway Research Program, National Research Councilo, 1993

4.0 DESIGN AND RECOMMENDATIONS

4.1 General Pavement Structure

As mentioned in Section 3, the exiting pavement section along the travel lanes and shoulder are composite pavement section comprising asphalt concrete (AC) overlay on Portland Cement Concrete (PCC). As part of resurfacing, the exiting pavement sections involve milling and overlay with AC. The proposed shoulder widening and ramp section on unpaved portions will involve full depth pavement reconstruction. Accordingly, pavement analyses and designs were carried out for proposed AC overlay and full depth flexible pavement.

The information collected from the as-built typical sections, visual distress identification survey, and design data for pavement and traffic (Section 2) together with field testing and analysis, pavement designs were carried out. The scope of the project is to assess the existing condition of the travel lanes, shoulders, and proposed unpaved widening sections and to recommend necessary rehabilitation procedures for resurfacing the travel lanes, shoulders, and full depth pavement for unpaved widening sections of shoulder and proposed ramp portion. The resurfacing of the pavement is designed for design service life of ten (10) years and the full depth reconstruction sections of the pavement for twenty (20) years based on the anticipated traffic volume during the anticipated service periods. As part of sectionalization, the two sections were categorized as resurfacing section and full depth reconstruction section.

4.2 Design of Pavement Structure

As mentioned in Section 2, the pavement design follows the 1993 AASHTO *Guide for Design of Pavement Structures* (cf. Ref. 2) and utilizes DARWin® 3.1 (cf. Ref. 3), the companion design software in the 1997 version. Using this software, "rigorous" ESAL calculations have been conducted.

Based on the calculations, the cumulated number of ESALs (equivalent 18-kip axles) for Route 22 Westbound for 10 years design service life slated for resurfacing for the composite section is on the order of 22 million and for the unpaved section slated for full depth reconstruction is on the order of 29 million.

The pavement design was carried out based on the anticipated service life of the existing pavement section and required resurfacing rehabilitation recommendation to extend the service life of the resurfaced pavement sections to 10 years and full pavement reconstruction of shoulder widening and ramp sections for service life of 20 years with 2013 as the beginning year. The pavement analyses were carried out on typical Route 22 Westbound travel lanes and shoulder. Pavement sections with AC (Asphalt Concrete) Overlay of AC/PCC (Portland Cement Concrete) and proposed shoulder widening and ramp on unpaved portions with AC were analyzed. As part of sectionalization, the pavement sections were dived into two (2) sections, resurfacing and full reconstruction for analysis and design. The exiting pavement section was analyzed for the anticipated life expectancy under the full traffic lane, as well required resurfacing on overlay sections to extend the service life to 10 years under the design traffic volume. The full depth reconstruction sections are analyzed for anticipated service life of 20 years. It is assumed that the proposed new roadway profile remains at the same grade as the exiting pavement, with minor adjustment during the final design phase. In order to achieve a better ride quality and performance and to provide a uniform pavement structural strength use of a uniform thickness of surface course is considered appropriate and recommended.

Pavement milling and resurfacing: Following this and based on the analysis, a milling depth of 3 inches is considered adequate to achieve required pavement structural strength and recommended for this

resurfacing project. As part of AC overlay, it is recommended to use 3 inch Hot Mix Asphalt (HMA) 12.5M76 Surface Course. The recommended overlay is applicable for the existing AC/PCC pavement for both travel lanes and shoulder. The recommended pavement section is expected to extend the service life to ten years (10).

Full Depth Pavement Reconstruction: A full depth flexible pavement section using HMA is analyzed and recommend for proposed shoulder widening and proposed ramp with a design service life of twenty (20) years.

Recommended Pavement Section: Summary of the recommended AC overlay and full depth flexible pavement for this resurfacing project is presented below:

I. AC (Asphalt Concrete) Overlay of AC/PCC (Portland Cement Concrete) Pavement

Route 22 Westbound Travel Lanes and shoulder

- Ten (10) years of service life
- 3 inch milling and overlay with
- HMA 12.5M76 Surface Course 3 inch

For this resurfacing project, recommendations were made based a ten (10) year service life. Prior to overlay, it is recommended to prepare the exposed surface receiving the overlay in accordance with the standard procedures. The entire milling and resurfacing should be carried out in strict adherence to the NJDOT standard procedures outlined in the standard specifications (cf. Ref. 8). Pending possible minor adjustments during final design phase of the project, the future grade of the pavement within the project limits is generally expected to match the existing grade.

II. Full depth Asphalt Concrete (AC) Pavement

Shoulder widening and Ramp of unpaved sections (widening in excess of 5 feet)

- Twenty (20) years of service life
- HMA 12.5M76 Surface Course: 3 inch
- HMA 12.5M64 Intermediate Course: 3 inch
- HMA 25M64 Base Course: 5 inch
- Dense Graded Aggregate Base (DGAB): 8 inch
- Subbase (I-3): 12 inch

Full depth pavement design was carried out based on a twenty (20) year service life. It is recommended that prior to placing subbase, the exposed subgrade should be prepared in accordance with the standard procedures (cf. Ref. 8, Section 202 and Section 301 and any other relevant sections).

Construction Considerations: Considering the project limits and to minimize the impact on traffic, milling and overlay of asphalt, including all the construction activities, should be carried out during off-peak times, preferably overnight. The closing and opening of the traffic lanes should strictly adhere to the regulations and in accordance with the standard procedures; any modifications to such should be carried out only upon approval of the Engineer.

As part of incidental recommendations, prior to PS&E submission request will be made to NJDOT to provide surface course Ride Quality requirements from NJDOT. Provision should be made to perform (if and where directed) full depth repair for the deteriorated pavement sections and deteriorated joints.

Widening and construction of the full depth pavement will involve saw cutting and sealing of the joints and use of joint sealers. This shall be carried in accordance with standard procedures (cf. Ref. 8, Sections 401.03.04 and 456.03.01).

Cost Estimate: A cost estimate for the recommended pavement rehabilitation based on approximate quantities has been prepared. The estimated cost does not include additional roadway improvements that may result from roadway profile change, realignment, widening, traffic signals, and right-of-way during the design development phase of the projects. The unit costs used in the estimate were based on interpolation from recent construction bid tabulations and reference to the recently completed Route 35 Project. The approximate cost for recommended pavement rehabilitation related only to pavement work within the project limits is approximately $500,000.

5.0 REFERENCES

1. The Louis Berger Group, Inc. Feasibility Assessment Report – Route 22 Westbound from Gary Road to Sayre Road, Safety Improvements and Resurfacing (Report in progress).

2. *AASHTO Guide for Design of Pavement Structures*. American Association of State Highway and Transportation Officials, 444 N. Capitol Street, N.W., Suite 249, Washington, D.C. 20001, 1993.

3. AASHTOWare® DARWin® 3.1 Pavement Design and Analysis System. User's Guide. Developed by ERES Consultants, Champaign, Illinois. Published by AASHTO, 1997.

4. Division of Project Development, Memorandum from Nilesh Bhavsar, dated November 20, 2012, New Jersey Department of Transportation,

5. http://www.state.nj.us/transportation/refdata/roadway/wim_files/ESAL_Design_Factors.pdf

6. Rutgers University – Engineering Soil Survey of New Jersey-Report Number 5, Union County-Engineering Research Bulletin Number 31, September 1952.

7. Strategic Highway Research Program, Distress Identification Manual for the Long-Term Pavement Performance Project, SHRP-P-338, 1993.

8. Standard Specifications for Road and Bridge Construction, New Jersey Department of Transportation, 2007.

ROUTE 22 WESTBOUND
FROM GARY ROAD TO SAYRE ROAD
SAFETY IMPROVEMENTS
PAVEMENT RESURFACING RECOMMENDATIONS AND REPORT
TOWNSHIP OF UNION, UNION COUNTY, NEW JERSEY

PAVEMENT DESIGN REPORT
APPENDICIES

Prepared for:

New Jersey Department of Transportation
1035 Parkway Avenue
Trenton, New Jersey 08625

Prepared by:

The Louis Berger Group, Inc.
412 Mount Kemble Ave.,
Morristown, New Jersey 07962

November 2012

APPENDICES

APPENDIX A
NJDOT STRAIGHT LINE DIAGRAM

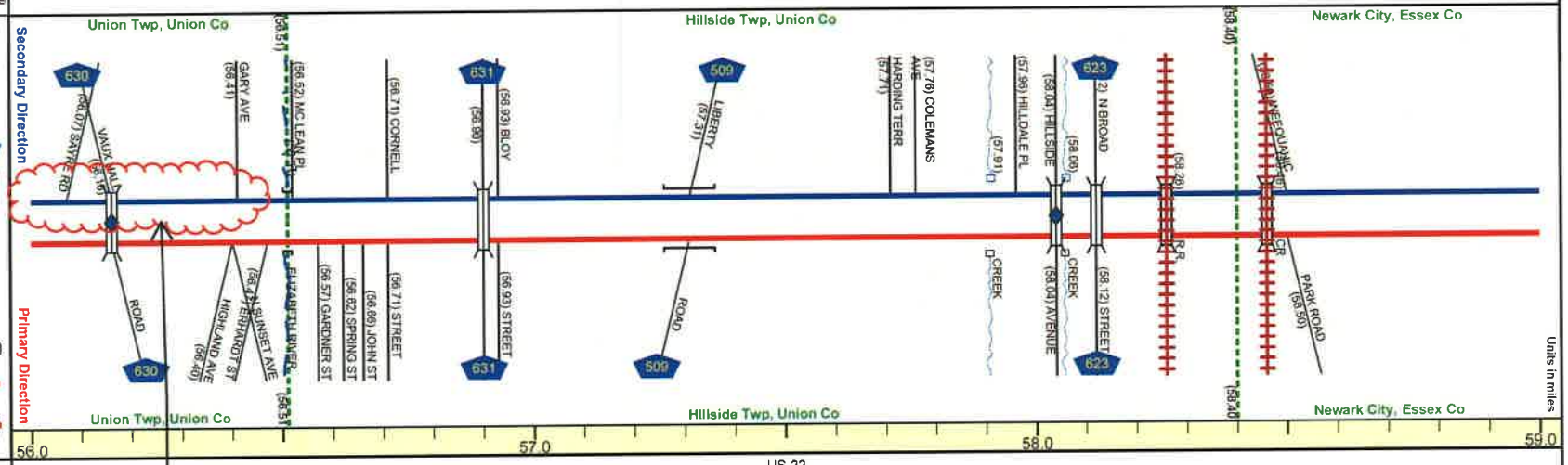
US 22 (West to East)

Mile Posts: 56.000 - 59.000



Pavement	24						26		
Shoulder	6	4	10		4	0		4	
Number of Lanes	2								
Speed Limit	45								
Street Name	US 22								

Interstate Route · US Route · NJ Route · County Road · Interchange Number · Grade Separated Interchange · Traffic Signal · Traffic Monitoring Sites (WIM, AVC, VOL) · Road Underpass · Road Overpass



Street Name	US 22								
Jurisdiction	N.J.D.O.T.								
Functional Class	Urban Principal Arterial								
Federal Aid - NHS Sy	NHS								
Control Section	2004						0718		
Speed Limit	45								
Number of Lanes	2	3			2				
Med. Type	Positive								
Med. Width	5								
Pavement	24	36			26				
Shoulder	6	4			0		4		
Traffic Volume	62,474 (2009)						61,810 (2005)	63,560 (2008)	
Traffic Sta. ID	3-9-543						3-7-262	3-7-262	
Structure No.	2004150	2004151	2004152	2004153	2004154	2004155 2004156	2004157	2004158	0718150
Enlarged Views	See Enlarged View #8								

Project Location

SRI = 00000022__

Date last inventoried: March 2006

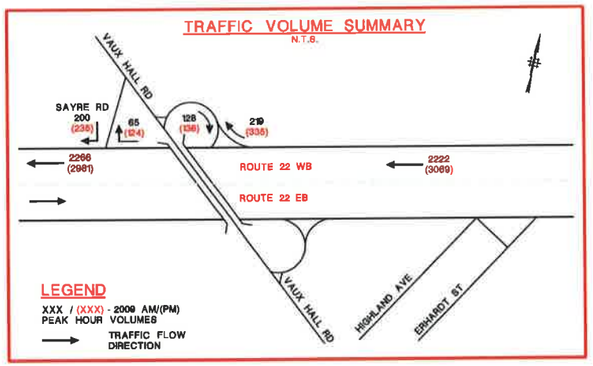
Page Created: May 2010

APPENDIX B
Pavement Layout Plan and As-Drilled Boring Location Plan

STATE	FEDERAL PROJECT NO.
N.J.	*

COUNTY OF UNION

TRAFFIC VOLUME SUMMARY
N.T.S.

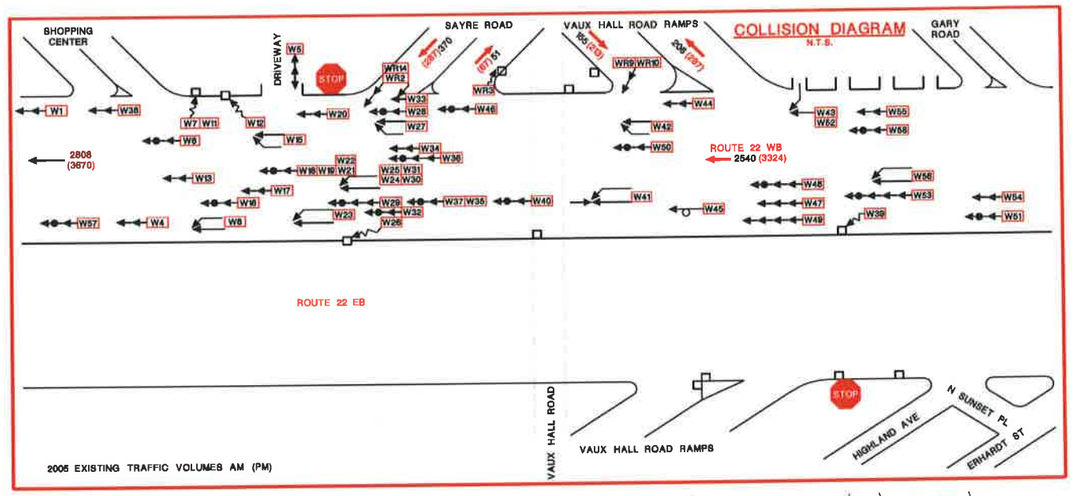


LEGEND

XXX / (XXX) - 2009 AM/(PM) PEAK HOUR VOLUMES

TRAFFIC FLOW DIRECTION

COLLISION DIAGRAM
N.T.S.



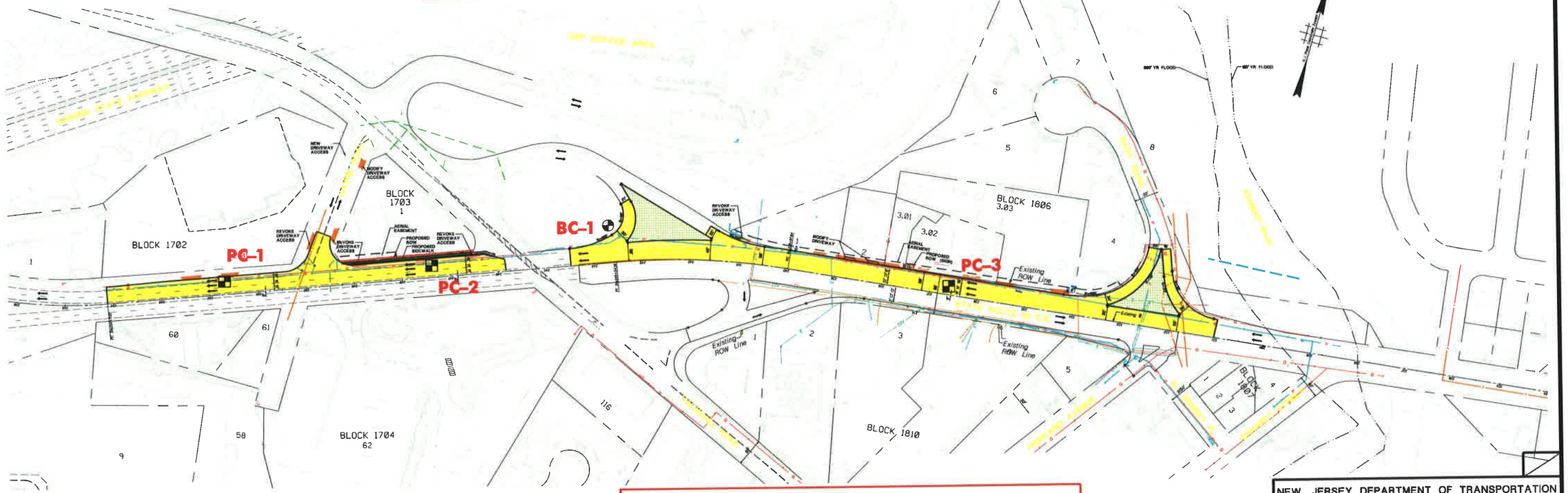
COLLISION DIAGRAM LEGEND

SYMBOLS		MANNER OF COLLISION	
MOVING VEHICLE	M MOTORCYCLE	REAR END	HEAD ON
PARKED VEHICLE	P PEDESTRIAN	OVERTAKE	LEFT TURN
BACKING VEHICLE	B BICYCLE	OUT OF CONTROL	RIGHT TURN
STOPPED VEHICLE	FIXED OBJECT	SKIDDING	RIGHT ANGLE
STOP TRAFFIC SIGNAL	FATAL	OVERTURNED	SIDE SWIPE

NOTES:

LOCATION OF ROUTE 22 CRASHES ARE NOT LANE SPECIFIC

E35 NUMBER ASSIGNED TO POLICE ACCIDENT REPORT



LEGEND

- ROADWAY BORING
- PAVEMENT CORE

LEGEND

PROPOSED ROADWAY	PROPOSED CURB
PROPOSED CONCRETE SIDEWALK	EXISTING SANITARY SEWER LINE
PROPOSED GRASS ISLAND	EXISTING WATER LINE
EXISTING DRIVEWAY	EXISTING STORM SEWER LINE
PROPOSED RIGHT-OF-WAY	EXISTING GAS LINE

100 0 100 200

NEW JERSEY DEPARTMENT OF TRANSPORTATION

BORING LOCATION PLAN AS-DRILLED

ROUTE 22 WESTBOUND
FROM GARY ROAD TO SAYRE ROAD
SAFETY IMPROVEMENTS
(FROM M.P. 55.9 TO M.P. 56.4)

THE LOUIS BERGER GROUP, INC.
MORRISTOWN, NEW JERSEY

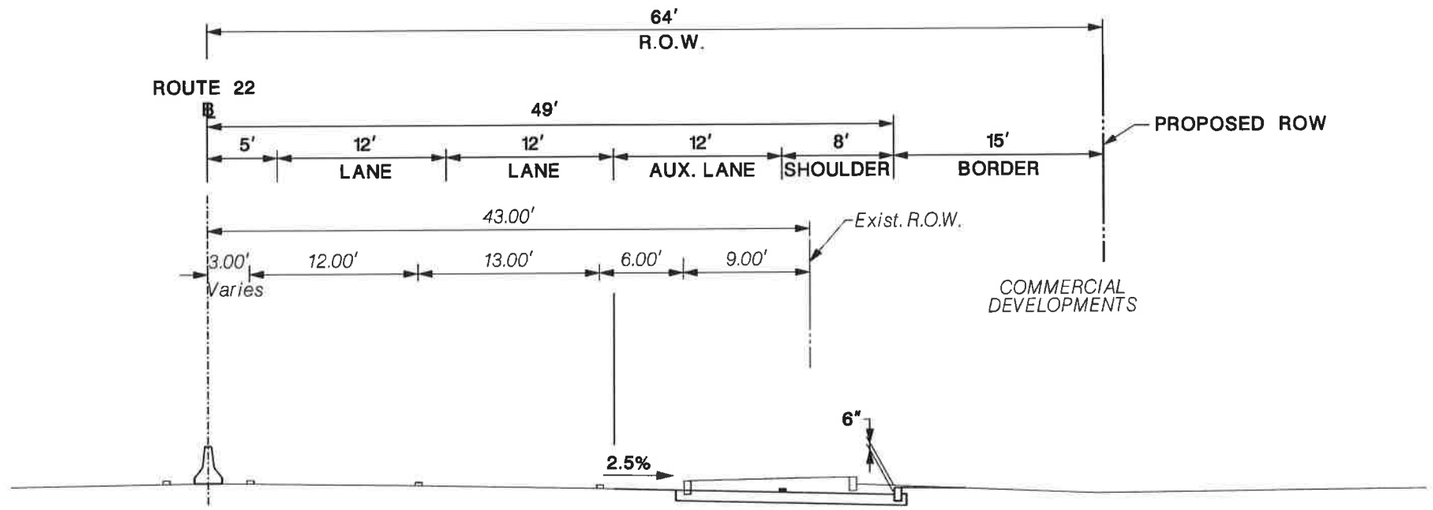
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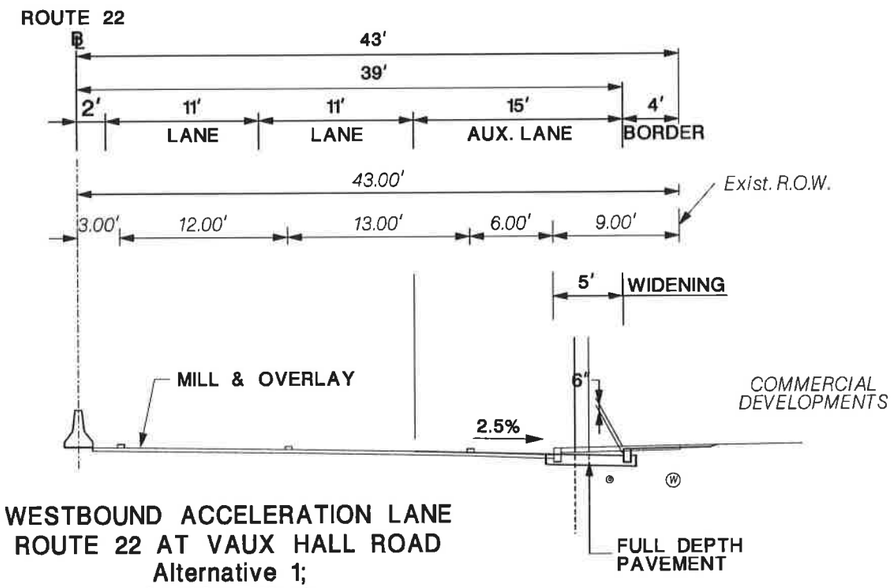
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APPENDIX C
Typical Roadway Section

STATE	FEDERAL PROJECT NO.
N.J.	*



WESTBOUND ACCELERATION LANE
ROUTE 22 AT VAUX HALL ROAD
Desirable Section
Looking West



WESTBOUND ACCELERATION LANE
ROUTE 22 AT VAUX HALL ROAD
Alternative 1;
Looking West

10 0 10 20

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

ROUTE 22 WESTBOUND
FROM GARY ROAD TO SAYRE ROAD
SAFETY IMPROVEMENTS
(FROM M.P. 55.9 TO M.P. 56.4)

THE LOUIS BERGER GROUP, INC.
MORRISTOWN, NEW JERSEY

FIG -

date= 10/26/2012 9:00:55 AM scale: 1"=10'
ID= USER
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APPENDIX D
Visual Distress Identification Survey Photographs

Table 3.1-1
SUMMARY TABLE
Route 22 Westbound from Gary Road to Sayre Road
Pavement Resurfacing Recommendations and Report
Township of Union, Union County, New Jersey

Picture No.	Location[a]	Distress Feature Type [b]	Severity Levels[b]
1	*East of Gary Rd*	Pothole	Moderate
		Longitudinal Cracking	Moderate
		Transverse cracking	Low
		Raveling	Low
		Bleeding	Low
2	*East of Gary Rd*	Rutting in wheel path	Low
		Raveling	Low
3	*Gary Rd Rt 22 WB Entrance Ramp*	Fatigue cracking (chicken wire/alligator pattern)	High
		Longitudinal cracks	Moderate
		Polished Aggregate	Moderate
		Water bleeding	Low
4	*Gary Rd. Rt 22 WB Entrance Ramp*	Raveling	Moderate
5	*Gary Rd. Rt 22 WB Exit Ramp*	Patch Deterioration	Moderate
		Raveling	Moderate
6	*Gary Rd. Rt 22 WB Entrance Ramp*	Fatigue Craking	Moderate
		Pothole	Moderate
7	*Gary Rd. Rt 22 WB Exit Ramp*	Block Cracking	Moderate
		Pothole	Moderate
8	*Rt 22 WB Sta. 233 - 234*	Rutting in wheel path	Moderate
		Longitudinal Craking	Low
		Bleeding near shoulder	Low
9	*Rt 22 WB Sta. 234 - 235*	Raveling near shoulder	Low
		Bleeding near shoulder	Low
10	*Rt 22 WB Sta. 235 - 236*	Rutting in wheel path	Moderate
		Raveling	Low
11	*Rt 22 WB Sta. 236 - 237*	Rutting in wheel path	Low
		Raveling	Low
12	*Rt 22 WB Sta. 236 - 237*	Rutting in wheel path	Moderate
		Raveling	Low
		Bleeding near shoulder	Low
13	*Rt 22 WB Sta. 238 - 239*	Raveling	Low
		Potholes	Low
14	*Rt 22 WB Sta. 239 - 240*	Rutting in wheel path	Low
		Raveling	Low
15	*Rt 22 WB Sta. 240 - 241*	Rutting in wheel path	Low
		Raveling	Low
16	*Rt 22 WB Sta. 240 - 241*	Raveling near shoulder	Low
		Bleeding near shoulder	Low
17	*Rt 22 WB Sta. 241 - 242*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
18	*Vauxhall Rd Rt 22 WB Exit ramp*	Raveling	Low
		Bleeding	Low

(a) Approximate locations

(b) Distress Identification Mannual for the Long-Term Pavement Performance Project, Strategic Highway Research Program, National Research Councilo, 1993

Table 3.1-1 Continued Next Page

Table 3.1-1
SUMMARY TABLE
Route 22 Westbound from Gary Road to Sayre Road
Pavement Resurfacing Recommendations and Report
Township of Union, Union County, New Jersey

Picture No.	Location[a]	Distress Feature Type [b]	Severity Levels[b]
19	*Rt 22 WB Sta. 242 - 243*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
20	*Vauxhall Rd RT 22 WB Entrance Ramp*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
21	*Rt 22 WB Sta. 243 - 244*	Rutting in wheel path	
		Raveling	Low
		Bleeding near shoulder	Low
22	*Rt 22 WB Sta. 244 - 245*	Rutting in wheel path	Low
		Raveling	Low
23	*Rt 22 WB Sta. 246 - 247*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
24	*Rt 22 WB Sta. 246 - 247*	Rutting in wheel path	Low
		Raveling	Low
25	*Rt 22 WB Sta. 246 - 247*	Raveling	Low
		Bleeding near shoulder	Low
26	*Rt 22 WB Sta. 247 - 248*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
27	*Rt 22 WB Sta. 247 - 248*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
28	*Rt 22 WB Sta. 248 - 249*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
29	*Rt 22 WB Sta. 248 - 249*	Rutting in wheel path	Low
		Raveling	Low
		Bleeding near shoulder	Low
30	*Rt 22 WB Sta. 249 - 250*	Rutting in wheel path	Low
		Raveling	Low
31	*Sayre Rd*	Raveling	Low
		Bleeding	Low
32	*Rt 22 WB Sta. 251 - 252*	Rutting in wheel path	Low
		Raveling	Low
33	*Rt 22 WB Sta. 253 - 254*	Rutting in wheel path	Low
		Raveling	Low

(a) Approximate locations

(b) Distress Identification Mannual for the Long-Term Pavement Performance Project, Strategic Highway Research Program, National Research Councilo, 1993



Picture 1: East of Gary Rd



Picture 2: East of Gary Rd



Picture 3: Gary Rd Rt. 22 WB Entrance Ramp



Picture 4: Gary Rd Rt. 22 WB Entrance Ramp



Picture 5: Gary Rd Rt. 22 WB Exit Ramp



Picture 6: Gary Rd Rt. 22 WB Entrance Ramp



Picture 7: Gary Rd Rt. 22. WB Exit Ramp



Picture 8: Rt. 22 WB Sta. 233 - 234



Picture 9: Rt. 22 WB Sta. 234 - 235



Picture 10: Rt. 22 WB Sta. 235 - 236



Picture 11: Rt. 22 WB Sta. 236-237



Picture 12: Rt. 22 WB Sta. 236-237



Picture 13: Rt. 22 WB Sta. 238 - 239



Picture 14: Rt. 22 WB Sta. 239 - 240



Picture 15: Rt. 22 WB Sta. 240 – 241



Picture 16: Rt. 22 WB Sta. 240 – 241



Picture 17: Rt. 22 WB Sta. 241 – 242



Picture 18: Vauxhall Rd Rt. 22 WB Exit Ramp



Picture 19: Rt. 22 WB Sta. 242 – 243



Picture 20: Vauxhall Rd Rt. 22 WB Entrance Ramp



Picture 21: Rt. 22 WB Sta. 243 – 244



Picture 22: Rt. 22 WB Sta. 244 – 245



Picture 23: Rt. 22 WB Sta. 246 – 247



Picture 24: Rt. 22 WB Sta. 246 – 247



Picture 25: Rt. 22 WB Sta. 246 – 247



Picture 26: Rt. 22 WB Sta. 247 - 248



Picture 27: Rt. 22 WB Sta. 247 - 248



Picture 28: Rt. 22 WB Sta. 248 - 249



Picture 29: Rt. 22 WB Sta. 248 - 249



Picture 30: Rt. 22 WB Sta. 249 - 250



Picture 31: Sayre Rd. Ramp



Picture 32: Rt. 22 WB Sta. 251 - 252



Picture 33: Rt. 22 WB Sta. 253 - 254

APPENDIX E
Soil Boring and Pavement Core Logs

The Louis Berger Group, Inc. 412 Mount Kemble Avenue Morristown, NJ 07960	**Boring Log** Page 1 of 1	**BORING NO.: BC-1**

CLIENT:	NJDOT	**PROJECT NO.:**	CKL501A1
PROJECT:	Route 22 Westbound Safety Improvements	**DATE STARTED:**	9/25/2012
LOCATION:	Union, NJ	**DATE FINISHED:**	9/25/2012
DRILLING CONTRACTOR:	TRC	**DRILLER:**	
DRILLING METHOD:	Auger	**SIZE AND TYPE OF BIT:**	3" Auger
DRILLING EQUIPMENT:	Soil Scout Aclier	**INSPECTOR:**	J. Ganz
SAMPLER TYPE:		**HAMMER:**	Safety Hamme **WEIGHT:** 140 lbs **DROP:** 30 in

BOREHOLE DATA

Diameter (inches):	**Elevation (ft. MSL):**	**Northing:**
Total Depth (ft.): 16	**Groundwater Depth [Elevation] (ft.):**	**Easting:**

NOTES:

Elevation (ft. MSL)	Bottom Elevation	Blow Counts	Standard Penetration Resistance N-Value (Blows / ft.) 10 20 30 40 50	SPT-N (Blows/ft.)	Recovery (in)	Sample No.	Depth In Feet	Bottom Depth	Lithology	USCS	SOIL DESCRIPTION AND STRATIGRAPHY	NOTES
		9 27 38	>>	65	9	S1	1			SM	Moderate brown (5YR 4/4), coarse to fine Sand, some Silt, some coarse to fine Gravel, dry.	
		40 31 38		59	9	S2	2 3	2		SM	Moderate brown (5YR 4/4), coarse to fine Sand, some (+) Silt, some coarse to fine Gravel, dry.	<1% Glass, <1% organics
		21 13 8		11	8	S3	4 5	4		SM	Moderate brown (5YR 4/4), coarse to fine Sand, some (+) Silt, some coarse to fine Gravel, dry.	
		6 5 6 4		15	5	S4	6 7	6		SC-SM	Moderate brown (5YR 4/4), coarse to fine Sand, some (+) Silt, some coarse to fine Gravel, dry.	
		6 9 12 12	>>	69	11	S5	8 9	8		SC-SM	Moderate brown (5YR 4/4), coarse to fine Sand, some (+) Silt, some coarse to fine Gravel, dry.	large gravel stuck in shoe
		21 48 42 17	>>	62	16	S6	10 11	10		GM	Moderate brown (5YR 4/4), coarse to fine Gravel, and coarse to fine Sand, some (-) Silt, dry.	
		32 30 18					12 13	12			Refusal No Recovery.	
		100/0					14 15	14			Refusal No Recovery.	
							16	16			Total Depth of Boring 16 feet.	
							17					

The Louis Berger Group, Inc. 412 Mt. Kemble Ave Morristown, NJ 07962	**PAVEMENT CORE LOG**	**Pavement Core No.: PC-1** Page 1 of 1

PROJECT: Route 22 Vaux Hall	**PROJECT LOCATION:** Rt 22 Westbound Union, NJ	**GROUND ELEVATION (ft.):**
STATION:	**OFFSET (ft):**	**REFERENCE LINE:**
BORINGS BY:	**SAMPLE SIZE (inches):**	
INSPECTOR: J. Ganz	**DATE COMPLETED:** 9/25/2012	

DEPTH (ft)	SAMPLE NO. (SIZE)	DEPTH inches	DEPTH mm	MATERIAL GRAPHIC	USCS	MATERIAL DESCRIPTION	FIELD PHOTOGRAPHS
0	()	1				ASPHALT CONCRETE, 6.0".	
		2					
		3					
		4					
		5	125				
0.5	()	6				CONCRETE, 10.0".	
		7					
		8					
		9					
		10	250				
		11					
1		12					
		13					
		14					
		15	375				
1.333		16			GW-GM	Dark yellowish brown (10YR 4/2), coarse to fine GRAVEL, and (-) coarse to fine Sand, trace (+) Silt, wet.	
		17				Bottom of Corehole at 1.417 ft. (17.004in.).	

Soil descriptions represent a field identification using the Burmister System of Classification unless otherwise noted.
All dimensions are in feet unless noted otherwise.

The Louis Berger Group, Inc. 412 Mt. Kemble Ave Morristown, NJ 07962	**PAVEMENT CORE LOG**	**Pavement Core No.: PC-2** Page 1 of 1

PROJECT: Route 22 Vaux Hall	**PROJECT LOCATION:** Rt 22 Westbound Union, NJ	**GROUND ELEVATION (ft.):**
STATION:	**OFFSET (ft):**	**REFERENCE LINE:**
BORINGS BY:	**SAMPLE SIZE (inches):**	
INSPECTOR: J. Ganz	**DATE COMPLETED:** 9/25/2012	

DEPTH (ft)	SAMPLE NO. (SIZE)	DEPTH inches	DEPTH mm	MATERIAL GRAPHIC	USCS	MATERIAL DESCRIPTION	FIELD PHOTOGRAPHS
0	()	1				ASPHALT CONCRETE, 4.25".	
		2					
		3					
		4					
0.354	()	5	125			REINFORCED CONCRETE, 10.5".	
		6					
		7					
		8					
		9					
		10	250				
		11					
1		12					
		13					
		14					
1.25		15	375		SW-SM	Coarse to fine SAND, little (-) Silt, some (+) coarse to fine Gravel, sat.	
						Bottom of Corehole at 1.283 ft. (15.396in.).	

Soil descriptions represent a field identification using the Burmister System of Classification unless otherwise noted.
All dimensions are in feet unless noted otherwise.

The Louis Berger Group, Inc.
412 Mt. Kemble Ave
Morristown, NJ 07962

PAVEMENT CORE LOG

Pavement Core No.: PC-3

PROJECT: Route 22 Vaux Hall	**PROJECT LOCATION:** Rt 22 Westbound Union, NJ	**GROUND ELEVATION (ft.):**
STATION:	**OFFSET (ft):**	**REFERENCE LINE:**
BORINGS BY:	**SAMPLE SIZE (inches):**	
INSPECTOR: J. Ganz	**DATE COMPLETED:** 9/25/2012	

DEPTH (ft)	SAMPLE NO. (SIZE)	DEPTH inches	DEPTH mm	MATERIAL GRAPHIC	USCS	MATERIAL DESCRIPTION	FIELD PHOTOGRAPHS
0	()	1–4				ASPHALT CONCRETE, 4.5".	
0.375	()	5–14	125–250			CONCRETE, 10.0".	
1							
1.208		15	375		GW	Dark yellowish orange (10YR 6/6), coarse to fine GRAVEL, some coarse to fine Sand, trace (-) Silt, sat.	
						Bottom of Corehole at 1.291 ft. (15.492in.).	

Soil descriptions represent a field identification using the Burmister System of Classification unless otherwise noted.
All dimensions are in feet unless noted otherwise.

APPENDIX F
Laboratory Test Results

SUMMARY OF LABORATORY TEST DATA

Project Name: Route 22 Westbound
Client Name: The Louis Berger Group, Inc.
TRC Project #: 196032

SAMPLE IDENTIFICATION			Soil Group (USCS System)	Moisture Content (%)	GRAIN SIZE DISTRIBUTION				PLASTICITY			
Boring #	Sample #	Depth			Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index
BC-1	S-1	0.0-2.0 ft	SM	6.6	23.3	48.6	28.1		28	28	NP	-
	S-2	2.0-4.0 ft	SM	8.9	26.2	38.3	35.5		18	17	1	-8.1
	S-4	6.0-8.0 ft	SC-SM	6.9	28.2	36.7	35.1		22	17	5	-2.0
	S-6	10.0-12.0 ft	GM	8.7	39.9	38.5	21.6		21	20	1	-11.3
PC-1	S-1	16.0-21.0 in	GW-GM	15.6	53.7	36.0	10.3		-	-	-	-
PC-2	S-1	13.0-16.0 in	SW-SM	18.4	35.2	53.8	11.0		-	-	-	-
PC-3	S-1	14.5-18.0 in	GW	18.0	65.4	33.1	1.5		-	-	-	-

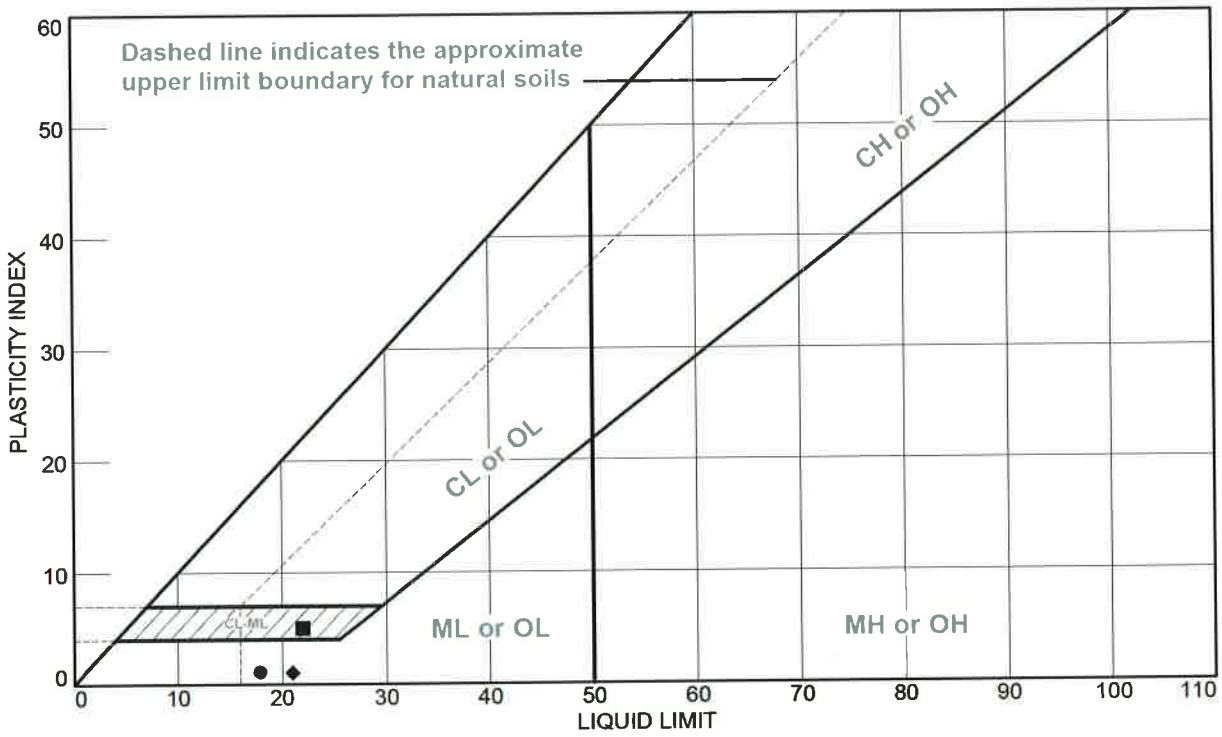
SAMPLE DESCRIPTIONS: RELATIVE PROPORTIONS		
Descriptive Term	Symbol	Estimated Percentages
Trace	TR	1-10
Trace to Some	TR to SM	10-15
Some	SM	15-30
Silty, Clayey, Sandy, Gravelly	-	30-40
And	and	40-50

Descriptive Terms: F= Fine, M=Medium, C=Coarse

DRAWN BY: TBT 10/12/12

CHECKED BY: MLG 10/12/12

Atterberg Limits and Moisture Content Report



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LIQUIDITY INDEX	USCS
●	BC-1	S-2	2.0-4.0 FT	8.9	17	18	1	-8.1	SM
■	BC-1	S-4	6.0-8.0 FT	6.9	17	22	5	-2.0	SC-SM
▲	BC-1	S-1	0.0-2.0 FT	6.6	28	28	NP		SM
◆	BC-1	S-6	10.0-12.0 FT	8.7	20	21	1	-11.3	GM

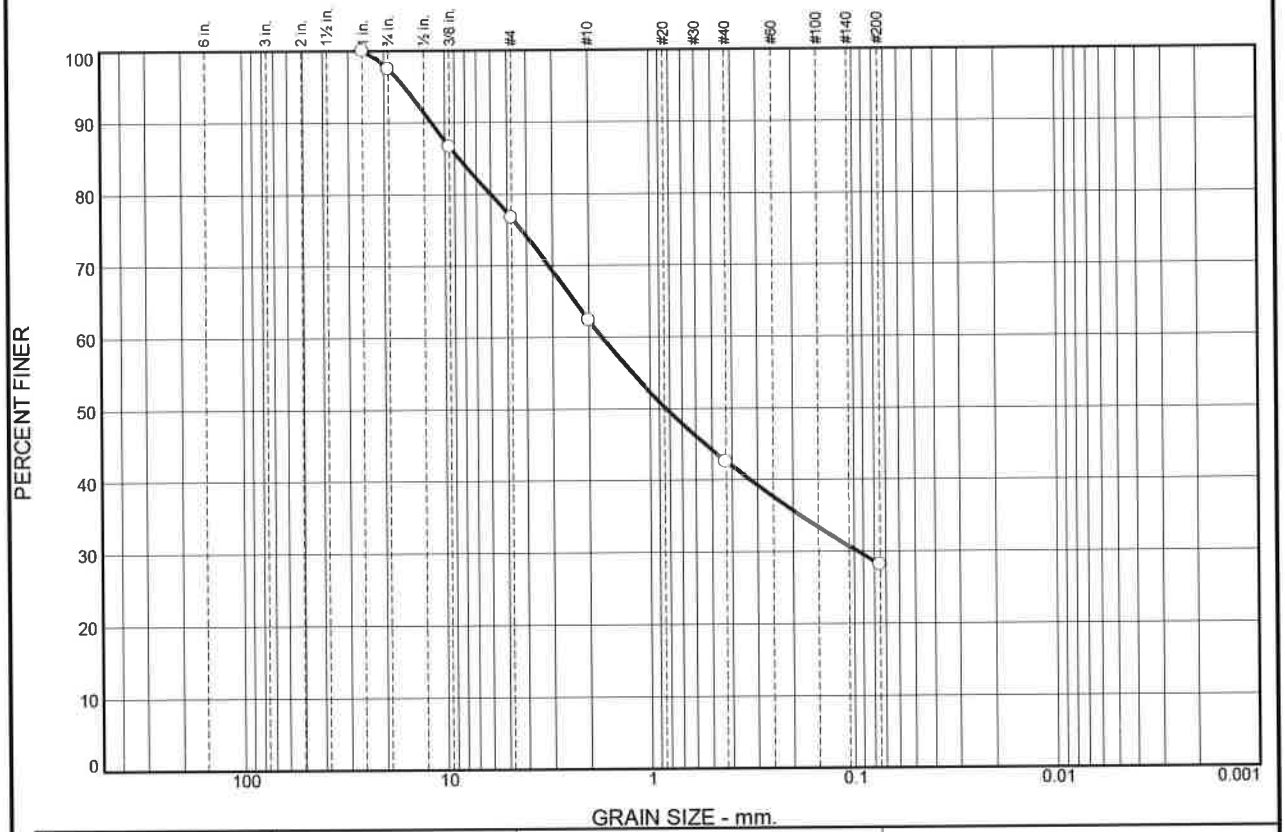
TRC
Engineers, Inc.
Mt. Laurel, NJ

Client: THE LOUIS BERGER GROUP, INC.
Project: ROUTE 22 WESTBOUND

Project No.: 196032

Figure 1

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	2.5	20.8	14.4	19.7	14.5	28.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	28	28	8.5760	1.7259	0.8360	0.0961				

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ BROWN M/F/C SAND, SM SILT, SM F/C GRAVEL	10/11/12	SM	6.6

Project No. 196032 **Client:** THE LOUIS BERGER GROUP, INC.
Project: ROUTE 22 WESTBOUND

○ **Source of Sample:** BC-1 **Depth:** 0.0-2.0 FT **Sample Number:** S-1

TRC Engineers, Inc.

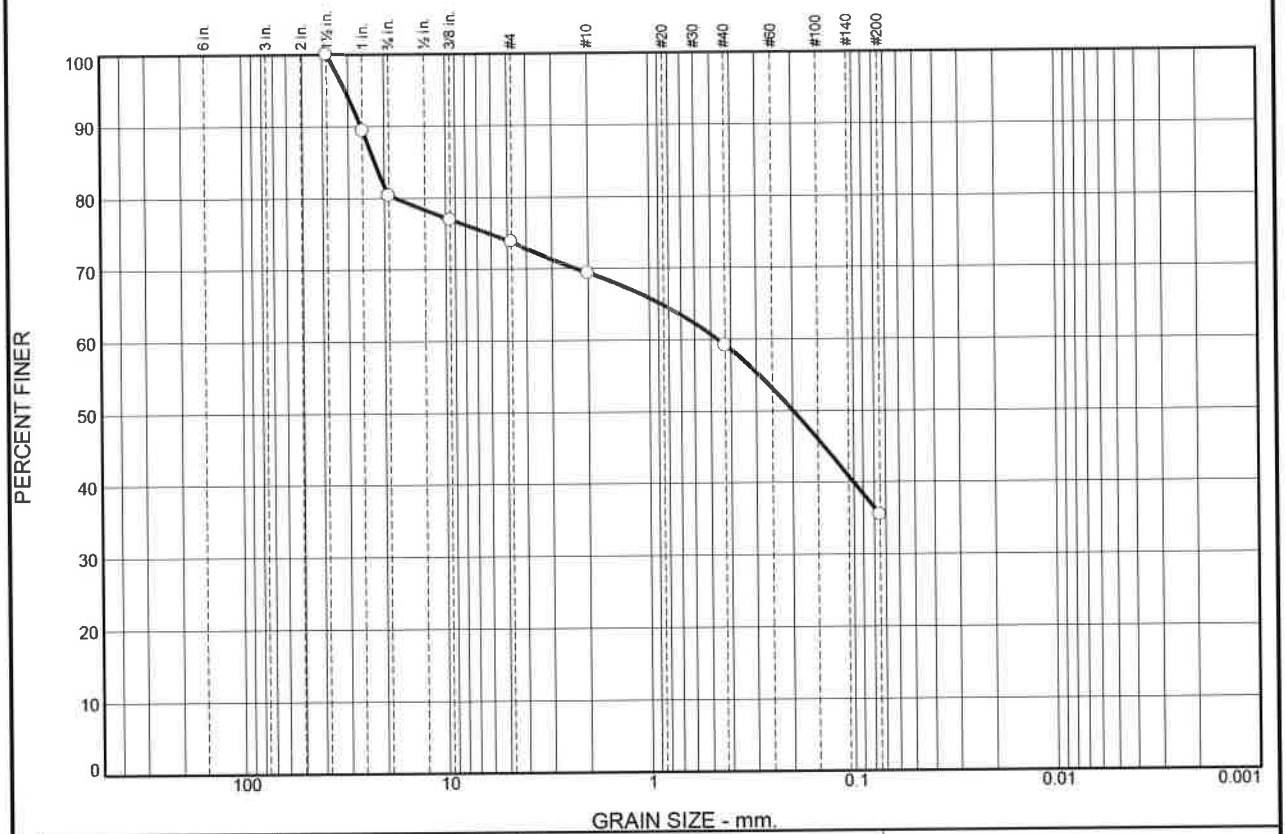
Mt. Laurel, NJ

Remarks:
○SAMPLE DESCRIPTION BASED ON VISUAL IDENTIFICATION AND LABORATORY ANALYSIS

Figure 2

Tested By: TBT 10/11/12 **Checked By:** MLG 10/12/12

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	19.7	6.5	4.4	10.2	23.7	35.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_C	C_U
○	18	17	22.2647	0.4626	0.1987					

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ BROWN SILTY, F/M/C SAND, SM C/F GRAVEL	10/11/12	SM	8.9

Project No. 196032 **Client:** THE LOUIS BERGER GROUP, INC.
Project: ROUTE 22 WESTBOUND

○ **Source of Sample:** BC-1 **Depth:** 2.0-4.0 FT **Sample Number:** S-2

TRC Engineers, Inc.

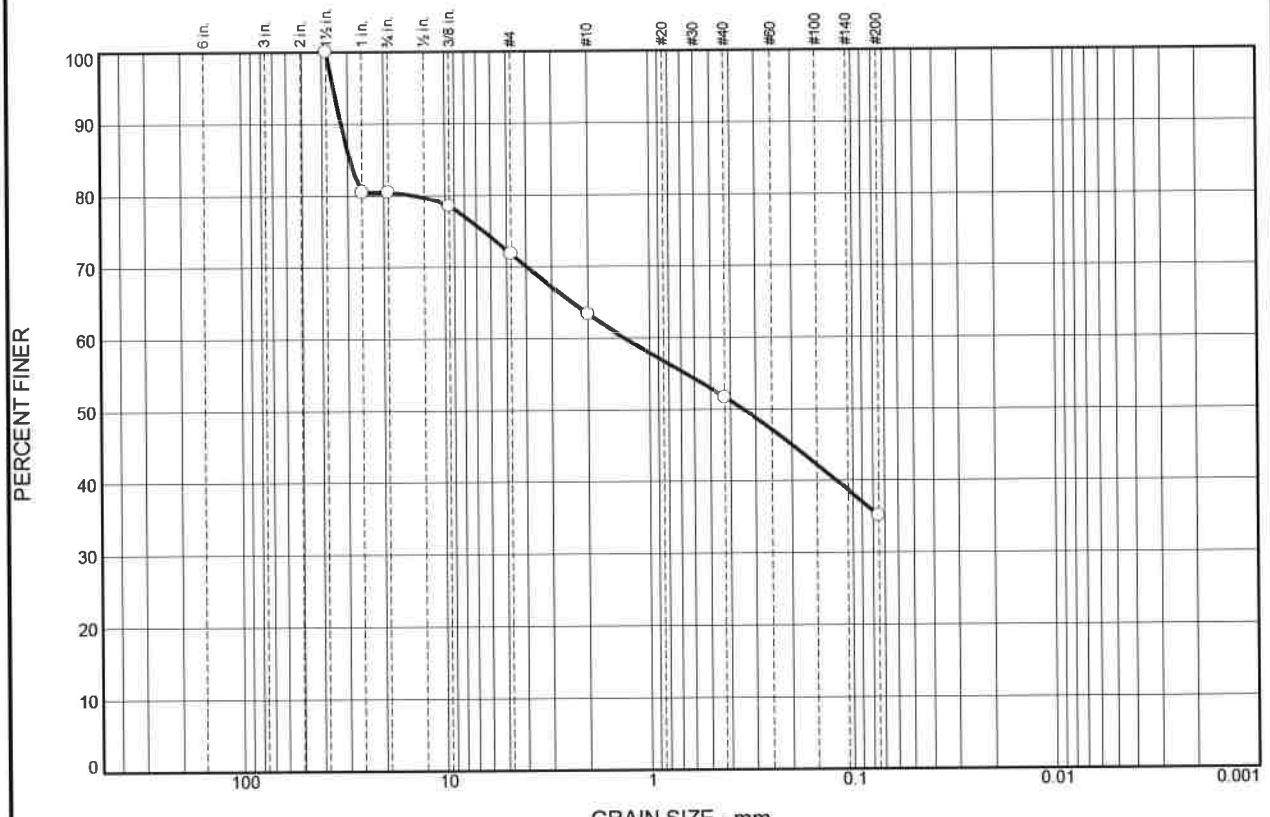
Mt. Laurel, NJ

Remarks:
○SAMPLE DESCRIPTION BASED ON VISUAL IDENTIFICATION AND LABORATORY ANALYSIS

Figure 3

Tested By: TBT 10/11/12 **Checked By:** MLG 10/12/12

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	19.6	8.6	8.5	11.6	16.6	35.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	22	17	29.2374	1.3282	0.3463					

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ RED-BROWN TO BROWN F/M/C SAND, SM C/F GRAVEL, SM SILT, TR CLAY	10/11/12	SC-SM	6.9

Project No. 196032 **Client:** THE LOUIS BERGER GROUP, INC.
Project: ROUTE 22 WESTBOUND

○ **Source of Sample:** BC-1 **Depth:** 6.0-8.0 FT **Sample Number:** S-4

TRC Engineers, Inc.

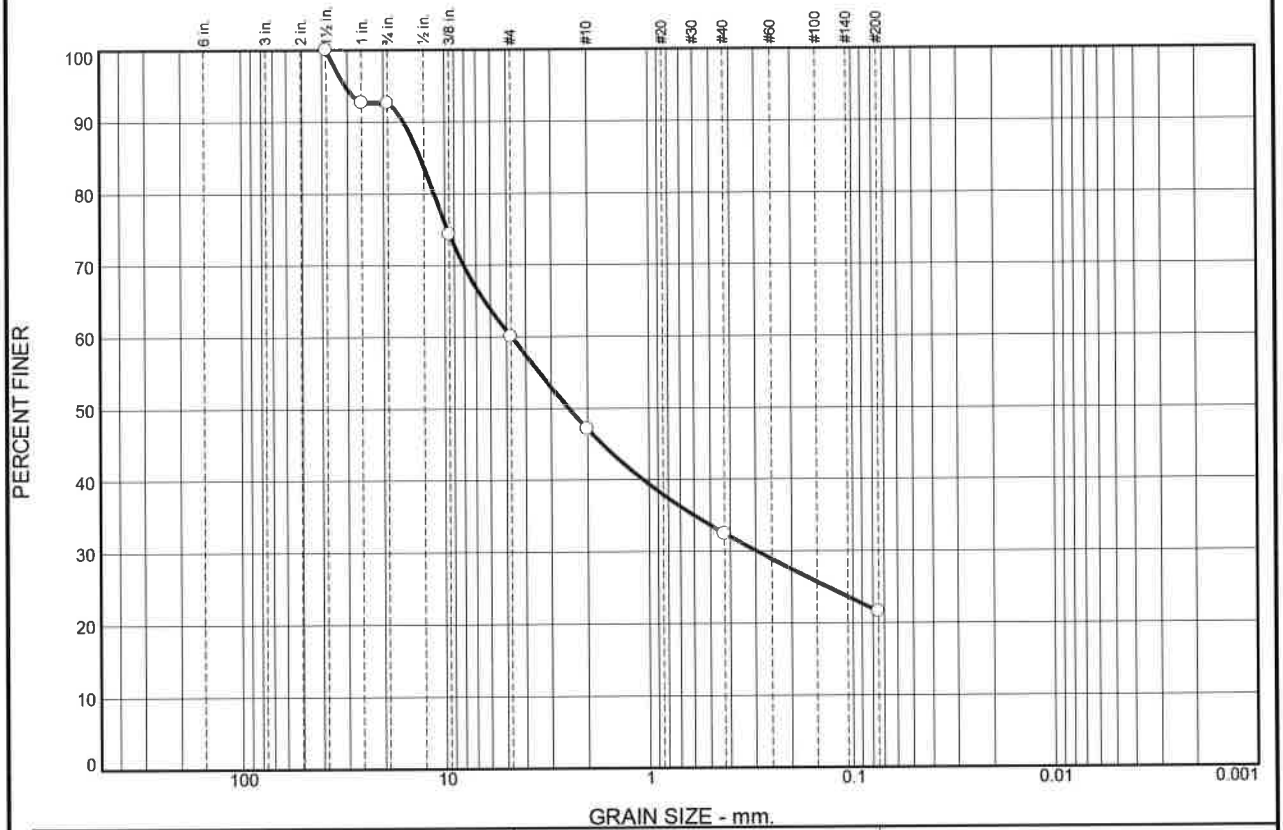
Mt. Laurel, NJ

Remarks:
○SAMPLE DESCRIPTION BASED ON VISUAL IDENTIFICATION AND LABORATORY ANALYSIS

Figure 4

Tested By: TBT 10/11/12 **Checked By:** MLG 10/12/12

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	7.4	32.5	13.0	14.6	10.9	21.6	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	21	20	13.2299	4.7298	2.4656	0.2961				

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ RED-BROWN M/C/F SANDY F/C GRAVEL, SM SILT	10/11/12	GM	8.7

Project No. 196032 **Client:** THE LOUIS BERGER GROUP, INC.

Project: ROUTE 22 WESTBOUND

○ **Source of Sample:** BC-1 **Depth:** 10.0-12.0 FT **Sample Number:** S-6

Remarks:
○SAMPLE DESCRIPTION BASED ON VISUAL IDENTIFICATION AND LABORATORY ANALYSIS

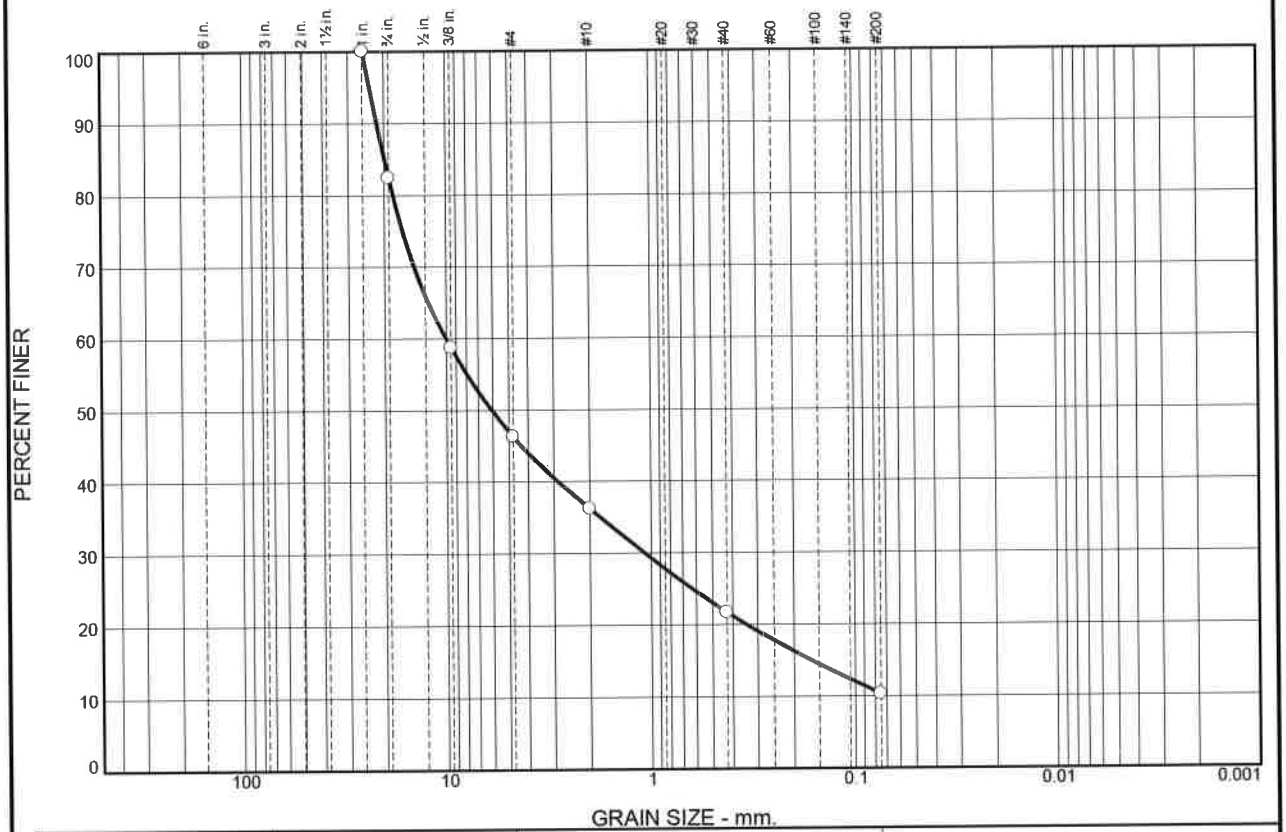
TRC Engineers, Inc.

Mt. Laurel, NJ

Figure 5

Tested By: TBT 10/11/12 **Checked By:** MLG 10/12/12

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	17.6	36.1	10.1	14.5	11.4	10.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			19.9508	10.0690	6.0464	1.0737	0.1645			

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ RED-BROWN M/F/C SANDY F/C GRAVEL, TR TO SM SILT	10/11/12	GW-GM	15.6

Project No. 196032 **Client:** THE LOUIS BERGER GROUP, INC.
Project: ROUTE 22 WESTBOUND

○ **Source of Sample:** PC-1 **Depth:** 16.0-21.0 IN **Sample Number:** S-1

TRC Engineers, Inc.

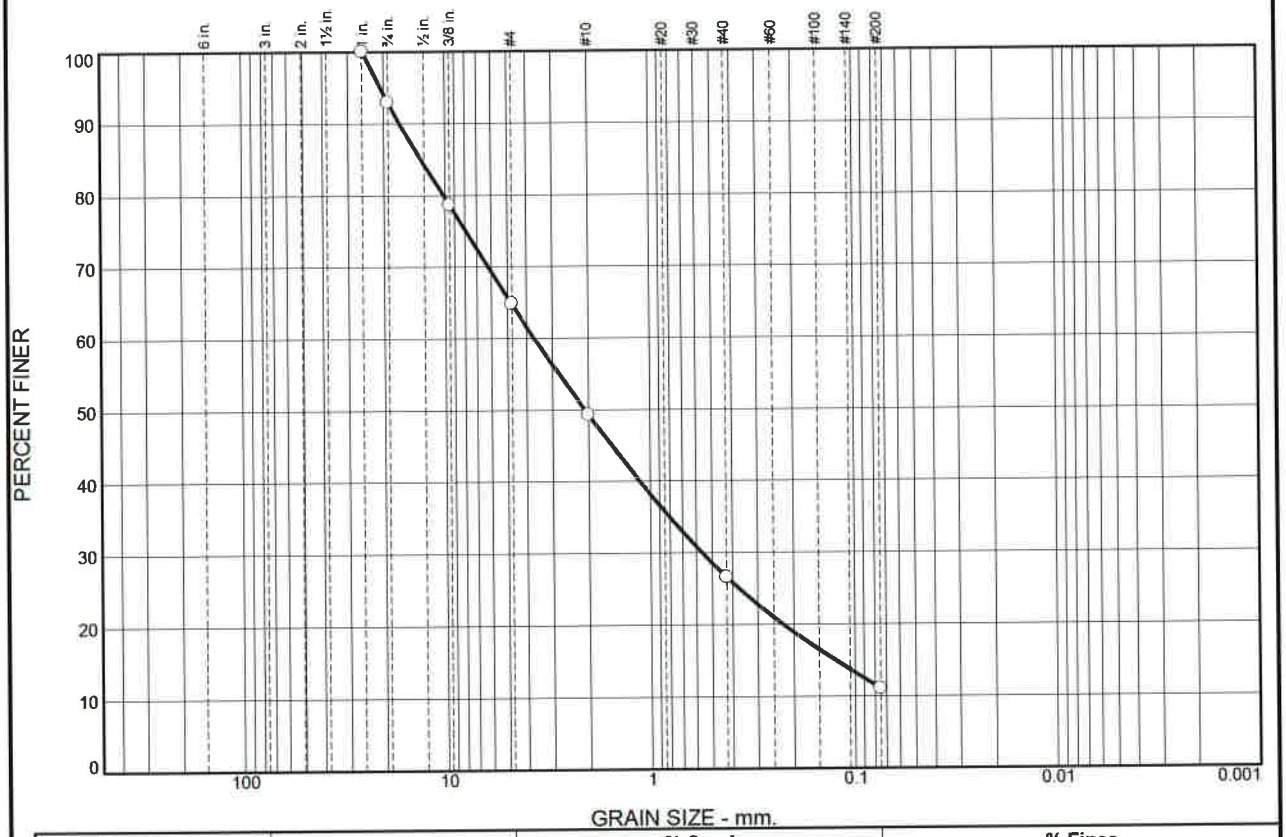
Mt. Laurel, NJ

Remarks:
○SAMPLE DESCRIPTION BASED ON VISUAL IDENTIFICATION AND LABORATORY ANALYSIS
*SAMPLE CONTAINS ASPHALT

Figure 6

Tested By: TBT 10/11/12 **Checked By:** MLG 10/12/12

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	7.1	28.1	15.5	22.7	15.6	11.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			13.1551	3.6844	2.0844	0.5612	0.1257			

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ BROWN F/C GRAVELLY M/F/C SAND, TR TO SM SILT	10/11/12	SW-SM	18.4

Project No. 196032 **Client:** THE LOUIS BERGER GROUP, INC.
Project: ROUTE 22 WESTBOUND

○ **Source of Sample:** PC-2 **Depth:** 13.0-16.0 IN **Sample Number:** S-1

TRC Engineers, Inc.

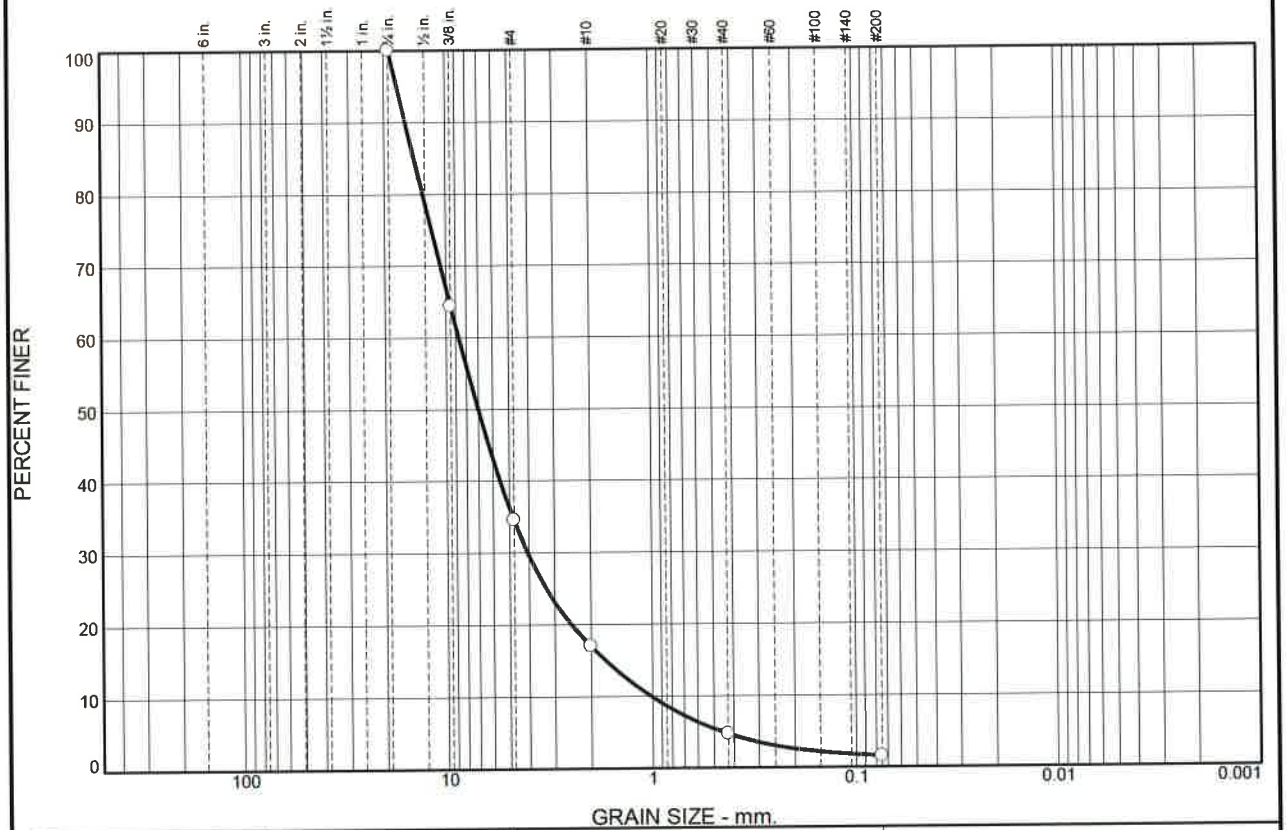
Mt. Laurel, NJ

Remarks:
○SAMPLE DESCRIPTION BASED ON VISUAL IDENTIFICATION AND LABORATORY ANALYSIS
*STANDING WATER IN JAR

Figure 7

Tested By: TBT 10/11/12 **Checked By:** MLG 10/12/12

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	65.4	17.6	12.3	3.2	1.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			14.2903	8.7075	7.0323	4.0761	1.6948	1.0195	1.87	8.54

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ RED-BROWN C/M/F SANDY F/ GRAVEL, TR SILT	10/11/12	GW	18.0

Project No. 196032 **Client:** THE LOUIS BERGER GROUP, INC.
Project: ROUTE 22 WESTBOUND

○ **Source of Sample:** PC-3 **Depth:** 14.5-18.0 IN **Sample Number:** S-1

TRC Engineers, Inc.

Mt. Laurel, NJ

Remarks:
○SAMPLE DESCRIPTION BASED ON VISUAL IDENTIFICATION AND LABORATORY ANALYSIS
*CONTAINS CONCRETE; STANDING WATER IN JAR

Figure 8

Tested By: TBT 10/11/12 **Checked By:** MLG 10/12/12

APPENDIX G
DARWin® Computer Outputs

New Jersey Department of Transportation (NJDOT)
MEMORENDUM
Traffic and Pavement Design Data
(November 20, 2012)

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MEMORANDUM

TO: **Prabhu Casuba, Principal Geotechnical Engineer,**
Louis Berger Group, Inc.

FROM: **Nilesh Bhavsar**
Division of Project Management

DATE: **November 20, 2012**

PHONE: **(609) 530-3642**

SUBJECT: **Route 22 WB, MP, 55.9-56.43**
Township of Union,, Union County
Projected Traffic Count Volume

In response to your request the projected Traffic Count Volume is as per the following details:

Traffic Design Data

2013 ADT (1-way)	= 36,060	vpd
2033 ADT (1- way)	= 39,850	vpd
2033 DHV (1- way)	= 3,550	vph
2033 Directional Distribution	= 100. %	
2033 Heavy Truck % in Peak Hour	= 10.0 %	

Pavement Design Data

2013 ADT (1-way)	= 36,060 vpd
2033 ADT (1-way)	= 39,850 vpd
2033 Heavy Truck % in 24 Hour	= 8 %
2033 Total Truck in 24 Hours	= 13 %

If you have any question please contact me at (609) 530-3642.

Route 22 Westbound Travel Lanes and Shoulder Asphalt Concrete (AC) overlay of AC/PCC (Portland Cement Concrete) Pavement

1993 AASHTO Pavement Design

DARWin Pavement Design and Analysis System

A Proprietary AASHTOWare
Computer Software Product
PCasuba

Overlay Design Module

Route 22 Westbound, AC Overlay of AC/PCC Pavement, MP 55.9 to MP 56.4, 10 Years

AC Overlay of AC/PCC Pavement

Pavement Thickness for Future Traffic	11.67 in

Design Method	Effective Existing Overlay Thickness (in)	Overlay Thickness (in)
Condition Survey	10.36	2.67

Pavement Thickness for Future Traffic

Future 18-kip ESALs Over Design Period	22,133,720
Initial Serviceability	4.2
Terminal Serviceability	3
PCC Modulus of Rupture	880 psi
PCC Elastic Modulus	9,000,000 psi
Static k-value	300 psi/in
Reliability Level	95 %
Overall Standard Deviation	0.44
Load Transfer Coefficient, J	3.2
Overall Drainage Coefficient, Cd	1
Calculated Thickness for Future Traffic	11.67 in

Effective Pavement Thickness - Condition Survey Method

Existing PCC Thickness	10 in
Existing AC Thickness	4 in
AC Milling Thickness	3 in
Rut Depth	- in
Durability Adjustment Factor	0.99
Fatigue Damage Adjustment Factor	-
AC Quality Adjustment Factor	0.92
Number of Deteriorated Joints	- per mi
Number of Deteriorated Cracks	0 per mi
Number of Unrepaired Punchouts	0 per mi
Number of Expansion Joints, Exceptionally Wide Joints, or AC Full Depth Patches	- 0 per mi

Calculated Results

Calculated Joints and Cracks Adjustment Factor	1.00
Calculated Effective Pavement Thickness	10.36 in

Future Simple ESAL Calculation

Performance Period (years)	10
Two-Way Traffic (ADT)	72,120
Number of Lanes in Design Direction	1
Percent of All Trucks in Design Lane	95 %
Percent Trucks in Design Direction	50 %
Percent Heavy Trucks (of ADT) FHWA Class 5 or Greater	5 %
Average Initial Truck Factor (ESALs/truck)	2.262
Annual Truck Factor Growth Rate	1 %
Annual Truck Volume Growth Rate	0 %
Growth	Compound
Total Calculated Cumulative ESALs	32,155,058 *

*Note: This value is not represented by the inputs or an error occurred in calculation.

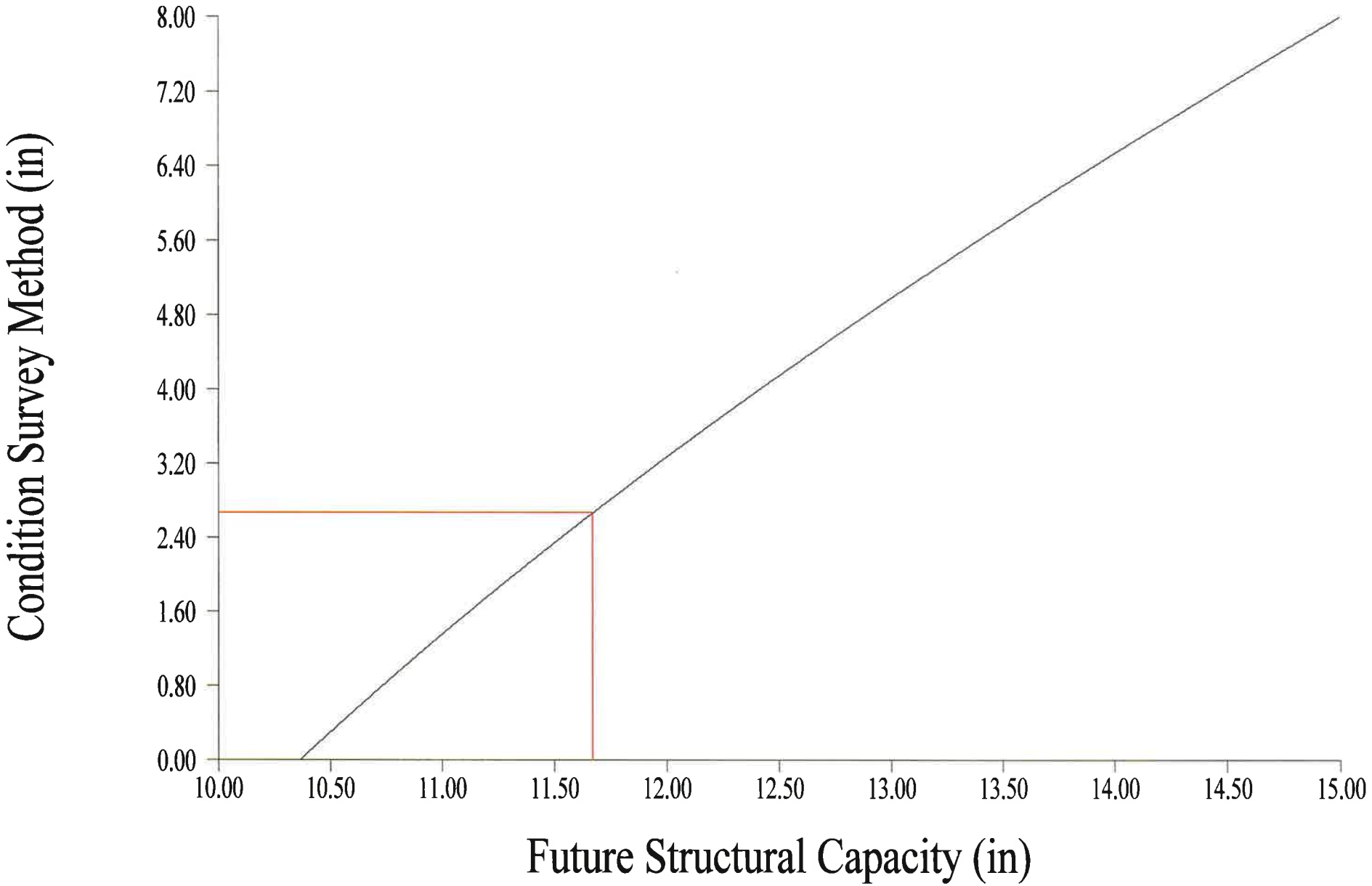
Future Rigorous ESAL Calculation

Performance Period (years)	10
Two-Way Traffic (ADT)	72,120
Number of Lanes in Design Direction	1
Percent of All Trucks in Design Lane	95 %
Percent Trucks in Design Direction	50 %

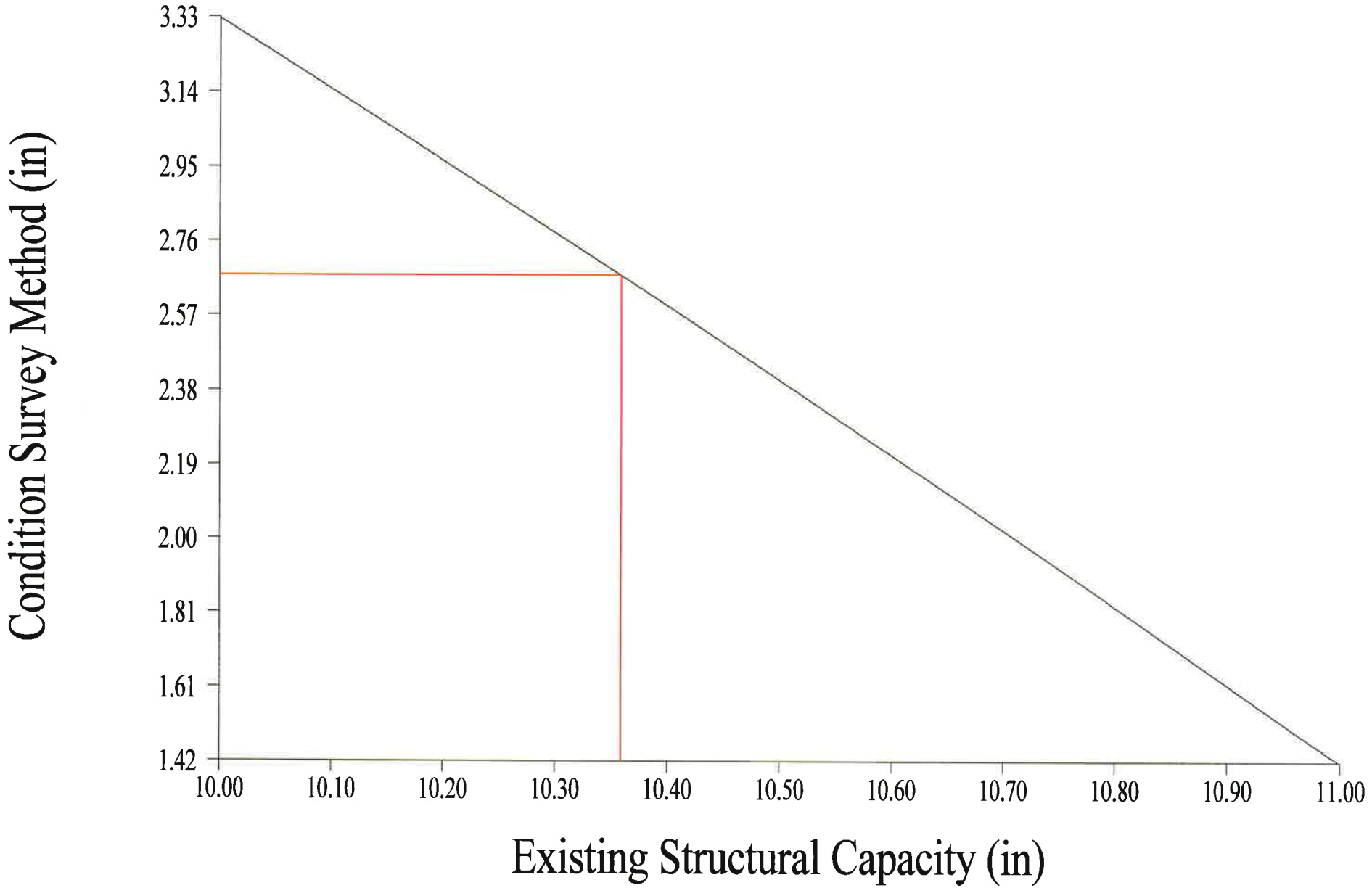
Vehicle Class	Percent of ADT	Annual % Growth	Average Initial Truck Factor (ESALs/ Truck)	Annual % Growth in Truck Factor	Accumulated 18-kip ESALs over Performance Period
2	87	1	0.0006	0	68,333
4	5	1	0.355	0	2,323,600
6	8	1	1.885	0	19,740,786
Total	100	-	-	-	22,132,720

Growth	Compound
Total Calculated Cumulative ESALs	22,132,720

Analysis of Overlay Thickness (in)



Analysis of Overlay Thickness (in)



Shoulder Widening and Ramp (unpaved sections)
Full Depth Asphalt Concrete (AC) Pavement

1993 AASHTO Pavement Design

DARWin Pavement Design and Analysis System

A Proprietary AASHTOWare
Computer Software Product
PCasuba

Flexible Structural Design Module

Route 22 WB-Full Depth, AC Pavement 20 Years MP. 55.9 to MP 56.4

Flexible Structural Design

18-kip ESALs Over Initial Performance Period	29,323,071
Initial Serviceability	4.2
Terminal Serviceability	3
Reliability Level	95 %
Overall Standard Deviation	0.44
Roadbed Soil Resilient Modulus	7,500 psi
Stage Construction	1
Calculated Design Structural Number	6.69 in

Rigorous ESAL Calculation

Performance Period (years)	20
Two-Way Traffic (ADT)	72,120
Number of Lanes in Design Direction	1
Percent of All Trucks in Design Lane	95 %
Percent Trucks in Design Direction	50 %

Vehicle Class	Percent of ADT	Annual % Growth	Average Initial Truck Factor (ESALs/ Truck)	Annual % Growth in Truck Factor	Accumulated 18-kip ESALs over Performance Period
2	87	1	0.0006	0	143,816
4	5	1	0.323	0	4,449,485
6	8	1	1.122	0	24,729,769
Total	100	-	-	-	29,323,071

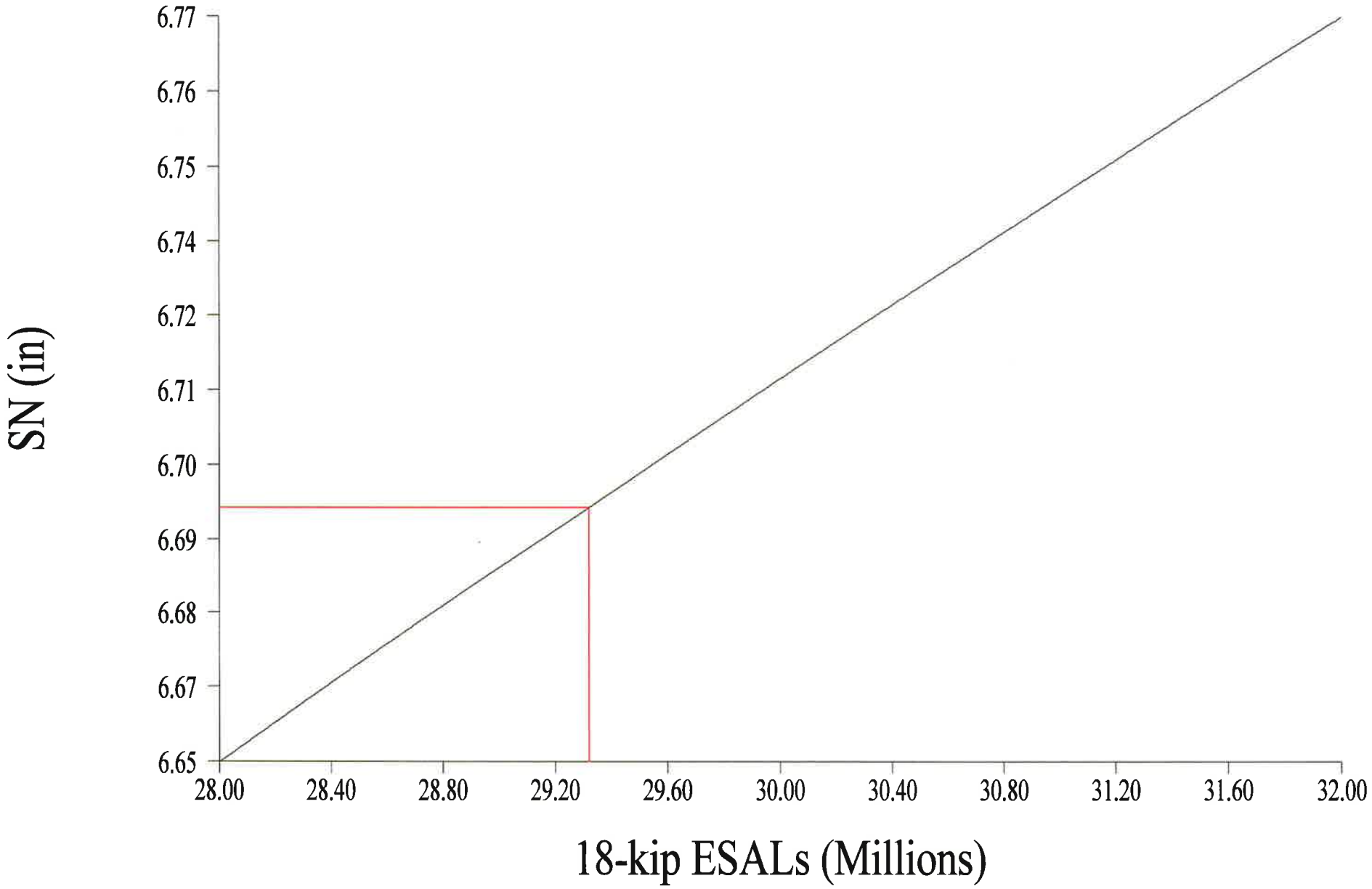
Growth	Compound
Total Calculated Cumulative ESALs	29,323,071

Specified Layer Design

Layer	Material Description	Struct Coef. (Ai)	Drain Coef. (Mi)	Thickness (Di)(in)	Width (ft)	Calculated SN (in)
1	HMA Asphalt Surface Course	0.44	1	3	24	1.32
2	Hot Mix Asphalt Intermediate Cou...	0.44	1	3	24	1.32
3	Hot Mix Asphalt Base Course	0.44	1	5	24	2.20
4	Dense Graded Aggregate Base	0.14	1	8	24	1.12
5	Subbase	0.08	1	12	24	0.96

Layer	Material Description	Struct Coef. (Ai)	Drain Coef. (Mi)	Thickness (Di)(in)	Width (ft)	Calculated SN (in)
Total	-	-	-	31.00	-	6.92

Analysis of SN (in)



APPENDIX J

PRELIMINARY ROADWAY PLANS

UTILITIES
NEW JERSEY DEPARTMENT OF TRANSPORTATION (TRAFFIC SIGNALS)
COMCAST (CABLE)
PSE&G (ELECTRIC)
TOWNSHIP OF UNION (SANITARY SEWER)
VERIZON (TELEPHONE FOC)
ELIZABETH TOWN GAS (GAS)
NEW JERSEY AMERICAN WATER (WATER)
SUNESYS (FOC)

State of New Jersey
Department of Transportation

PLANS OF

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET

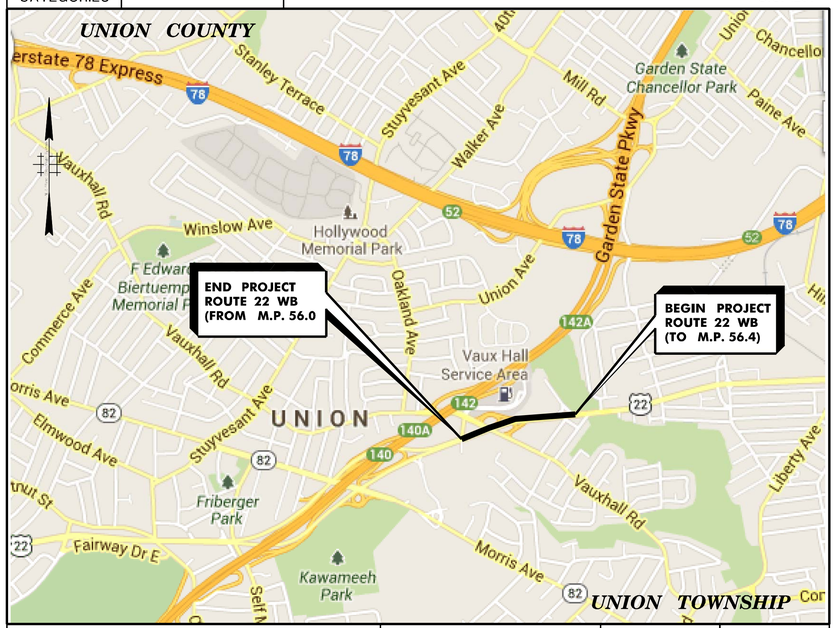
STATE	FEDERAL PROJECT NO.
N.J.	

CONTRACT NO. 056058003

TOWNSHIP OF UNION **UNION COUNTY**

PROJECT CATEGORIES	NHS NON-3R

SCALE AS INDICATED **AUGUST 2013** C.S. 1201



TYPE OF HIGHWAY - URBAN PRINCIPAL ARTERIAL | ROW SECTION | ROUTE 22 WB

INDEX OF SHEETS	
SHEET NO.	**DESCRIPTION**
1	KEY
2	ESTIMATE - DISTRIBUTION OF QUANTITIES
3	TYPICAL SECTIONS
4-7	CONSTRUCTION PLANS
8-10	GRADES
11	TRAFFIC CONTROL AND STAGING PLANS
12-14	TRAFFIC SIGNING AND STRIPING PLANS

STANDARD ROADWAY CONSTRUCTION–TRAFFIC CONTROL–BRIDGE CONSTRUCTION DETAILS BOOKLET, (2007) AND STANDARD ELECTRICAL DETAILS BOOKLET, (2007) ARE APPLICABLE TO THIS PROJECT EXCEPT FOR THOSE DETAILS CONTAINED HEREIN.

MID–POINT OF PROJECT
LONGITUDE: 74 ° 34′ 49″ W
LATITUDE: 40 ° 22′ 45″ N

DESIGN TRAFFIC DATA – RTE. 22 WB		
A.D.T. (2008) - 2 WAY	=	58,270
A.D.T. (2022) - 2 WAY	=	76,886
D.H.V. (2022) - 2 WAY	=	5,898
D	=	51%
T	=	5.6%
V	=	55 M.P.H.

"CHANGES MADE TO THESE PLANS SINCE SIGNATURE BY THE CONSULTANT MAY BE DETERMINED BY COMPARISON OF THE PLANS FILED AT THE DEPARTMENT WITH THOSE FILES AT THE OFFICE OF THE CONSULTANT."

KEY MAP

4000′ 2000′ 0 2000′ 4000′

Submitted by _____ _____
Director, Division of Project Management — Date

Approved by _____ _____
State Transportation Engineer — Date

TOTAL LENGTH OF THE PROJECT = 2,287 LIN. FT. OR 0.433 MILES

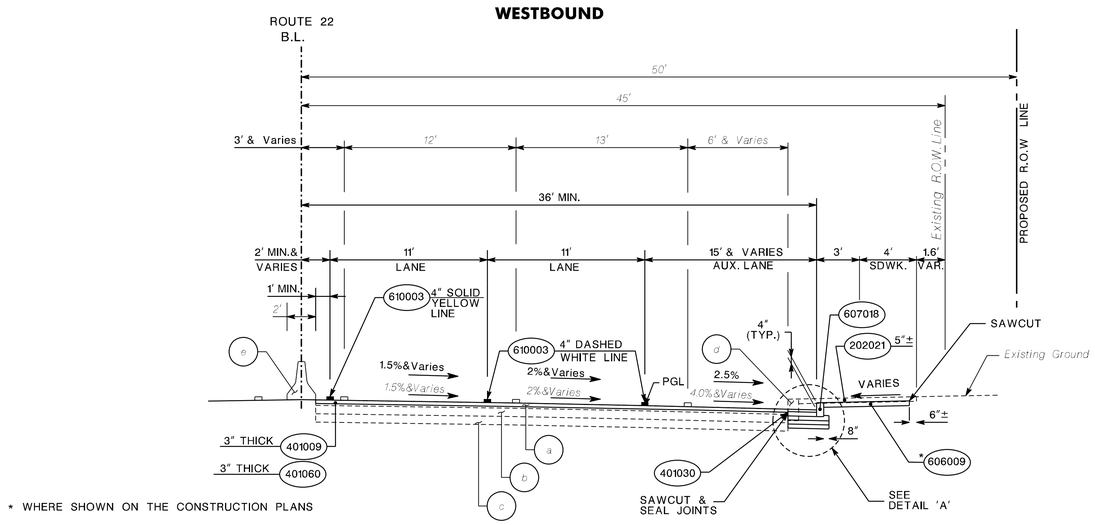
2007 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION TO GOVERN

The Louis Berger Group, Inc.
Certificate of Authorization No. 24GA27933700

Hong Y. Sun **Date**
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

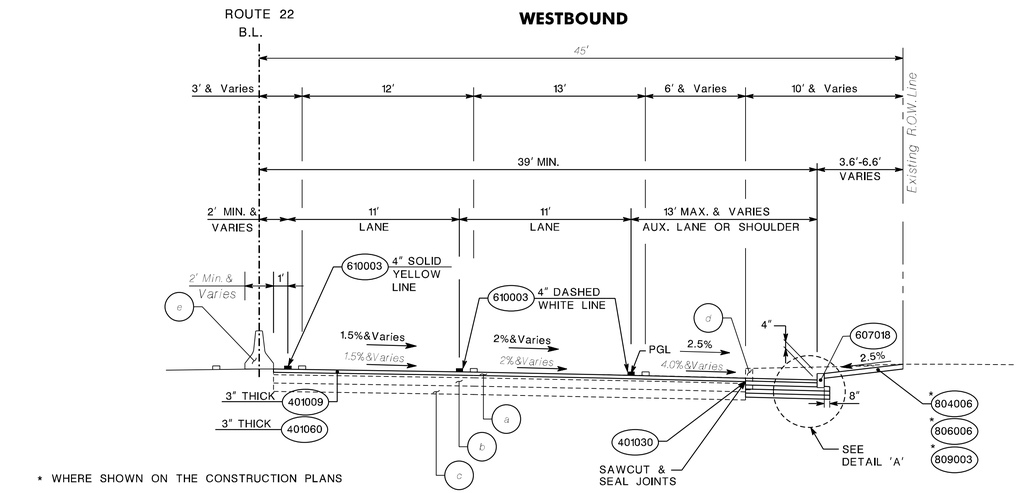
Files: V:\Operations\324\Route_22_WB_PE\Drawings\Plans\Plans\Files\01_Title\title.dgn

STATE	FEDERAL PROJECT NO.
N.J.	



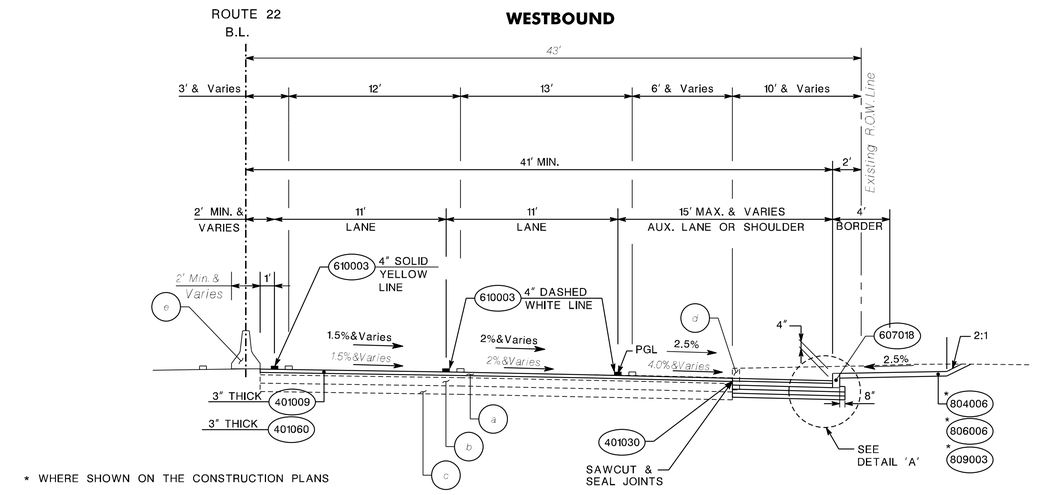
* WHERE SHOWN ON THE CONSTRUCTION PLANS

ROUTE 22 WESTBOUND AT VAUXHALL RD
STA. 246+09± TO STA. 249+32±
N.T.S.



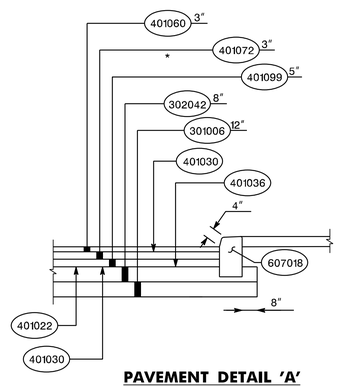
* WHERE SHOWN ON THE CONSTRUCTION PLANS

ROUTE 22 WESTBOUND AT VAUXHALL RD
STA. 249+32± TO STA. 253+85±
N.T.S.



* WHERE SHOWN ON THE CONSTRUCTION PLANS

ROUTE 22 WESTBOUND AT VAUXHALL RD
STA. 231+01± TO STA. 246+09±
N.T.S.



PAVEMENT DETAIL 'A'
N.T.S.

Existing Materials	
Item No.	Description
a	Pavement Type MA-BC Top Course, 4" and Variable Thickness
b	Pavement Type Concrete Base Course, 10" Thick
c	Subbase
d	9"x16" Concrete Vertical Curb
e	Existing 24"x32" Concrete Barrier Curb

PROPOSED MATERIALS

ITEM NO.	DESCRIPTION
202021P	REMOVAL OF PAVEMENT
301006P	SUBBASE
302042P	DENSE-GRADED AGGREGATE BASE COURSE, 8" THICK
401009P	HMA MILLING, 3" OR LESS
401022M	GEOTEXTILE, PAVING FABRIC
401030M	TACK COAT
401036M	PRIME COAT
401060M	HOT MIX ASPHALT 12.5M76 SURFACE COURSE
401072M	HOT MIX ASPHALT 12.5M64 INTERMEDIATE COURSE
401099M	HOT MIX ASPHALT 25M64 BASE COURSE
606009P	HOT MIX ASPHALT SIDEWALK, 5½" THICK
607018P	9"x16" CONCRETE VERTICAL CURB
610003M	TRAFFIC STRIPES, LONG LIFE EPOXY RESIN 4"
804006P	TOPSOILING, 4" THICK
806006P	FERTILIZING AND SEEDING, TYPE A-3
809003M	STRAW MULCHING

TS-1
TS-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

3
14

ID= $USER$ date= 8/29/2013 3:03:45 PM scale: AS SHOWN
file= V:\Operations\034\Route 22 WB PE\Deliverables\Drawings\Sheet Files\03-Typical Section Sheets\shtzntyp01.dgn

NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARD LEGEND

STATE	FEDERAL PROJECT NO.
N.J.	

Linear Features

Existing	PROPOSED	
W	W	Water Main (Size)
G	G	Gas Main (Size)
T	T	Telephone Conduit
E	E	Electric Conduit (Highway or Utility)
CTV	CTV	Cable TV
		Fiber Optic
ITS	ITS	Intelligent Transpotation System (Wires & Cables)
(Size & Type) (Over 30" - Draw to Size)	(SIZE & TYPE)	Sanitary Sewers or Storm Drains
		Pavements (Concrete or Bituminous)
		Shoulders
		Curbs
(F) (C)	(C) (F)	Slopes (Cut & Fill)
5+00 ℄	℄ 10+00	Base Line
		Twp., City, County Lines
Existing R.O.W. Line	PROPOSED R.O.W. LINE	Right of Way Lines (Access Permitted)
Existing R.O.W. & No Access Line	PROP. R.O.W. & NO ACCESS LINE	Right of Way Lines (No Access)
		Easements
℄		Property Line
X X		Fence (Size & Type)
		Reset Fence
		Beam Guide Rail
		Reset Beam Guide Rail
		Noise Walls
		Wetland Limit Line
		Silt Fence
Ditch	DITCH	Ditches
		Railroad Tracks
		Tree Line

Topographical Features

Existing	PROPOSED	
		Inlets (Label Type)
"ES"	"ES"	Inlets (Type ES)
		Manholes (Label Type or Utility)
		Reset (Inlets or Manholes)
		Reconstructed (Inlets or Manholes)
		Cast Iron Extension (Frame or Ring) (Inlet or Manhole)
		New Manhole Casting, Square Frame, Circular Cover
		R.C. End Section or C.M. Headwall
		Headwalls
		Headwalls & Aprons
W		Water Gate Valves
		Reset Water Gate Valves
		Gas Gate Valves
		Reset Gas Gate Valves
Hyd.		Hydrants
		Reset Hydrants
		Utility Pole (Type & Number)
	TEMP	Temporary Utility Pole
		Traffic Signal
J.B.	J.B.	Junction Box
	Ⓕ	Fiber Optic Junction Box
J.B. & Light	J.B.	Junction Box Foundation
		Signs
		Vertical Panels
		Camera
DMS	DMS	Dynamic Message Sign (DMS)

Topographical Features

Existing	PROPOSED	
		Guide Rail End Terminals
		Beam Guide Rail Anchorages
Mon.		Monuments
		ROW Monument (ROW Control Points)
TEST PIT NUMBER		Test Pit
Boring Number	BORING NUMBER	Borings (Boring Number)
		Decidous Tree (Size, Kind)
		Evergreens
		Bush
		Hedges
		Swamp

Double Reference Codes

EDQR	ESTIMATE AND DISTRIBUTION OF QUANTITIES - ROADWAY
TS	TYPICAL SECTIONS
PSI	PLAN SHEET INDEX
C	CONSTRUCTION PLANS
EP	ENVIRONMENTAL PLANS & SOIL EROSION & SEDIMENT CONTROL PLANS
D	DRAINAGE PLANS
DTL	CONSTRUCTION DETAILS
P	PROFILES
T	TIES
G	GRADES
TC	TRAFFIC CONTROL AND STAGING PLANS
E	ELECTRICAL PLANS
TSP	TRAFFIC SIGNAL PLANS
HL	HIGHWAY LIGHTING PLANS
ITS	- INTELLIGENT TRANSPORTATION SYSTEM PLANS
SL	SIGN LOCATION PLANS
TSS	TRAFFIC SIGNING AND STRIPING PLANS
STD	SIGN TEXT DETAILS
L	LANDSCAPE PLANS
MS	METHOD OF CROSS SECTIONS
X	CROSS SECTIONS
EQB	ESTIMATE OF QUANTITIES - BRIDGE
B	BRIDGE PLANS

Miscellaneous Symbols

- Items With No Alternate
- Alternate Items OR — For Alternate Pipe Items (C) = Concrete (M) = Metal
- Milling
- Building to be Demolished
- Removal of Concrete Base Course & Concrete Surface Courses
- Building to be Removed & Paid for Under Clearing Site
- PARCEL — Demolition No. & Parcel No. of Building to be Demolished
- PROFILE: + % / - % LEVEL LINE
- High Point
- Low Point
- B.M. — Bench Mark

ABBREVIATIONS USED IN THIS CONTRACT

AH., BK.	AHEAD, BACK	IP	IRON PIN	RCCP, R.C.C.P.	REINFORCED CONCRETE CULVERT PIPE
℄, B.L.	BASELINE	J.B.	JUNCTION BOX	RCP, R.C.P.	REINFORCED CONCRETE PIPE
B.M.	BENCH MARK	LT., RT.	LEFT, RIGHT	RMC, R.M.C.	RIGID METALLIC CONDUIT
B.T.	BELL TELEPHONE	L.O.P.	LIMIT OF PAVEMENT (PAVING)	RNMC, R.N.M.C.	RIGID NON-METALLIC CONDUIT
BIT., BITUM.	BITUMINOUS	L.O.M.	LIMIT OF MILLING	ROW, R.O.W.	RIGHT OF WAY
BLDG.	BUILDING	M.B.	MAILBOX	R.R.	RAILROAD
℄, C.L.	CENTERLINE	M.P.	MILE POST	RTE., RT.	ROUTE
C.I.P.	CAST IRON PIPE	MAX.	MAXIMUM	SAN.	SANITARY
CSP, C.S.P.	CORRUGATED STEEL PIPE	MIN.	MINIMUM	SDWK.	SIDEWALK
C.M.P.	CORRUGATED METAL PIPE	NO.	NUMBER	S.H.D.	STATE HIGHWAY DEPARTMENT
CONC.	CONCRETE	N.T.S.	NOT TO SCALE	SHLD.	SHOULDER
CULV.	CULVERT	PAV'T.	PAVEMENT	℄, S.L.	SURVEY LINE
D, DIA.	DIAMETER	PERF.	PERFORATED	S.O.D.	SUBBASE OUTLET DRAIN
D.C.	DROP CURB	P.G.L.	PROFILE GRADE LINE	STY.	STORY
DE	DITCH EXCAVATION	℄, P.L.	PROPERTY LINE, PROFILE LINE	T	TANGENT
DEP., DP	DEPRESSED CURB	PK	PARKER KAYLON MASONRY NAIL	TBA	TO BE ABANDONED
DH	DRILL HOLE	POC, P.O.C.	POINT ON CURVE	TBR	TO BE REMOVED
DWY	DRIVEWAY	POL, P.O.L.	POINT ON LINE	TEL.	TELEPHONE
E.B., W.B., N.B., S.B.	EASTBOUND, WESTBOUND	POT, P.O.T.	POINT ON TANGENT	TEMP.	TEMPORARY
	NORTHBOUND, SOUTHBOUND	PRC, P.R.C.	POINT OF REVERSE CURVE	THK., TH.	THICK
EL., ELEV.	ELEVATION	PROP.	PROPOSED	TYP.	TYPICAL
EXIST.	EXISTING	PT, P.T.	POINT OF TANGENCY	U.D.	UNDERDRAIN
GR.	GRATE	PVC, P.V.C.	POLYVINYL CHLORIDE PIPE,	UP, U.P.	UTILITY POLE
HT.	HEIGHT		POINT OF VERTICAL CURVATURE	VAR.	VARIABLE, VARIES
H.W.	HEADWALL	PVI, P.V.I.	POINT OF VERTICAL INTERSECTION	W.C.V.C.	WHITE CONCRETE VERTICAL CURB
HYD.	HYDRANT	PVT, P.V.T.	POINT OF VERTICAL TANGENCY, PAVEMENT	WM	WATER METER
INV.	INVERT	R	RADIUS	X-SECT	CROSS SECTION

N.J. Plane Coordinate System

North Arrow To Be Used On Standard Construction Sheets Where Bearings Refer To N. J. Plane Coordinate System

N.T.S.

C-1 / C-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

4
14

ID= $USER$ date= 8/29/2013 3:04:23 PM scale: AS SHOWN

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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION

COUNTY OF UNION

END PROJECT
ROUTE 22 ℄
STA. 253+85

END FEDERAL PROJECT
STP - 0040 (172)
ROUTE 22 ℄
STA. 253+85

MEET EXISTING CURB & PAVEMENT

94+46.93

NEW DRIVEWAY ACCESS

REVOKE DRIVEWAY ACCESS

MEET EXISTING PAVEMENT

PROPOSED R.O.W.

REVOKE DRIVEWAY ACCESS

PROPOSED R.O.W.

PROPOSED ROW

PROPOSED SIDEWALK

REVOKE DRIVEWAY ACCESS

SAYRE ROAD

VAUXHALL ROAD

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

BLOCK 1702

BLOCK 1703

BLOCK 1704

23' D.C.

50' D.C.

36' D.C.

36' D.C.

37' D.C.

18" R.C.P.

R=45'

R=38.5'

39'

41'

31'

PLAN SHEET NO. C-3

MATCH LINE 246+00

30' 20' 10' 0 30' 60'

C-2
C-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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14

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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION **COUNTY OF UNION**

PLAN SHEET NO. C-2
MATCH LINE 246+00

PLAN SHEET NO. C-4
MATCH LINE 237+50

MEET EXISTING PAVEMENT

RAMP B

RAMP A

MEET EXISTING PAVEMENT

REVOKE DRIVEWAY ACCESS

LIMITS OF GRADING

AERIAL EASEMENT

31' D.C.

50' D.C.

36' D.C.

MODIFY DRIVEWAY

R=75'

R=41'

R=78'

R=55'

R=250'

18" R.C.P.

"E"

"B"

"B"

36'

14'

45'

45'

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

U.S. Route 22 (Eastbound)

VAUXHALL ROAD

Vaux Hall Rd

Existing ROW Line

Light Pole

Dense Trees

Paved Parking

Post

Guy

Telephone Poles Typical

Stone and Grnd. Area

1 Story Concrete #1605 "Office Furniture Showroom"

1 Story Concrete #1607 "Route 22 Bar-B-Q"

1 Story Concrete #1597 "Mediterranean Restaurant Catering"

1 Story Concrete #1595 "Boost Mobile"

1 Story Concrete No.1620 "TIFFANY'S" Bar and Grill

3 Sty. Brick No.1600

BLOCK 1810

Substation

Signs "TIFFANY'S"

30' 20' 10' 0 30' 60'

C-3
C-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION

COUNTY OF UNION

PLAN SHEET NO. C-3

MATCH LINE 237+50

BEGIN PROJECT
ROUTE 22 ℄
STA. 231+04

MEET EXISTING PAVEMENT

LIMITS OF GRADING

SIGN TO BE RELOCATED

40' D.C.

45' D.C.

44' D.C.

39' D.C.

R=250'

18" R.C.P.

GARY ROAD

Elizabeth River

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

U.S. Route 22 (Eastbound)

Existing ℄

MEET EXISTING PAVEMENT & CURB

HIGHLAND AVENUE

N. SUNSET PL.

ERHARDT STREET

30' 20' 10' 0 30' 60'

C-4
C-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.

CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE

NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION **COUNTY OF UNION**

LIMITS OF GRADING

MEET EXISTING PAVEMENT

SAYRE ROAD

VAUXHALL ROAD

LIMITS OF GRADING

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

MEET EXISTING GRADES

MEET EXISTING GRADES

MATCH LINE 246+00

PLAN SHEET NO. G-2

NOTES:

1. (XX.XX)-EXISTING PAVEMENT ELEVATION TO BE VERIFIED BY THE CONTRACTOR IN THE FIELD.

2. ELEVATIONS SHOWN AT CURBLINE ARE FOR THE BOTTOM OF THE CURB.

30' 20' 10' 0 30' 60'

G-1 / G-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

GRADES

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

8 / 14

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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION **COUNTY OF UNION**

PLAN SHEET NO. G-1
MATCH LINE 246+00

PLAN SHEET NO. G-3
MATCH LINE 237+50

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

VAUXHALL ROAD

MEET EXISTING GRADES

MEET EXISTING PAVEMENT

MEET EXISTING GRADES

MEET EXISTING PAVEMENT

LIMITS OF GRADING

Existing ROW Line

PT = 241+54.38

PC = 239+01.24

NOTES:

1. (XX.XX)-EXISTING PAVEMENT ELEVATION TO BE VERIFIED BY THE CONTRACTOR IN THE FIELD.
2. ELEVATIONS SHOWN AT CURBLINE ARE FOR THE BOTTOM OF THE CURB.

30' 20' 10' 0 30' 60'

G-2
G-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

GRADES

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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14

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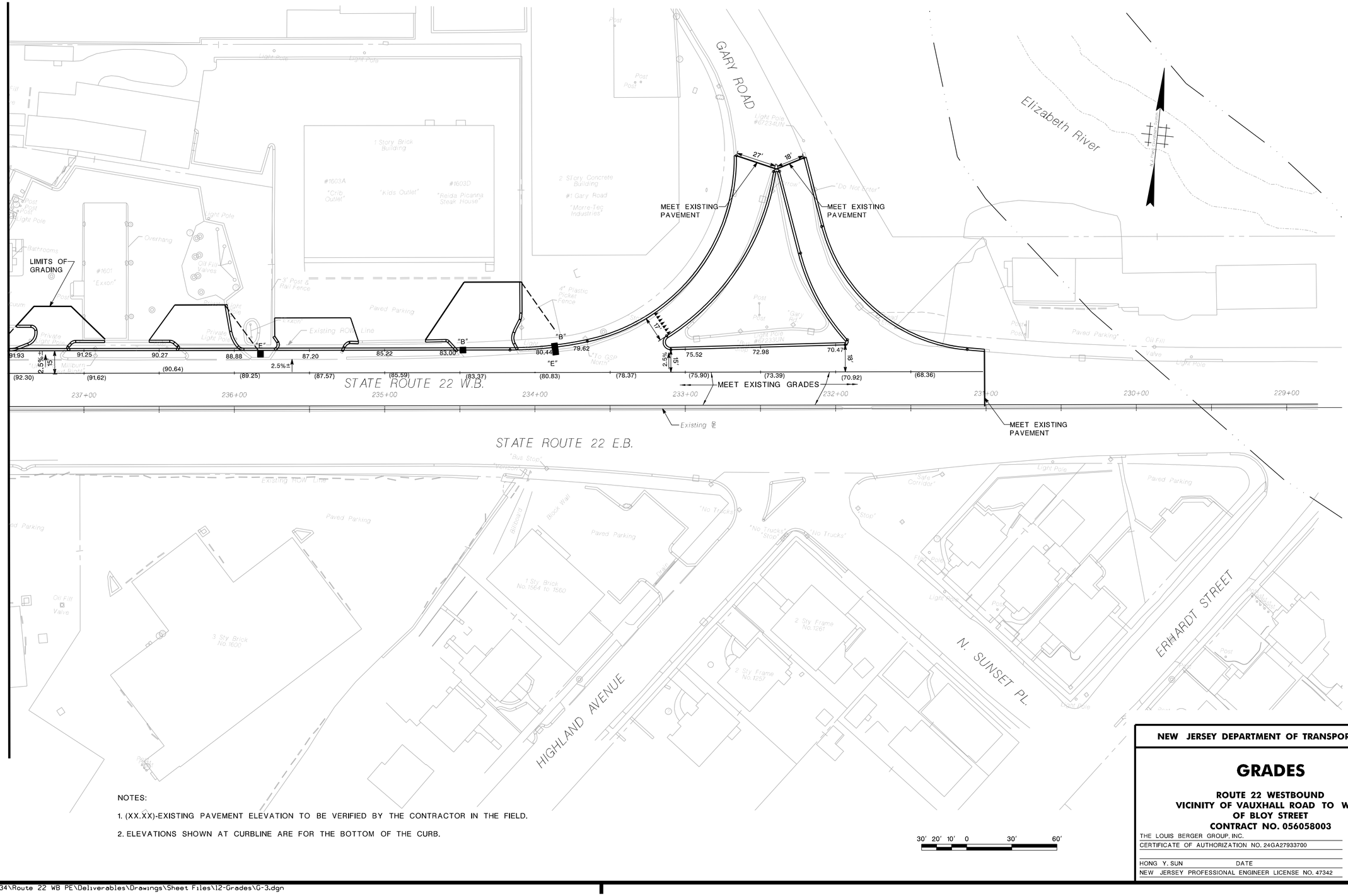
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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION **COUNTY OF UNION**

PLAN SHEET NO. G-2

MATCH LINE 237+50



NOTES:

1. (XX.XX)-EXISTING PAVEMENT ELEVATION TO BE VERIFIED BY THE CONTRACTOR IN THE FIELD.
2. ELEVATIONS SHOWN AT CURBLINE ARE FOR THE BOTTOM OF THE CURB.

G-3
G-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

GRADES

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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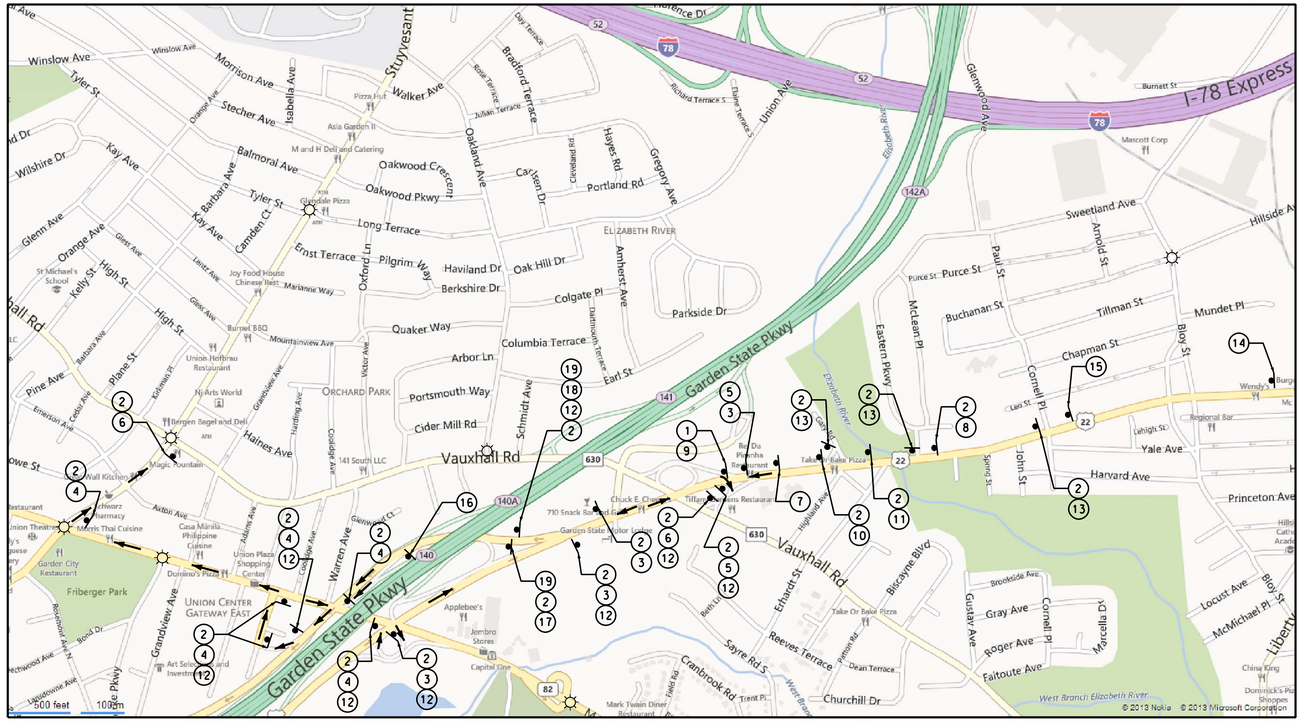
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STATE	FEDERAL PROJECT NO.
N.J.	

CONSTRUCTION SIGN TABLE FOR DETOUR

IDENT. No.	SIGN	MESSAGE	CAPS	VERTICAL SPACE (in)	SIZE (INCLUDES BORDER)	AREA (SF)	REQUIRED QUANTITY IN NUMBER	TOTAL AREA (SF)
1	R11-2A	RAMP CLOSED	7"C 7"C	5 6 5 7 7	42"x30"	8.8	1	8.8
2	M4-9N	VAUXHALL ROAD	4"C 4"C	6 4 4 4 6	36"x24"	6	19	114
3	M4-9X	DETOUR ↑			30"x24"	5	4	20
4	M4-9R	DETOUR →			30"x24"	5	6	30
5	*	VAUXHALL RD. EXIT UNION/ELIZABETH CLOSED FOLLOW DETOUR	4"C 4"C 4"C 4"C	2.5 3 3 1 1 2.5 4 4 4 4 4	60"x30"	12.5	1	12.5
6	M4-8a	END DETOUR			24"x18"	3	2	6
7	*	ON OR ABOUT _____ THIS RAMP TO BE CLOSED FOR REPAIR PLAN ALT. ROUTE	4"C 6"C 6"C 6"C	3 3 3 3 3 4 6 6 1 6	84"x42"	24.5	1	24.5
8	W20-3 (MOD.)	RAMP CLOSED 1500 FT			48"x48"	16	1	16
9	M4-10L	← DETOUR			48"x18"	6	1	6
10	W20-2C	DETOUR 500 FT			48"x48"	16	1	16
11	W20-2B	DETOUR 1000 FT			48"x48"	16	1	16
12	M4-4 BLACK ON ORANGE	TRUCK			24"x12"	2	8	16
13	W20-2	DETOUR AHEAD			48"X48"	16	3	48
14	W20-1A	ROAD WORK 1 MILE			48"x48"	16	1	16
15	W20-1D	ROAD WORK ½ MILE			48"x48"	16	1	16
16		DETOUR 22 WB NO TRUCK →	6"C 6"C	9 2.5 2.5 6 1 6	60"x36"	15	1	15
17	R3-5b	LEFT LANE	4"C	4 4 4	30"x12"	2.5	1	2.5
18	R3-5f	RIGHT LANE	4"C	4 4 4	30"x12"	2.5	1	2.5
19	M4-8	DETOUR	8"B	3.5 8 3.5	30"x15"	3.1	2	6.2
					CONSTRUCTION SIGN TOTAL			392.0 SF

* Black On Orange - Install 2 weeks prior to closing.


I-78 Express
Garden State Pkwy
Vauxhall Rd
Cider Mill Rd
Haines Ave
Winslow Ave
Morrison Ave
Stuyvesant
Walker Ave
Bradford Terrace
Oakland Ave
Hayes Rd
Gregory Ave
Union Ave
Glenwood Ave
Stecher Ave
Isabella Ave
Balmoral Ave
Oakwood Crescent
Oakwood Pkwy
Long Terrace
Ernst Terrace
Pilgrim Way
Haviland Dr
Oak Hill Dr
Berkshire Dr
Colgate Pl
Amherst Ave
Parkside Dr
Quaker Way
Columbia Terrace
Arbor Ln
Portsmouth Way
Earl St
Schmidt Ave
Wilshire Dr
Kay Ave
Glenn Ave
Orange Ave
Kelly St
High St
Plane St
Pine Ave
Tyler St
Camden Ct
Barbara Ave
Oxford Ln
Carleen Dr
Portland Rd
Sweetland Ave
Arnold St
Purce St
Buchanan St
Tillman St
Mundet Pl
Chapman St
Bloy St
Yale Ave
Harvard Ave
Princeton Ave
Lehigh St
Regional Bar
Wendy's
Eastern Pkwy
McLean Pl
Paull St
Cornell Pl
John St
Spring St
Leo St
Highland Ave
Richard Terrace S
Diane Terrace S
Julian Terrace
Rose Terrace
Dairy Terrace
Florence Dr
Burnett St
Mascott Corp
Pizza Hut
Asia Garden II
M and H Deli and Catering
Glendale Pizza
Joy Food House Chinese Rest
Burnett BBQ
Union Hellenau Restaurant
NJ Arts World
Bergen Bagel and Deli
Magic Fountain
Wall Kitchen
Schwarz Pharmacy
Akton Ave
Casa Manila Philippine Cuisine
Domino's Pizza
Union Plaza Shopping Center
Garden City Restaurant
Friberger Park
UNION CENTER GATEWAY EAST
Art Sebastian Investments
Applebee's
Jembro Stores
Capital One
Mark Twain Diner Restaurant
Cranbrook Rd
Trent Pl
Sayre Rd S
Reeves Terrace
Dean Terrace
Churchill Dr
Ellis Rd
Erhart St
Biscayne Blvd
Gustav Ave
Gray Ave
Roger Ave
Faitoute Ave
Brookside Ave
Marcella Dr
Locust Ave
McMichael Pl
Bloy St
China King
Dominick's Pizza Shoppes
West Branch Elizabeth River
ELIZABETH RIVER
ORCHARD PARK
Rio Do Pinecha Restaurant
Talk O' Bake Pizza
Chuck E. Cheese
710 Snack Bar
Garden State Visitor Center
Tiffany Sons Restaurant
Take Or Bake Pizza
St Michael's School
Rosemary Ave
Bond Dr
Edgewood Ave
Emerson Ave
Kossuth Ave
Barbara Ave
Glenn Ave
Mountainview Ave
Victor Ave
Grandview Ave
Hartford Ave
Goodale Ave
Warren Ave
Glenwood Ave
Dartmouth Terrace
Elizabeth River
Lenz Ave
Marianne Way
Bayard Terrace
Julian Terrace
Richard Terrace S
Diane Terrace S
Florence Dr
Burnett St
Mascott Corp
Pizza Hut
Asia Garden II
M and H Deli and Catering
Glendale Pizza
Joy Food House Chinese Rest
Burnett BBQ
Union Hellenau Restaurant
NJ Arts World
Bergen Bagel and Deli
Magic Fountain
Wall Kitchen
Schwarz Pharmacy
Akton Ave
Casa Manila Philippine Cuisine
Domino's Pizza
Union Plaza Shopping Center
Garden City Restaurant
Friberger Park
UNION CENTER GATEWAY EAST
Art Sebastian Investments
Applebee's
Jembro Stores
Capital One
Mark Twain Diner Restaurant
Cranbrook Rd
Trent Pl
Sayre Rd S
Reeves Terrace
Dean Terrace
Churchill Dr
Ellis Rd
Erhart St
Biscayne Blvd
Gustav Ave
Gray Ave
Roger Ave
Faitoute Ave
Brookside Ave
Marcella Dr
Locust Ave
McMichael Pl
Bloy St
China King
Dominick's Pizza Shoppes
West Branch Elizabeth River
ELIZABETH RIVER
ORCHARD PARK
Rio Do Pinecha Restaurant
Talk O' Bake Pizza
Chuck E. Cheese
710 Snack Bar
Garden State Visitor Center
Tiffany Sons Restaurant
Take Or Bake Pizza
St Michael's School
Rosemary Ave
Bond Dr
Edgewood Ave
Emerson Ave
Kossuth Ave
Barbara Ave
Glenn Ave
Mountainview Ave
Victor Ave
Grandview Ave
Hartford Ave
Goodale Ave
Warren Ave
Glenwood Ave
Dartmouth Terrace
Elizabeth River
Lenz Ave
Marianne Way
Bayard Terrace
Julian Terrace
Rose Terrace
Dairy Terrace

STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION

COUNTY OF UNION

SAYRE ROAD

VAUXHALL ROAD

MEET EXISTING STRIPING

4" DOUBLE YELLOW

YIELD

R1-2
36"x36"x36"

W1-4R
36"x36"

SAFE CORRIDOR
FINES DOUBLED
SPEEDING AND OTHER VIOLATIONS
AS OF FEB 15 2004

SIGN "A"
72"x48"

SIGN "B"
72"x12"

VAUXHALL RD
HILLSIDE →

SIGN "C"
84"x30"

U TURN →

SIGN "D"
72"x18"

MEET EXISTING STRIPING
STA. 253+85.00

RPM, MONO-DIRECTIONAL
WHITE LENS

4" DASHED WHITE

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

253+46.77

253+00

252+00

251+00

250+00

249+00

248+00

247+00

246

94+46.93

13'

11'

11'

2'

15'

11'

11'

RPM, MONO-DIRECTIONAL
AMBER LENS

4" SOLID YELLOW

MATCH LINE 246+00

PLAN SHEET NO. TSS-2

30' 20' 10' 0 30' 60'

TSS-1
TSS-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNING AND STRIPING PLANS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

12
14

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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION

COUNTY OF UNION

W1-8R

W1-8R
18"x24"

Existing ROW Line

GSP-1
24"x24"

NEXT RIGHT

M3-1
24"x12"

NORTH

RAMP
10
M.P.H.

R1-2
36"x36"x36"

YIELD

12" SOLID WHITE

RPM, MONO-DIRECTIONAL
WHITE LENS

4" SOLID WHITE

4" DASHED WHITE

SIGN "E"
74"x53"

UNION
MILLBURN
NEXT RIGHT

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

243+00

242+00

241+00

240+00

239+00

238+00

245+00

244+00

PT = 243+54.38

PC = 239+07.62

RPM, MONO-DIRECTIONAL
AMBER LENS

4" SOLID YELLOW

PLAN SHEET NO. TSS-1
MATCH LINE 246+00

PLAN SHEET NO. TSS-3
MATCH LINE 237+50

VAUXHALL ROAD

Existing ROW Line

BLOCK 1810

30' 20' 10' 0 30' 60'

TSS-2
TSS-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNING AND STRIPING PLANS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION | **COUNTY OF UNION**

PLAN SHEET NO. C-2

MATCH LINE 237+50

M4-5 24"x12"
TO
NORTH
M3-1 24"x12"
GSP-1 24"x24"
NEXT RIGHT

RIGHT LANE FOR EXIT ONLY
W(NJ)9-3B 30"x48"

R1-2 36"x36"x36"
YIELD

RELOCATE SIGN

RPM, MONO-DIRECTIONAL WHITE LENS

4" DASHED WHITE

4" SOLID YELLOW

RPM, MONO-DIRECTIONAL AMBER LENS

MEET EXISTING STRIPING STA. 231+00.00

GARY ROAD

Elizabeth River

STATE ROUTE 22 W.B.

STATE ROUTE 22 E.B.

Existing ROW Line

39'

15'

11'

11'

237+00 236+00 235+00 234+00 233+00 232+00 231+00 230+00 229+00

HIGHLAND AVENUE

N. SUNSET PL.

ERHARDT STREET

30' 20' 10' 0 30' 60'

TSS-3
TSS-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNING AND STRIPING PLANS

ROUTE 22 WESTBOUND
VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET
CONTRACT NO. 056058003

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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APPENDIX K

COMPLETE STREETS CHECKLIST

NJDOT Complete Streets Checklist

Background

The New Jersey Department of Transportation's Complete Streets Policy promotes a "comprehensive, integrated, connected multi-modal network by providing connections to bicycling and walking trip generators such as employment, education, residential, recreational and public facilities, as well as retail and transit centers." The policy calls for the establishment of a checklist to address pedestrian, bicyclist and transit accommodations "with the presumption that they shall be included in each project unless supporting documentation against inclusion is provided and found to be justifiable."

Complete Streets Checklist

The following checklist is an accompaniment to NJDOT's Complete Streets Policy and has been developed to assist Project Managers and designers develop proposed alternatives in adherence to the policy. Being in compliance with the policy means that Project Managers and designers plan for, design, and construct all transportation projects to provide appropriate accommodation for bicyclists, pedestrians, and transit users on New Jersey's roadways, in addition to those provided for motorists. It includes people of all ages and abilities. The checklist applies to all NJDOT projects that undergo the Capital Project Delivery (CPD) Process and is intended for use on projects during the earliest stages of the Concept Development or Preliminary Engineering Phase so that any pedestrian or bicycle considerations are included in the project budget. The Project Manager is responsible for completing the checklist and must work with the Designer to ensure that the checklist has been completed prior to advancement of a project to Final Design.

Using the Complete Streets Checklist

The Complete Streets Checklist is a tool to be used by Project Managers and designers throughout Concept Development and Preliminary Engineering to ensure that all developed alternatives reflect compliance with the Policy. When completing the checklist, a brief description is required for each **"Item to be Addressed"** as a means to document that the item has been considered and can include supporting documentation.

CONCEPT DEVELOPMENT CHECKLIST

Instructions:
For each box checked, please provide a brief description for how the item is addressed, not addressed or not applicable and include documentation to support your answer.

Item to be Addressed	Checklist Consideration	YES	NO	N/A	Required Description
Existing Bicycle, Pedestrian and Transit Accommodations	Are there accommodations for bicyclists, pedestrians (including ADA compliance) and transit users included on or crossing the current facility? **Examples include (but are not limited to):** Sidewalks, public seating, bike racks, and transit shelters	☒	☐	☐	No existing bicycle facilities. No existing formalized sidewalk. Stairs on Vauxhall Road overpass are not ADA compliant. Sidewalk is proposed along Route 22 WB from Vauxhall Road to Sayre Road
Existing Bicycle and Pedestrian Operations	Has the existing bicycle and pedestrian suitability or level of service on the current transportation facility been identified?	☐	☒	☐	No existing facilities for LOS determination n.
	Have the bicycle and pedestrian conditions within the study area, including pedestrian and/or bicyclist treatments, volumes, important connections and lighting been identified?	☒	☐	☐	Limited pedestrian traffic at Vauxhall Road has worn the surrounding grass.
	Do bicyclists/pedestrians regularly use the transportation facility for commuting or recreation?	☐	☒	☐	The area is primarily paved and commercial outside the road.
	Are there physical or perceived impediments to bicyclist or pedestrian use of the transportation facility?	☒	☐	☐	Median barrier. No sidewalk. Intermittent shoulders. High traffic speeds.
	Is there a higher than normal incidence of bicyclist/pedestrian crashes within the study area?	☐	☒	☐	Likely due to lack of utilization.

NJDOT Complete Streets Checklist

Item to be Addressed	Checklist Consideration	YES	NO	N/A	Required Description
	Have the existing volumes of pedestrian and/or bicyclist crossing activity at intersections including midblock and nighttime crossing been collected/provided?	☐	☒	☐	Lack of facilities prevents volume count to be warranted without popular desire.
Existing Transit Operations	Are there existing transit facilities within the study area, including bus and train stops/stations?	☒	☐	☐	Bus stop at Gary Road (Island)
	Is the transportation facility on a transit route?	☐	☐	☒	No facility adjacent.
	Is the transportation facility within two miles of "park and ride" or "kiss and go" lots?	☐	☐	☒	No facility adjacent.
	Are there existing or proposed bicycle racks, shelters, or parking available at these lots or transit stations? Are there bike racks on buses that travel along the facility?	☐	☐	☒	No facility adjacent.
Existing Motor Vehicle Operations	Are there existing concerns within the study area, regarding motor vehicle safety, traffic volumes/congestion or access?	☒	☐	☐	High accident rates associated with weaving lanes adjacent to intersections.
Existing Truck/Freight Operations	Are there existing concerns within the study area, regarding truck/freight safety, volumes, or access?	☐	☒	☐	No specific concerns other than one side road access.
Existing Access and Mobility	Are there any existing access or mobility considerations, including ADA compliance?	☒	☐	☐	The stairs to Vauxhall Road are not ADA-compliant.
	Are there any schools, hospitals, senior care facilities, educational buildings, community centers, residences or businesses of persons with disabilities within or proximate to the study area?	☐	☒	☐	Not immediately adjacent to the project.

NJDOT Complete Streets Checklist

Item to be Addressed	Checklist Consideration	YES	NO	N/A	Required Description
Land Usage	Have you identified the predominant land uses and densities within the study area, including any historic districts or special zoning districts?	☒	☐	☐	No historic concerns per the Categorical Exclusion Document.
	Is the transportation facility in a high-density land use area that has pedestrian/bicycle/motor vehicle and transit traffic?	☐	☒	☐	Minimal bike/ped. Roadway has median barrier.
Major Sites	Have you identified the major sites, destinations, and trip generators within or proximate to the study area, including prominent landmarks, employment centers, recreation, commercial, cultural and civic institutions, and public spaces?	☒	☐	☐	Route 22 is predominantly an arterial to/from Newark, NJ.
Existing Streetscape	Are there existing street trees, planters, buffer strips, or other environmental enhancements such as drainage swales within the study area?	☐	☒	☐	None. Urban conditions only.
Existing Plans	Are there any comprehensive planning documents that address bicyclist, pedestrian or transit user conditions within or proximate to the study area? **Examples include (but are not limited to):** • SRTS Travel Plans • Municipal or County Master or Redevelopment Plan • Local, County and Statewide Bicycle and Pedestrian Plans • Sidewalk Inventories • MPO Transportation Plan • NJDOT Designated Transit Village	☐	☒	☐	None

PROJECT MANAGER SIGN-OFF

Statement of Compliance	YES	NO	If NO, Please Describe Why (refer to Exemptions Clause)
The Preliminary Preferred Alternative (PPA) accommodates bicyclists and pedestrians as set forth in the New Jersey Department of Transportation's Complete Streets Policy.	☐	☒	This high-volume urban principal arterial has limited existing facilities, poor potential bike/ped. connectivity, and limited right-of-way widening opportunity per local officials direction (desiring to limit property impacts). The project does propose some sidewalk where permissible but these extents (and the project extents) match into similar high-volume urban principal arterial conditions. Surrounding areas utilize local roads for the desired connectivity. Costs (including ROW acquisition) to construct bicycle, pedestrian, and ADA compliant access to the Vauxhall Road overpass may exceed 20% of the total cost of the project depending on the current market. The intent of the project, to improve safety additional accel./decel. lanes, would be compromised by encouraging bicyclists and pedestrians and potentially create more vehicular conflicts.

PRELIMINARY ENGINEERING CHECKLIST

Instructions:
For each box checked, please provide a brief description for how the item is addressed, not addressed or not applicable and include documentation to support your answer.

Item to be Addressed	Checklist Consideration	YES	NO	N/A	Required Description
Bicyclist, Pedestrian, and Transit Accommodations	Does the proposed project design include accommodations for bicyclists? **Examples include (but are not limited to):** **Bicycle facilities:** bicycle path; bicycle lane; bicycle route; bicycle boulevard; wide outside lanes or improved shoulders; bicycle actuation at signals (loop detectors and stencil or other means); signs, signals and pavement markings specifically related to bicycle operation on roadways or shared-use facilities; bicycle safe inlet grates **Bicycle amenities**: Call boxes (for trail or bridge projects); drinking fountains (also for trail projects); secure long term bicycle parking (e.g., for commuters and residents); and secure short term bicycle parking.	☐	☒	☐	Existing shoulder to be widened for auxilliary acceleration/deceleration lane safety improvement. Local government has expressed desire to limit ROW impacts (see meeting minutes of March 5, 2007). No existing bicycle facilities.
	Does the proposed project design address accommodations for pedestrians? **Examples include (but are not limited to):** **Pedestrian facilities**: Sidewalks (preferably on both sides of the street); mid-block crosswalks; striped crosswalks; geometric modifications to reduce crossing distances such as	☐	☒	☐	The only existing pedestrian facilities are the access stairs to the Vauxhall Road overpass. There is a short "goat path" worn in the grassed shoulder leading to the stairs. It is in this area that the sidewalk is proposed.

Item to be Addressed	Checklist Consideration	YES	NO	N/A	Required Description
	curb extensions (bulb-outs); pedestrian-actuated traffic signals such as High Intensity Activated Crosswalk Beacons, Rapid Rectangular Flashing Beacons; dedicated pedestrian phase; pedestrian signal heads and pushbuttons; pedestrian signs for crossing and wayfinding, lead pedestrian intervals; high visibility crosswalks (e.g., ladder or zebra); pedestrian-level lighting; in-road warning lights; pedestrian safety fencing; pedestrian detection system; pedestrian overpass/underpass; and median safety islands for roadways with (two or more traffic lanes in each direction). **Pedestrian amenities:** Shade trees; public seating; drinking fountains				
	Have you coordinated with the corresponding transit authority to accommodate transit users in the project design? **Transit facilities**: Transit shelters, bus turnouts **Transit amenities:** public seating, signage, maps, schedules, trash and recycling receptacles	☐	☒	☐	The widening of the roadway for auxiliary lanes leaves no additional room for stops or turnouts with the tight right-of-way corridor.
Bicyclist and Pedestrian Operations	Does the proposed design consider the desired future bicyclist and walking conditions within the project area including safety, volumes, comfort and convenience of movement, important walking and/or bicycling connections, and	☐	☒	☐	Pedestrians and bicyclists are not currently encouraged on the existing roadway and are not encouraged by the proposed design.

Item to be Addressed	Checklist Consideration	YES	NO	N/A	Required Description
	the quality of the walking environment and/or availability of bicycle parking?				
Transit Operations	Does the proposed design address the desired/anticipated future transit conditions within the project area, including bus routes and operations and transit station access support transit usage and users?	☐	☒	☐	The safety improvements on the project are not directly related to future transit conditions.
Motor Vehicle Operations	Does the proposed design address the desired future motor vehicle conditions within the project area, including volumes, access, important motor vehicle connections, appropriateness of motor vehicle traffic to the particular street (e.g., local versus through traffic) and the reduction of the negative impacts of motor vehicle traffic?	☒	☐	☐	In respect to safety improvements, this project does address safety concerns and access management concerns along this corridor by improving intersections and accesses and also limiting the number of accesses.
Truck/Freight Operations	Does the proposed design address the desired future truck conditions within the project area, including truck routes, volumes, access, mobility and the reduction of the negative impacts of truck traffic?	☐	☒	☐	As the corridor is an urban principal arterial, truck traffic is integral to the intended use and character of the roadway.
Access and Mobility	Does the proposed design address accommodations for those with access or mobility challenges such as the disabled, elderly, and children, including ADA compliance? **Examples include (but are not limited to):** Curb ramps, including detectable warning surface; accessible signal actuation; adequate sidewalk or paved path (length & width or	☐	☒	☐	It is intended that those with access or mobility issues will arrive at their intended destination on site either by vehicle or use a local adjacent roadway.

Item to be Addressed	Checklist Consideration	YES	NO	N/A	Required Description
	linear feet); acceptable slope and cross-slope (particularly for driveway ramps over sidewalks, over crossings and trails); and adequate green signal crossing time				
Land Usage	Is the proposed design compatible with the predominant land uses and densities within the project area, including any historic districts or special zoning districts?	☒	☐	☐	No historic concerns per the Categorical Exclusion Document.
Major Sites	Can the proposed design support the major sites, destinations, and trip generators within or proximate to the project area, including prominent landmarks, *commercial*, cultural and civic institutions, and public spaces?	☒	☐	☐	The capacity of the roadway and the intersections levels of service are not significantly addressed by the safety improvements.
Streetscape	Does the proposed design include landscaping, street trees, planters, buffer strips, or other environmental enhancements such as drainage swales?	☐	☒	☐	Project scope is widening and resurfacing. The adjacent ground cover is primarily pavement and driveways.

Item to be Addressed	Checklist Consideration	YES	NO	N/A	Required Description
Design Standards or Guidelines	Does the proposed design follow all applicable design standards or guidelines appropriate for bicycle and/or pedestrian facilities? **Examples include (but are not limited to):** American Association of State Highway and Transportation Officials (AASHTO) - *A Policy on Geometric Design of Highway and Streets, Guide for the Development of Bicycle Facilities, Guide for the Planning, Design, and Operation of Pedestrian Facilities; Public Right-of-Way Accessibility Guide* (PROWAG); *Manual on Uniform Traffic Control Devices* (MUTCD); *Americans with Disabilities Act Accessibility Guidelines* (ADAAG); National Association of City Transportation Officials (NACTO) - *Urban Bikeway Design Guide;* New Jersey Department of Transportation (NJDOT) - *Bicycle Compatible Roadways & Bikeways Planning and Design Guidelines, Pedestrian Planning and Design Guidelines.*	☐	☒	☐	The limited run of sidewalk is compliant but connects to facilities (Vauxhall Road overpass stairs and west side of Sayre Road) that are not compliant. The fact that the short run of sidewalk does not connect to compliant facilities, would make ADA tip-downs unadvisable. No bicycle facilities are proposed.

PROJECT MANAGER SIGN-OFF

Statement of Compliance	YES	NO	If NO, Please Describe Why (refer to Exemptions Clause)
The Approved Project Plan (APP) accommodates bicyclists and pedestrians as set forth in the New Jersey Department of Transportation's Complete Streets Policy.	☐	☒	See Exemptions four, five, and explanations above.

APPENDIX L

DESIGN COMMUNICATIONS REPORT

STATE OF NEW JERSEY
DEPARTMENT OF TRANSPORTATION
Consultant Design

Design Communications Report Approval

PE Phase

PROJECT NAME: Route 22 WB Vicinity of Vauxhall Rd to West of Bloy St

UPC#:058003

DESIGNER: The Louis Berger Group, Inc.

DESIGNER PROJECT MANAGER: Hong Sun

NJDOT PROJECT MANAGER: Hardev Dave

Design Communications Report (DCR) Entry No.(s) 6

Pursuant to the Interactive Communications Procedure and the Interactive Communications Process of the New Jersey Department of Transportation (the Department), the Department's Project Manager has approved the DCR identified above, (approved by Entry No(s).) subject to the certification below of the Designer.

This approval by the Department's Project Manager is not a certification by the Department that the above project has been designed in accordance with all applicable State and Federal design standards and requirements or that comments and decisions made during Interactive Communications with the Department on design elements and features of the project to this point have been incorporated or satisfactorily resolved and the Contract Documents have been revised accordingly, and the Department is fully relying in this regard upon the certification below by the Designer.

Furthermore, the Project Manager, by signing below on behalf of the Department, has not waived the Designer's obligation to provide contract documents that are constructible and free from errors and/or omissions.

H Sun 3/20/14
Designer's Project Manager / Date

03/6/14
NJDOT Project Manager / Date

STATE OF NEW JERSEY
DEPARTMENT OF TRANSPORTATION
Quality Management

Design Communications Report

PROJECT NAME: Route 22 WB Vicinity of Vauxhall Rd to West of Bloy St

UPC#:058003

DESIGNER: The Louis Berger Group, Inc.

DESIGNER PROJECT MANAGER: Hong Sun

NJDOT PROJECT MANAGER: Hardev Dave

Design Communications Report Entry Form

Project Name: Route 22 WB Vicinity of Vauxhall Rd to West of Bloy St

Design Activity No. 3030	**(Approved date by NJDOT Project Manager)** **October 1, 2010**	**DCR Entry No. 1.** _____ **Safety**
NJDOT Bicycle and Pedestrian SME		
Design Element issue: Sidewalk		
Decision and reasoning: After the SME's field visit on October 1, 2010, the NJDOT Bike and pedestrian SME requested sidewalk along Route 22 westbound between the Vauxhall Road Bridge and Sayre Road. Provision of sidewalk requires right of way taking.		

Design Activity No. 3030	**(Approved date by NJDOT Project Manager)** **April 2012**	**DCR Entry No. 2** _____ **Geometrics**
NJDOT Value Solutions		
Design Element issue: Provide an acceleration lane under the bridge for loop ramp from Vauxhall Road north to Route 22 westbound.		
Decision and reasoning: Berger reviewed the cross section under the bridge and the available width without widening the bridge is 10 feet. It was decided not to provide acceleration lane under the bridge.		

Design Activity No. 3055/3115	**(Approved date by NJDOT Project Manager)** **July 24, 2013**	**DCR Entry No. 3** _____ **Right of Way**
NJDOT Project Manager		
Design Element issue: Relocation of Utility poles and gas main relocation		
Decision and reasoning: The existing gas main along Route 22 westbound is located in the border area. Utility poles that need relocation cannot be relocated within the available border area because of existing gas main and will require additional ROW in fee taking. ROW in fee taking will impact the adjacent commercial properties parking spaces. The NJDOT project manager, during the project progress meeting at Berger's Morristown office on July 24, 2013, decided to relocate the gas main outside of the existing ROW through a utility easement and reduce the proposed border area via ROW fee taking in order to relocate the utility poles		

Design Activity No. 3115	**(Approved date by NJDOT Project Manager)** **August 08, 2013**	**DCR Entry No. 4** _____ **Right of Way**
NJDOT ACCESS SME		
Design Element issue: Cross easement between Block 1806 Lot 2 and Block 1806 Lot 3.01		
Decision and reasoning: Based on the initial investigation by the NJDOT title search there is no cross easement between Block 1806 Lot 2 and Block 1806 Lot 3.01		

Design Activity No. 3090	**(Approved date by NJDOT Project Manager)** **October 21, 2013**	**DCR Entry No. 5** _____ **Bus Stop**

Design Communications Report Entry Form

Project Name: Route 22 WB Vicinity of Vauxhall Rd to West of Bloy St

NJDOT Traffic Operations, NJDOT Project Coordinator
Design Element issue: Bus Stop at Gary Road
Decision and reasoning: Bus Stop at Gary Road island is not a NJDOT traffic operations approved location.

Design Activity No. 3105	**(Approved date by NJDOT Project Manager) July 2011**	**DCR Entry No. 6** _____ **ACCESS**
NJDOT Project Manager		
Design Element issue: Revoke Driveway Access along Sayre Road and Route 22 from Aaarti Liquor Store situated in Bock 1703 Lot 1		
Decision and reasoning: This driveway cannot be revoked at this time because the business delivery access is through this driveway. There were site improvements planned, but put on hold due to the economy.		

Design Activity No.	**(Approved date by NJDOT Project Manager)**	**DCR Entry No.** _____ **Utilities**
Who (NJDOT Project Manager/ SME /Stakeholder /Designer)		
Design Element issue		
Decision and reasoning		

APPENDIX M

MEETING MINUTES

MINUTES OF MEETING

Date and Time: Thursday, February 3, 2005 at 9:30 A.M.

Location: NJDOT Offices

Project: Route 22 Vaux Hall Road Interchange Feasibility Assessment
Route 22 Bloy Street to Liberty Avenue Feasibility Assessment

Purpose: **Project Kick-off Meeting**

Attendees:

NJDOT

Jay Jeyamohan	(609) 530- 3884
Richard Rogers	(609) 530- 3502
Kamlesh Shah	(609) 530- 5539

The Louis Berger Group, Inc. (Berger)

Dennis E. Conklin, P.E.	(973) 765-1921
Michael Monteleone	(212) 363-4341
Robert J. Thiel, P.E.	(973) 765-1930

The following were highlights of the meeting:

Project Status / Issues

- The Berger Team was introduced. Mr. Monteleone will handle the contract and will lead the traffic and public involvement portions of the project. Mr. Conklin will lead the project and manage all technical aspects of the project. Mr. Thiel will prepare the geometric alternatives.
- The NJDOT requested addition copies of the Final Needs Assessment and Tier 2 Report. A PDF of the report would suffice.
- The NJDOT requested that the ROW be superimposed on the topography. Berger noted that they were in the process of obtaining the local tax maps.
- The NJDOT noted that Berger should evaluate the LOS for the improvement in the design year. The report mentions 2025, but the design year will likely be a later.
- The NJDOT noted that Berger should consider impacts of new stormwater regulations to alternates considered.
- The NJDOT noted that the next steps for the project would include a scope team meeting. Berger should review the scope team checklist to assure that all required items are available.
- The NJDOT requested that one alternate consider a signalized intersection at Bloy Street.

Action Items

- Berger to prepare the following:
  - Additional copies of the reports, as requested.
  - Base maps to be updated to include existing ROW.
  - Initial alternatives to be prepared for March meeting.
  - Review Scope Team checklist.

Next meeting will be scheduled for March.

MINUTES WERE PREPARED BY THE LOUIS BERGER GROUP, INC.

MINUTES OF MEETING

Date and Time: Thursday, September 8, 2005 at 10:00 A.M.

Location: NJDOT Headquarters, Trenton, NJ

Project: Route 22 Vauxhall Road Interchange Feasibility Assessment
Route 22 Bloy Street to Liberty Avenue Feasibility Assessment

Purpose: **Scope Team Kick-off Meeting**

Attendees:

NJDOT

Bhavesh Shah (DPPD)	(609) 530- 8078
Kamlesh Shah (DPPD)	(609) 530- 5539
Richard Rogers (DPPD)	(609) 530- 3502
Steve Hochman (PM)	(609) 530-5366
Ken Conrow (E-Team)	(609) 530-5465
Edmund Osian (E-Team)	(609) 530-2783
Hemant Shelaf (PM)	(609) 530-2484
Richard Eng (Safety Programs)	(609) 530-5208
Wayne Morris (ROW North)	(973) 770-5101
Syed Kazmi (TSSE)	(609) 530-2631
Chris Barretts (TSSE)	(609) 530-2951
Chiman Antala (Design Services)	(609) 530-2455
Jaime Saladino (TEI)	(609) 530-3854
Paul Hartle (Traffic Ops. North)	(201) 797-9023
Joseph Rowen (OBPP)	(609) 530-5290
Debbie Kingsland (OBPP)	(609) 530-3525
John Miksits (ROW)	(973) 770-5180
Hardev Dave (PM)	(609) 530-3594
Michael Russo (DPPD)	(609) 530-2524

The Louis Berger Group, Inc. (Berger)

Robert J. Thiel, P.E.	(973) 765-1930
Michael Monteleone	(212) 612-7916

The following were highlights of the meeting:

Project Status

- Bhavesh Shah provided an overview of the projects and their background. It was noted that the FA projects were just starting and were a result of breakouts from the Route 22 Corridor

Needs Assessment. The discussion focused around a description of the problems and potential solutions at the two locations.

Bloy Street

- Two alternates were discussed. The first alternate conceptualized an at-grade intersection to replace the existing grade separation. The second alternate conceptualized an in-line staged replacement of the existing bridge and improvements to the local street network. Key issues at this location were the heavy truck movement to and from the east along Route 22, and poor geometry on the local street network for the trucks. Items noted during the discussion were:
    - TSSE noted that the Route 22 corridor does not contain signals, and a new traffic signal should not seriously be considered at this location.
    - A question was raised regarding access from Liberty Street. It was noted that Liberty Street does not directly connect to Route 22, and any diversions from Bloy Street would utilize residential streets.
    - ROW in this area is a concern. It was noted at this stage the concepts should be developed irrespective of their ROW impacts and the impacts evaluated as a part of the alternatives analysis.
    - It was noted that the construction of roundabouts may be a solution at the two local street intersections between the Bloy Street Bridge access road and Bloy Street (one on either side of Route 22).
    - It was noted that the alternatives shown create only a small amount of new impervious area. The project area is located in close proximity to the Elizabeth River.
    - The gas station within the project area will likely be a concern when the hazardous screening is completed.
    - It was noted that the Liberty Avenue Bridge replacement project is in Preliminary Design and it is proposed to replace the existing third lane along the eastbound portion of Route 22 with a shoulder.
    - The issue of whether the third eastbound lane on Route 22 would be used as an auxiliary lane, acceleration/deceleration lanes, or a shoulder was discussed and needs to be investigated further.
    - The interface and coordination between the Bloy Street and Liberty Avenue projects is critical.
    - The replacement of the Bloy Street Bridge was discussed within the existing bridge ROW, an adjacent ROW, and along the existing Bloy Street ROW.
    - The historical significance of the Bloy Street Bridge was raised.

Vauxhall Road

- One alternate was discussed, which showed improved ramp geometry and the addition of acceleration and deceleration lanes. Key issues at this location were the heavy accident rates

due to poor ramp geometry and the lack of acceleration and deceleration lanes. Items noted during the discussion were:

- ROW noted that the change of use due to the revocation of access will require a complete taking of the property.
- It was noted that right in to the local street at the end of the eastbound acceleration lane should be considered.
- It was noted that the Gary Road extension proposed may conflict with an existing microwave tower.
- It was noted that accident data should be collected to determine the need for improvements, and that the alternative analysis should weigh design exceptions verses ROW takings. The State's policy of fixing problems dictates that capital improvement monies be spent where real problems exist, not just a deficiency on paper.
- It was suggested that the connection of Gary Road to the GSP ramp network be considered.
- It was suggested that dedicated left turn lanes be considered as part of the intersections of the ramps with Vauxhall Road.

Next Steps

- Individual meetings will be held with local government officials for both of these projects. The meetings will be scheduled for early December. It is anticipated that the meetings will be held on the same day. One meeting will be held in the morning and the other will be held in the afternoon.
- Berger to prepare additional schemes based upon the ideas collected at the scoping kickoff meeting.

Action Items

- Berger to prepare the following:
  - Email containing the percentage of trucks at Bloy Street.
  - Estimate 2005 Route 22 traffic volumes (based upon data from Route 22 Corridor Needs Assessment) and provide to NJDOT.
  - Email requesting accident data.
  - Analysis of accidents on Route 22 and ramps for both Bloy Street and Vauxhall Road project areas.
  - Berger to forward a copy of the topographic mapping for the NJDOT's use.
  - Additional alternatives and matrices for Local Government Meetings.
  - Email preliminary TAC list for each project for review by NJDOT.
- NJDOT to:
  - Provide most recent design for Liberty Avenue Bridge.

- Determine the historical significance of the Bloy Street Bridge
- Provide accident data (to be requested by Berger).

Next meeting will be scheduled for December.

MINUTES WERE PREPARED BY THE LOUIS BERGER GROUP, INC.

MINUTES OF MEETING

Date and Time: Wednesday, February 15, 2006 at 1:30 P.M.

Location: Union Municipal Building, Union, NJ

Project: Route 22 and Vaux Hall Road Feasibility Assessment

Purpose: **Concept Review and Teaming Meeting**

Attendees:

New Jersey Department of Transportation (NJDOT)

Bhavesh Shah	(609) 530- 8078
Kamlesh Shah	(609) 530- 5539
Hardev Dave	(609) 530-3594
Richard Rogers	(609) 530- 3502
Nina Chivulescu	(609) 530-2740
Tom Johnson	(609) 530-2740

County of Union (County)

Kamal Saleh (Planning)	(908) 527-4086
Liza Betz (Planning)	(908) 527-4086
Nicholas Pantina (Engineering)	(908) 789-1541

Township of Union (Union)

Ronald Manzella	(908) 851-8500
David Marks	(908) 851-8506
Sgt Peter Quance	(908) 851-5071

The Louis Berger Group, Inc. (Berger)

Robert J. Thiel, P.E.	(973) 765-1930
Michael Monteleone	(973) 678-1960x570

The following were highlights of the meeting:

Project Status

The meeting started at 1:45 pm with an introduction of the project to the attendees by the NJDOT PM for the Feasibility Assessment, Bhavesh Shah. Mr. Shah noted that the project is a result of the previous corridor study, and that the project is currently undergoing a feasibility assessment.

Vaux Hall Road Alternatives

The following is a summary of the alternates discussed.

Alternate 1

Alternate 1 depicts the reconfiguration of the eastbound ramps to improve/provide acceleration and deceleration lanes while impacting a minimum number of properties and maintaining an adequate ramp speed. Westbound ramps would generally remain in their current configuration with the addition of acceleration lanes. Signals are proposed along Vauxhall Road at the end of both sets of ramps. Sayre Road is proposed to be dead-ended due to its conflict with the proposed accelerations lane. The following issues were raised during discussion:

- The Township noted that the Liquor Store (Block 1703, Lot 1) has been approved for an addition. The Township will provide a copy of the plans.
- The Township raised a concern regarding the coordination of the signals. It was noted that signals will have to be designed to act in coordination, and the gaps provided by the signals along Vauxhall will help the operation of adjacent stop controlled intersections.
- The Township voiced a strong concern with the taking of the existing restaurant (block 1810, lot 1). It was noted that the reconfigured Parkway Interchange 143 will take an entire business (bowling alley) and the taking of this successful restaurant will further decrease the tax base for the Township. It was noted that the NJDOT should reconsider the improvements or relocation of the restaurant.
- The Township would like to know if the proposed acceleration/deceleration lanes under the Vaux Hall Road Bridge would affect the width of the sidewalks along Route 22.

Alternate 2

Alternative number 2 depicts a similar arrangement for the eastbound ramps as Alternate 1, however reconfigures the westbound ramps into a new service road (extension of Gary Road) that is combined with the GSP northbound on ramp. This alternative would eliminate the revocation of access proposed along Route 22 westbound under alternate 1. This alternate was also noted to be more expensive and require additional coordination with the NJTA. The following issues were raised during the discussion of this alternative:

- The Township noted that this option was preferable when compared to Alternate 1, however the relocation of the restaurant is of critical concern to the Township.
- The Township noted that it would not object to a potential taking of the parcel located between Gary Road and the Elizabeth River, which may be required by this option.
- The Township noted that is strongly supports the dead-ending of Sayre Road proposed in both of these alternates.
- The Township noted that it would provide written comments after reviewing the minutes of this meeting, and that it would prefer to see options developed that avoid impacts to Block 1703, Lot 1.

Action Items

1. Township to provide NJDOT with copy of Block 1703, lot 1 expansion plans.
2. Township to provide written comments on alternatives.
3. NJDOT to forward electronic copies of the alternatives to the County (Betz, Pantina) and the Township (Marks).

MINUTES WERE PREPARED BY THE LOUIS BERGER GROUP, INC.

The Louis Berger Group, Inc.

MINUTES OF MEETING

Date and Time: Monday, March 5, 2007 at 10:30 A.M.

Location: Union Township Municipal Building
Morris Avenue, Union, New Jersey

Project: **ROUTE 22/VAUX HALL ROAD INTERCHANGE FEASIBILITY ASSESSMENT. U-TURN G CLOSURE**

Purpose: **Review of Initially Preferred Alternative (IPA)**
Review of U-Turn G Closure Plan

A meeting with representatives of Union Township was held on Monday, March 5, 2007 at the Union Township Municipal Building. The purpose of the meeting was to present the Initially Preferred Alternative plan for improving the Route 22 eastbound entry ramp of the Route 22/Vaux Hall Road Interchange and to discuss NJDOT plans to close the Route 22 median U-turn G located west of Springfield Road. Present at the meeting were the following people:

NAME	AFFILIATION	PHONE
Frank Bradley	Union Twsp Administrator	(908) 851-8500
Mike Minotelli	Union Twsp Plannng	(908) 851-8460
Ronald Manzelle	Union Twsp Assist Administrator	(908) 851-8500
Phil Haderer	Union Twsp Engineer	(908) 851-8506
St. Peter Quance	Union Twsp Police Dept.	(908) 851-5071
Bhavesh Shah	NJDOT – DPPD	(609) 530-8078
Thomas P. Johnson	NJDOT OCR	(609) 530-2110
Felipe Hernandez	NJDOT – Traffic Operations North	(201) 797-7043
Naveen Gumedelli	The Louis Berger Group, Inc.	(973) 765-1857
Dennis E. Conklin	The Louis Berger Group, Inc.	(973) 765-1921

A plan of the proposed improvements to the Route 22/Vaux Hall Road Interchange eastbound entry ramp to Route 22 was presented along with an aerial photograph of the project area. Bhavesh Shah initiated the meeting noting that the NJDOT met with Township representatives in February, 2005 and presented plans for improving the geometric deficiencies at the Vaux Hall Road/Route 22 Interchange to eliminate the safety and operation problems experienced at this segment of the Route 22 corridor. The Township objected to the original improvement plans because of the right-of-way impacts to commercial properties. Bhavesh noted the DOT has scaled back the interchange improvements to include the addition of an acceleration lane along the eastbound roadway for the Vaux Hall Road entry ramp. The acceleration lane will reduce conflicts between through traffic and entering traffic and the incidents of traffic accidents.

Dennis Conklin explained the details of the plan. Two (2) typical sections were studied for adding the eastbound acceleration lane. Alternative 3A provided a desirable roadway cross section comprised of a 1-foot left shoulder, two (2) 12-foot wide through lanes, a 13-foot wide acceleration lane and a 6-foot wide border area for a pedestrian sidewalk and utility poles. This desirable cross section requires the ROW line to be located 45 feet from the Route 22 centerline. The existing

Route 22 ROW is located 43 feet from the centerline, therefore a 2-foot strip of property must be acquired from Lots 2, 3, 4 and 5 in Block 1810 to construct the desirable cross section. The property acquisition from Lots 3 and 4 would impact the parking lot of the two office buildings.

Alternative 3B provides a minimum roadway cross section comprised of a 1-foot left shoulder, two (2) 11-foot wide through lanes, a 12-foot wide acceleration lane and a 7-foot wide border area. This minimum cross section requires the ROW line to be located 43 feet from the centerline which coincides with the existing ROW line. The minimum roadway cross sections is proposed for the acceleration lane improvement.

The horizontal alignment of the acceleration lane requires a 450 feet long acceleration lane and a 300-foot taper. The end of the taper is situated approximately 100 feet east of the existing Highland Avenue/N. Sunset Place intersection with the Route 22 eastbound roadway. It is proposed to close the existing local street intersection and connect the northerly curb of Highland Avenue and N. Sunset Place.

The Township representatives objected to the closing of the local street intersection. The driveway access for the new clothing store business that fronts on Route 22 is located on Highland Avenue and access to the store would become very circuitous with the closing of the intersection. The store owner built a new building on the site, after Township approval, and the store just recently opened for business. The Township would not approve an improvement plan that indirectly had such a negative impact on this commercial property. The Township suggested the NJDOT acquire the business and property as a potential solution.

The Township representatives suggested leaving the intersection and making Highland Avenue one way in from Route 22. Mr. Bradley wanted to determine the number of residents along Highland Avenue that would be affected by the change in traffic patterns before agreeing to make Highland Avenue a one-way street.

The NJDOT representatives agreed to re-evaluate the improvement plan to determine if there was a way to address the Townships objections.

A discussion of the NJDOT plan to close U-Turn G through the Route 22 median at the west end of Union Township followed. The median U-Turn G is situated just west of the Springfield Road/Route 22 westbound roadway intersection and allows westbound traffic to connect to the eastbound roadway. The NJDOT representatives presented a plan of the system of median u-turns that provide access to commercial properties that front along, or are in the median, of the Route 22 eastbound and westbound roadways. The NJDOT desires to permanently close U-Turn G due to the high incidence of accidents that occur at this location. The Township representatives supported the plan. Initially, U-Turn G will be temporarily closed and the affect on traffic observed over time. The Township representatives wanted the temporary closure to occur before the summer school recess so peak traffic volumes could be observed. The NJDOT representatives indicated the temporary closure could be implemented in approximately a month.

The placement of advance notification signs for the U-Turn closure and placement of VMS signs after the closure were reviewed with the Township representatives. Frank Bradley stated that the Township would assist with notification of the U-Turn G closure through the use of Reverse 911 and Channel 34 television messages.

DEC:ml

MINUTES OF MEETING

Date and Time:	Tuesday, June 1, 2010 at 1:30 P.M.
Location:	NJDOT E&O Building, 3rd Floor Conference Room Trenton, New Jersey
Project:	**ROUTE 22 WB VAUXHALL ROAD INTERCHANGE IMPROVEMENTS FEASIBILITY ASSESSMENT**
Purpose:	**Core Group Meeting** **Bloy Street Interchange IPA**

Attendees: A list of attendees is on the attached Sign In Sheet.

Route 22/Bloy Street Interchange

Plans of the Bloy Street Interchange IPA bridge replacement and intersection improvements were displayed along with the bridge construction staging and photographs of truck turning movements encroaching on the left lane of the Route 22 eastbound and westbound roadway and also the Bloy Street opposing lane. Mr. Shah began the meeting by reviewing the safety issues and existing bridge condition that the proposed project was designed to address. He described the IPA improvements, the bridge construction staging, and ROW impacts that were proposed to implement the project. Entire takings were proposed in the southeast, southwest and northwest quadrants of the Bloy Street/Route 22 intersection.

The NJDOT ROW representatives suggested the ROW takings in the northwest and southeast quadrants be changed to partial takings along the property frontage. Access to the northwest property can be provided from Bloy Street near the north property line. Access to the southeast property can be provided from Long Avenue. NJDOT ROW will determine during the ROW appraisal process whether the reminder of the southeast property has economic value or not.

It was agreed that the property in the southwest quadrant should be an entire taking as access cannot be safely provided.

The ROW representatives indicated the estimated preliminary ROW cost, based on one entire taking, is $3.0 million with $1.2 million assigned to the gas station in the southeast quadrant.

Berger will revise the IPA plan to reflect a single entire taking in the southwest quadrant. The Project Fact Sheet will also be amended to reflect the ROW changes and to incorporate NJDOT comments.

Prior to adjoining the Core Group Meeting, Bhavesh Shah requested that each of the SME complete the appropriate section of the NJDOT Scope Statement and have the document approved by their supervisor.

Subsequent to the meeting, an e-mail comment was received from Joseph Powell of the Office of Bicycle and Pedestrian Programs noting that the project should be ADA compliant, especially the replacement stairs proposed on the west side of the bridge on both sides of Route 22. Bhavesh Shah responded to the comment noting sidewalks were proposed along both sides of the bridge and bridge approaches with curb ramps at all intersections. This will function as an ADA ramp system. The Office of Bicycle and Pedestrian Programs concurs with this ramp system.

An e-mail was also received from Al Virgilio, NJDOT Value Solutions Unit suggesting a means of constructing the proposed bridge in two (2) stages instead of the three (3) stages proposed in the IPA plan. His method requires a one-way detour during the initial stage of construction, presumably for the northbound direction that has the lesser large truck volume. Mr. Virgilio was advised that Hillside Township is vehemently opposed to any detouring of traffic during construction.

Following the Core Group Meeting, several SME reviewed the alternatives developed at the Vaux Hall Road/Route 22 Interchange for constructing an eastbound acceleration lane along Route 22 for the eastbound entry ramp. Concern was raised about existing driveways depicted on the Alternative 3B plan at the clothing store occupying Lot 5 in Block 1810 and the driveway at the rear of a resident occupying Lot 1 in Block 1807. Both driveways are situated in the acceleration lane taper.

Review of photographs taken at the site indicates the clothing store parking lot is curbed with driveway access at Highland Avenue. Photographs of the residential property on Lot 1 in Block 1807 were not available. During a subsequent field reconnaissance, a retaining wall obscured by brush was observed along the Route 22 eastbound ROW line at the rear of the residential property. The proposed acceleration lane improvements will construct full height curbing at these two (2) locations.

Bhavesh Shah indicated that a cost of $10,000 per utility pole should be used to calculate the utility relocation costs of Alternative 3B.

The Route 22/Vaux Hall Road Interchange Improvements Fact Sheet will be amended to indicate the accident rate, utility relocation cost and construction cost with a statement that Alternative 3B does not require any ROW acquisition.

DEC:ml
Attachment

NEW JERSEY DEPARTMENT OF TRANSPORTATION

SIGN IN SHEET

Route 22 Vauxhall Road Interchage
Townshisp of Union, Union County
Place: E & O Bldg. Room 3C
DATE: JUNE 1, 2010

NAME	OFFICE	TELEPHONE NUMBER
BHAVESH SHAH	NJDOT-DPD	609–530-8078
KAMLESH SHAH	NJDOT-DPD	609–530-5539
JOE POWELL	NJDOT BIKE/PED	5.5290
Rebecca Cohen	NJDOT-DPD	
Nunzio Merla	FHWA	609-637-4233
FRANK PINTO	NJDOT - Utilities	609-530-2881
NILESH BHAVSAR	NJDOT - DPM	609-530-3642
Nayan Brahmbhatt	NJDOT - Traffic	609-530-4678
Raj Brahmbhatt	Access Design	609-530-3775
HARDEV DAVE	NJDOT - PM	" - 3594
JEAN Joseph	NJDOT - MAINT.	973 770 5129
Chiman Antala	Value solutions	5-2455
Amutha Vijayakumar	Value Solutions	609-530-2580
Hong Sun	The Louis Berger Group, Inc.	973-407-1561
Naveen Gunesen	The Louis Berger Group	973-407-1529
Dennis E Conklin	"	" " 1524

MINUTES OF MEETING

Date and Time: Friday, September 10, 2010 at 2:00 P.M.

Location: Union Township Municipal Building
Morris Avenue, Union, New Jersey

Project:
- **ROUTE 22 WB AND VAUX HALL ROAD INTERCHANGE SAFETY IMPROFVEMENTS, FEASIBILITY ASSESSMENT**
- **ROUTE 22 EB FROM VAUXHALL ROAD TO HIGHLAND AVENUE, SAFETY IMPROVEMENTS FINAL DESIGN**

Purpose: **Review of Initially Preferred Alternative (IPA) for Route 22 WB**
Review of Final Design Update for Route 22 EB

A meeting with representatives of Union Township was held on September 10, 2010 at the Union Township Municipal Building. The purpose of the meeting was to present the Initially Preferred Alternative (IPA) plan for the Route 22 WB and Vauxhall Road Interchange safety improvements and to update the Route 22 EB and Vauxhall Road Interchange final design. Present at the meeting were the following people:

NAME	AFFILIATION	PHONE
Frank Bradley	Union Township Administrator	(908) 851-8500
Diana Rodriguez	Union Township Engineering	(908) 851-8506
Meredith Hammond	NJDOT - OCR	(609) 530-4555
Hardev Dave	NJDOT – CPM	(609) 530-3594
Nilesh Bhavsar	NJDOT – CPM	(609) 530-3648
Kamlesh Shah	NJDOT – DPPD	(609) 530-5539
Bhavesh Shah	NJDOT – DPPD	(609) 530-8078
Hong Sun	The Louis Berger Group, Inc.	(973) 407-1561
Naveen Gumedelli	The Louis Berger Group, Inc.	(973) 407-1529

- **ROUTE 22 WB AND VAUX HALL ROAD INTERCHANGE SAFETY IMPROFVEMENTS, FEASIBILITY ASSESSMENT**

A plan of the proposed improvements to the Route 22 WB/Vauxhall Road Interchange safety improvements was presented. Bhavesh Shah initiated the meeting noting that the NJDOT met with Township representatives before on Route 22 EB improvements and based on the comments from FHWA NJDOT is presenting plan for improving the geometric deficiencies at the Vauxhall Road/Route 22 WB Interchange to improve the safety and operation at this segment of the Route 22 corridor. The accident rate along this section of Route 22 WB is higher than the statewide average rate.

Berger explained the design details of the IPA plan. The traffic movement to northbound Vauxhall Road from Route 22 WB has no deceleration lane and conflicts with traffic exiting and entering the commercial establishment situated along westbound Route 22 between the Gary Road intersection and the exit ramp terminal. The traffic movement entering westbound Route 22 from northbound Vauxhall Road has no acceleration lane with a yield condition (due to bridge abutment). The traffic movement to southbound Vauxhall Road exits Route 22 westbound onto Sayre Road has no deceleration lane and conflicts with traffic exiting and entering a liquor store situated between the Vauxhall Road Overpass and Sayre Road. The traffic movement from southbound Vauxhall Road to Route 22 westbound uses Sayre Road to enter Route 22 with a stop condition and conflicts with traffic exiting and entering the commercial establishments situated along westbound Route 22 west of Sayre Road.

The safety improvements along Route 22 WB include the addition of an auxiliary lane between Gary Road and Vauxhall Road, a short deceleration to Sayre Road, and a short acceleration lane from Sayre Road. The existing roadway section consists of 2-foot left shoulder, two (2) 12-foot wide through lanes, 6-foot right shoulder and 9-foot border area. The proposed section consists of 1-foot left shoulder, two (2) 11-foot through lanes, 15-foot auxiliary lane between Gary Road and Vauxhall Road with 4-foot wide border area for utility poles and 12-foot deceleration/acceleration lane at Sayre Road with 7-foot border area for a pedestrian sidewalk and utility poles. All the proposed improvements are within the existing ROW except for a ground mounted sign located in front of the Exxon Gas station located at Block 1806 Lot 3.02. Aerial easement is required from Block 1806 Lots 1, 2, 3.01, 3.02 and 4 for the utility lines.

Access improvements include revoking one driveway access facing exit ramp terminal at Block 1806 Lot 1 and two driveway accesses from Liquor store at Block 1703 Lot 1. The improvements are in consistent with the future improvements of Block 1703 Lot 1. Driveway access at Block 1806 Lot 2 will be modified. About 15 utility poles need to be relocated and the construction cost is about three million dollars. Most of the improvement work is done with shoulder closure only, except for the ramp improvement which requires a detour for short duration.

NJDOT requested if the Township could support in getting the ROW required from Block 1806 Lot 3.02. The Township indicated if it is not a franchise business then the Township could potentially support. After the meeting the Township confirmed from the Tax Department that the gas station is owned by Exxon franchise located in Houston, Texas.

The Township indicated their support on this project and stated the improvements are appreciated but concerned about the Route 22 westbound west of the proposed improvements. NJDOT stated they will look into the Feasibility Assessment and the availability of funds for the improvements at Route 22/Route 82 intersection with Garden State Parkway.

NJDOT requested for the resolution of support from the Township for the Initially Preferred Alternative. The Township stated it is the Township policy that the resolution of support will not be issued until the Public Information Center (PIC) is completed at least. The Township stated PIC is needed and Township would provide the conference room for the PIC when the design is completed.

- **ROUTE 22 EB from Vauxhall Road to Highland Avenue, Safety Improvements Final Design**

Hardev Dave updated the final design status for the Route 22 EB safety improvements with emphasis on the proposed island at Route 22 eastbound and Highland Avenue intersection and the

potential detour requirement. The proposed island could be a sloping curb or pavement stripe marking. The Township preferred the sloping curb with concrete island option. No lane closures during construction are allowed during the day. Detour is required for the Route 22 EB exit and entry ramps with Vauxhall Road for short duration during weekday nights. Traffic is diverted through Bloy Street in Hillside Township. The project is expected to begin construction in spring 2011. NJDOT is planning a PIC in early 2011 with contractor on board before the start of construction. The NJDOT Office of Community Relations will inform the Hillside Township about the detour.

MINUTES WERE PREPARED BY THE LOUIS BERGER GROUP, INC.

The Louis Berger Group, Inc.

MINUTES OF MEETING

Date and Time:	Wednesday, May 1, 2013 at 02:00 P.M.
Location:	NJDOT, Engineering and Operations Building
Project:	**Route 22 Westbound from Gary Road to West of Sayre Road Safety Improvements**
Purpose:	**Right of Way Kick-off Meeting**

The following were highlights of the meeting:

- Sign-in Sheet is attached.
- Naveen Gumedelli provided an overview of the project.
- The NJDOT stated border strip of land should be bought in fee wide enough to put the utility poles. Utility poles cannot be in utility easement.
- The NJDOT stated Berger should evaluate two options for the utility relocations
  - Option 1: Relocate utility poles with fee taking and evaluate impacts to the parking.
  - Option 2: Relocate Gas main that is in the 4-foot border area beyond the existing ROW into utility easement and relocate the poles into the existing ROW.
- NJDOT suggested to do Title search and check if there is a cross easement between lots.
- NJDOT suggested adding a cross section detail at the Exxon Gas price sign and add it to the ROW report.
- NJDOT stated not to show construction easement for relocation of the private signs
- Berger to call Union Township for the Police crash reports along Sayre Road at Route 22 WB and investigate for the crashes because of driveways of the Bowling Alley and Aarti's World Discount Liquor Store.
- Berger to call Union Township and inquire on the validity of the approved site plan for Aaarti's World Discount Liquor store situate at Block 1703 Lot 1.
- Berger to send the approved site development of the liquor store to Paul Ignarri.
- NJDOT stated the driveway on the ROW impact plan should be reported as a SA parcel. Limits of SA parcel should be 5-foot beyond the limit of disturbance.
- NJDOT to send ROW Report and ROW Impact to NJDOT Mount Arlington Office.
- NJDOT stated to make sure the driveway profiles have enough ground clearance.

Post Script

- Based on the Union Township Planning Board meeting resolution dated November 30, 2006. Permit for the improvements on Block 1703 Lot 1 Aarti's World Discount Liquor Store expired as of May 27, 2007. Attached is Union Township Planning Board resolution.

The Louis Berger Group, Inc.

MINUTES OF MEETING

Date and Time:	Wednesday, July 24, 2013 at 12:30 P.M.
Location:	The Louis Berger Group, Morristown, NJ
Project:	**Route 22 Westbound from Gary Road to West of Sayre Road Safety Improvements**
Purpose:	**Project Progress Review**

The following were highlights of the meeting:

- Sign-in Sheet is attached.
- Berger briefed the project progress.
- Berger detailed about the two options that were developed between Gary Road and Vauxhall Road exit ramp to relocate the utilities.
  - Option 1: Relocate the utility poles with ROW fee taking. Impacts to the parking stalls are Block 1806 Lot 3.03 18 parking stalls, Block 1806 Lot 3.01 3 parking stalls, Block 1806 Lot 2 9 parking stalls and 1806 Lot 1 15 parking stalls.
  - Option 2: Relocate Gas main that is in the 4-foot border area beyond the existing ROW into proposed utility easement and relocate the poles into the existing ROW.
- It was decided by NJDOT to go with option 2 with gas main relocation.
- Berger to contact utility companies except sewer to check whether they received utility agreement from NJDOT
- Block 1806 Lot 3.01 impact to property parking to be stated in the ROW comment resolution summary and access impact summary.
- Berger to investigate consolidating the two signs Milburn, Union next right sign and GSP sign.
- Berger to investigate the OSHA and NBC requirements with the proposed poles relocation and the Exxon business sign.
- Berger to check available GEOD expenses to survey Exxon sign height and utility cable location and height.

New Jersey Department of Transportation

Sign In Sheet

Route 22 Westbound from Gary Road to West of Sayre Road

Safety Improvements

Location: Louis Berger Office, Morristown

Wednesday July 24, 2013 01:00 PM

Project Progress Meeting

Name	Office	Telephone Number
HARDEV DAVE	NJDOT, TRENTON	609-530-3594
NILESH BHAVSAR	NJDOT,	609-530-3642
JON LEE	LBG, Morristown	973-407-1585
Bernice Lee	LBG, Morristown	(973) 407-1539
Naveen Gunadelli	LBG, Morristown	973 407 1529
Hong Sun	LBG	973-407-4561

The Louis Berger Group, Inc.

MINUTES OF MEETING

Date and Time:	Friday, October 11, 2013 at 01:00 P.M.
Location:	NJDOT, Engineering and Operations Building Conference Room 3B
Project:	**Route 22 WB Vicinity of Vauxhall Road to West of Bloy Street**
Purpose:	**SME Core Group Meeting**

The following were highlights of the meeting:

- Sign-in Sheet is attached.
- NJDOT introduced about the project.
- Berger further explained the purpose of the project and provided details and project constraints.
- NJDOT Bicycle and Pedestrian Group asked if there is any sidewalk proposed
- Berger showed the location of the proposed sidewalk and the NJDOT project manager Hardev Dave, stated the owner of the lot does not want to shovel the snow and maintain the sidewalk.
- NJDOT Project Manager requested from the Bicycle and Pedestrian SME to investigate if the proposed sidewalk at this location is warranted or if it can be removed to accommodate the property owner's request. There is ROW taking in fee at this location for roadway widening and proposed sidewalk.
- NJDOT asked if there is any bus service within the project limits.
- There is a bus stop at the center island intersection of Route 22 WB with Gary Avenue
- NJDOT requested Berger to check with Traffic Operations on the regulations of the bus stop location.
- NJDOT Hydraulics and Hydrology (H&H) questioned if the project is within the Flood Plain. Berger stated the project is not located in the Flood Plain and the closet Flood Plain is far away from the project limits.
- NJDOT H&H asked if there any drainage improvements proposed for this project. Berger stated that new inlets are added to accommodate the widening and to address constrain spread to the allowable limits.
- NJDOT H&H asked what is the area of new impervious surface. Berger stated the project will have 0.2 Acre of new impervious surface.
- NJDOT H&H asked if there is any guiderail and directed Berger to account for the non-vegetative surface area and that is to be added to the new impervious area.
- Berger to investigate and update the new impervious area.
- NJDOT H&H asked about the impacts to the Riparian Zones within the project. Berger stated that the project is well outside a regulated water body and therefore there are no Riparian Zones within the project.
- NJDOT asked if there is any under deck lighting and if the project proposed any overhead sign structures. Berger stated under deck lighting improvements are not required and there are no proposed overhead sign structures in the project.

- NJDOT stated there is no need to provide the curb ramp at the corner of Sayre Road and Route 22 WB. As there is no sidewalk crossing at this location.
- NJDOT bicycle and pedestrian SME requested that Berger email a pdf of the typical section drawing.
- NJDOT value solutions asked Berger to check the horizontal sight distance along the left lane at the curve from sta. 239+97.24 to sta. 243+54.38.

Post Script

- A copy of the Typical Section drawing was provided to NJDOT
- Route 22 WB new impervious area is 0.22 Ac. (Guiderail non-vegetative surface is added)
- Bus stop at the center island intersection of Route 22 WB with Gary Avenue is not in accordance with state regulations.
- Design exception report is updated to add the horizontal sight distance along the left lane at the curve from sta. 239+97.24 to sta. 243+54.38

New Jersey Department of Transportation

Sign In Sheet

Route 22 Westbound from Gary Road to West of Sayre Road

Core Group Meeting

Location: Engineering & Operations Building, Conference 3 B

Friday October 11, 2013 01:00 PM

Project Progress Meeting

Name	Office	Telephone Number
David Abbott	DOT / H&H	609-530-2283
Harden Dave	DOT - PM	609-530-3594
Stan Pierzhanowski	" Value Solutions Rowt	609 - 530 - 3809
Diana Villanueva	DOT - QMS - Design Standards	609-630-6579
WARREN HOWARD	DOT - QMS - DESIGN STANDARDS	609-530-2499
Chiman Antala	DOT - Value Solutions	609-530-2455
JOSEPH PONELL	NJDOT OFFICE OF BICYCLE & PEDESTRIAN PROGRAMS	JOSEPH.PONELL@DOT.STATE.NJ.US 609.530.5290
Hong Sun	Louis Berger Group	973-407-1561
NILESH BHAVSAR	NJ DOT - APM	609-530-3642
Amutha Vijayakumar	NJDOT - Value Solutions	609 530 - 2580
Naveen Gunedelli	Louis Berger Group	9734071529
Claudette Y Bailey	BTE	609 530 4978

New Jersey Department of Transportation

Sign In Sheet

Route 22 Westbound from Gary Road to West of Sayre Road

Safety Improvements

Location: Engineering & Operations Building, Conference 3 B

Wednesday May 01, 2013 02:00 PM

Right of Way Kick-off Meeting

Name	Office	Telephone Number
Naveen Gunnedalli	The Louis Berger Group, Inc.	973-407-1529
Harder Dave	NJDOT - PM	609-530-3544
Jitu Amin	NJDOT - Row Engg.	609-530-5661
Paul Ignazzi	NJDOT - Access Design +ROW Engg	609-530-5543
Dennis Wright	NJDOT - Access Design	609-530-5030
Raj Brahmbhatt	" "	609-530-3775

APPENDIX N

PROJECT MANAGEMENT PLAN

State of New Jersey

Department of Transportation

Project Management Plan
RT 22 WB, Vicinity of Vauxhall Rd to West of Bloy Street
UPC # 058003

Prepared by
Capital Program Management
Division of Project Management
February, 2014

Document Information and Revision History

File Name	Route 22 WB, Vicinity of Vauxhall Rd to W of Bloy St, PMP
Original Author(s)	Hardev Dave
Current Revision Author(s)	N/A

Version	Date	Author(s)	Revision Notes

Approval of the Project Management Plan

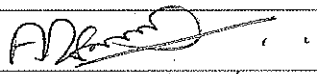
Concept Development	
Approved By:	N/A
Title	
Signature	
Date of Approval	
Preliminary Engineering	
Approved By:	Atul Shah
Title	Program Manager, Division of Project Management, Group E
Signature	
Date of Approval	2/14/14

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2.8 Risk Management 1
2.9 Procurement Management 2

1.0 Project Overview

Existing Condition:

Route U.S. 22 is an urban, principal arterial roadway extends generally east-west from Warren County on the west to Route 1 and 9 on the east. The accident analysis prepared by NJDOT Bureau of Safety Programs indicates an accident rate of 3.79 along this segment of Route 22WB which is higher than the 2.93 statewide average rates. The westbound accidents along Route 22 are caused by conflicting movements that exist along westbound Route 22 from the Gary Road intersection to west of the Sayre Road intersection. The Vauxhall Road interchange configuration along westbound Route 22 lacks acceleration, deceleration and auxiliary lanes necessary to reduce conflicts between through traffic and traffic exiting and entering Route 22 westbound at Vauxhall Road and the numerous commercial establishments that front along the westbound roadway.

The Vauxhall Road (CR 630) overpass (Structure No. 2004150) over Route 22 (MP 56.2) is in fair condition and only requires normal maintenance. The 2011 sufficiency rating of the Vauxhall Road overpass is 76 as determined by the NJDOT Bridge Management System. The existing Route 22 WB roadway typical section consists of a 6-foot median with a 2-foot median barrier, two 12-foot wide travel lanes and a 6-foot right shoulder in each direction with a 9-foot border area for utility poles. The existing Route 22 ROW width outside the interchange area is 86 feet. The existing pavement cross slopes on Route 22 WB are various from 0.34% to 4.27%.

The traffic movement to northbound Vauxhall Road from Route 22 westbound has no deceleration lane and conflicts with traffic exiting and entering the commercial establishment situated along westbound Route 22 between the Gary Road intersection and the exit ramp terminal. The traffic movement entering westbound Route 22 from northbound Vauxhall Road has no acceleration lane with a yield condition (due to a bridge abutment). The traffic movement to southbound Vauxhall Road exits Route 22 westbound onto Sayre Road has no deceleration lane and conflicts with traffic exiting and entering a liquor store situated between the Vauxhall Road Overpass and Sayre Road. The traffic movement from southbound Vauxhall Road to Route 22 westbound uses Sayre Road to enter Route 22 with a stop condition and conflicts with traffic exiting and entering the commercial establishments situated along westbound Route 22 west of Sayre Road.

Proposed Improvements:

Provide an auxiliary lane along Route 22 WB between Gary Road and Vauxhall Road. Improve the turning radius from Vauxhall Road to Route 22 WB to allow large trucks to make a right turn into the appropriate lane without encroaching on the adjacent lane. Provide a foreshortened deceleration and a foreshortened acceleration lane to and from Sayre Road along Route 22 WB by widening Route 22 WB pavement converting the existing right shoulder to part of the new auxiliary lane. Provide sidewalk along Route 22 WB between Vauxhall Road and Sayre Road. Improve the drainage system by adding inlets along Route 22 WB to address spread at low points and along widened pavement. Existing Route 22 WB

travel lanes will be milled 2 inches and overlay with 2 inches asphalt. The existing pavement cross slopes and elevations on the travel lanes will remain the same.

The proposed roadway cross section along the auxiliary lane section comprises of 1-foot left shoulder, two (2) 11-foot wide through lanes with existing cross slopes and a 15-foot wide auxiliary lane with 2.5% cross slope, 4-foot border area. The proposed roadway section along the deceleration lane section comprises of a 1-foot left shoulder, two (2) 11-foot wide through lanes with existing cross slopes, 15-foot wide deceleration lane with 2.5% cross slope, 9-foot border area. The proposed roadway section along acceleration lane comprises of a 1-foot left shoulder, two (2) 11-foot wide through lanes with existing cross slopes , a 13-foot wide auxiliary lane with 2.5% cross slope and a 6-foot border area.

2.0 Project Management Processes and Approaches

The project team will address the project management areas as described below:

2.1 Integration Management

This project was converted from the old Concept Development/Feasibility Assessment phase to the new Preliminary Engineering phase. This project management plan was prepared for the Preliminary Engineering report. No typical need for integration of project management processes were identified during the PE phase. However, normal process integration will be undertaken as needed. Integration of project management processes will be carried out using the Department PMO policies and guidelines. Individual processes are briefly discussed in the following sections.

2.2 Scope Management

A Scope Statement form for the Final Design Phase is included in the Preliminary Engineering report. The Final Design scope of work was developed for the operational and safety improvements of Route 22 WB in the vicinity of Vauxhall Road Interchange. The scope of work (SOW) was developed in coordination with internal/external stakeholders and FHWA. Final Design budget and schedule will be developed using the FD Scope statement. If during the Final Design phase any change in the approved scope of work is warranted, it will be presented to the Change Control Board for approval in accordance with the established Department procedures. All scope related decisions will be documented in Design Communications Report (DCR).

2.3 Schedule Management

Design consultant need to be selected for this project for Final Design and Construction Support Services. Once designer is selected there will be negotiation of schedule along with the Fee proposal (cost of the services). A baseline project

schedule will be established and monthly schedule updates will be prepared as per established Department procedures to monitor the progress. Scheduled activities will be regularly monitored to ensure timely project delivery. During scope changes and/or in the event of unforeseen circumstance, the schedule will be re-baseline.

2.4 Cost Management

Approved Final Design scope statement is included in the PE report. The PE report includes cost estimates for design, right-of-way, utility and construction. These estimates have been provided to the NJDOT Capital Program staff for programming required funds for the project.

Right-of-Way requirements have been identified and a preliminary Right of way cost estimate is included in the PE Report. A final ROW plan along with an access plan will be developed during the Final Design phase which will be used to prepare a final ROW cost estimate by NJDOT Right-of-Way division.

Final design budget will be developed after the design fees are negotiated with the consultant to be selected for the project and the in-house support budget is developed negotiating review team hours. FMIS and Business Object tools available on the Department website will be used to track the in-house and consultant design costs. Cost monitoring will be performed using progress reports and invoices submitted by the consultant as per the Division of Project Management guidelines. Suspense will be avoided by monitoring costs by-weekly and timely initiating request for additional funds when necessary.

2.5 Quality Management

It will be ensured that designers who submit expression of interest for the FD have an approved corporate quality management plan on the Department PMO webpage. NJDOT PMO procedures and guidelines on quality reviews of design submissions will be followed for the project. In addition to the required Final Design submission, interim quality review meetings and submissions will be made as needed. Consultant monitoring will be performed to verify quality before the major submissions. Quality for PS&E submission will be verified via department developed checklists.

2.6 Human Resource Management

It is anticipated that this project design will be performed by a consultant team. Human resource management efforts will be limited to the in-house subject matter expert staff. Required time frames for the completion of project submissions reviews will be established with SME Bureaus when the project design kick off meeting is held.

2.7 Communications Management

Communications with internal and external stake holders will continue during the Final Design phase. Project management team will be the center of all project related communications with the stake holders. At the project kick-off meeting a line of communication will be established. All Design communications and decisions will be reviewed and approved by Project Manager. Approved Design Communication Report (DCR) will be uploaded on the PMO webpage. The DCR will be periodically updated as per the agreed upon schedule between project manager and the designer. The Union township is in support of this project. Annual local briefings will be provided to town and a Public Information Center will be held before beginning construction.

2.8 Risk Management

Due to the size and complexity of this project, it has not been identified as a pilot project to formally follow the department established risk management process. However, informally the simpler analysis for constructability was performed during FA/PE phase. The following key issues could trigger risk:

- The need of temporary construction easements and permanent fee takings from adjacent business owners.
- Proposed widening could impact non-encroaching parking space at a parcel.
- Coordination of the proposed improvements with utility companies and local developments.
- Compliance with storm water management. Mitigate impacts to potentially environmental sensitive parcels.

The above listed risks will be monitored during the final design phase to employ appropriate risk management strategies. All scope changes will be reviewed for any risk which it might pose to the project delivery schedule and cost.

2.9 Procurement Management

Design consultant need to be selected to advance this project thru final design and construction support services. This project should follow NJDOT one step selection process and selection will be made per department policy 312. Once a consultant is selected an individual federally funded agreement will be executed.

APPENDIX O

RISK REGISTER

NJDOT RISK MANAGEMENT

PROJECT RISK REGISTER

Project Name:	ROUTE 22 WB - VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET

Project Manager:	Hardev Dave	**Municipality(ies):**	Union Township
Designer:	The Louis Berger Group, Inc	**County(ies):**	Union County
NJDOT Project Job No.:	2204994	**Initial Register Date:**	5/14/2014
NJDOT UPC #:	058003	**Last Register Update:**	

Risk Rank & ID		Risk Statement & Category			Risk Analysis Matrix						Risk Response Strategy & Response Planning				
			Risk Category			Risk Impact									
Risk Rank	Unique ID #	Risk Statement	Initial Risk Owner	Risk May Occur In	Risk Probability	Schedule	Cost	Schedule Score	Cost Score	Final Score	Risk Response Strategy	Risk Response Action Plan	Final Risk Owner	Action Plan Status	Risk Last Updated
9	1	As a result of increase cost to relocate gas utility which may occur, which would lead to increase in total project estimate	Project Management	Final Design	2 - Low	2 - Low	4 - Moderate	4	8	12	Accept Threat	Have contigency in estimate to relocate the gas during Preliminary Engineering	NJDOT	Plan Implemented	5/14/2014
5	2	As a result of Utility company not agreeing to provide higher length utility pole which may occur, which would lead to relocate Exxon Business Sign	Utilities	Final Design	3 - Moderate	2 - Low	4 - Moderate	6	12	18	Mitigate Threat	Have contingency plan to relocate the Exxon sign during final design	Designer and NJDOT	Active Plan Implementation	5/14/2014
1	3	As a result of defined driveway for Block 1806 Lot 3.01 which may occur, which would lead to parking circulation issue	Access	Final Design	3 - Moderate	7 - High	4 - Moderate	21	12	33	Accept Threat	Have contigency plan to place no truck parking sign on the parking spot next to the aisle	NJDOT	Plan Implemented	5/14/2014
6	4	As a result of owner objection to access revocation from Block 1806 Lot 1 which would lead to schedule delay	Access	Final Design	2 - Low	7 - High	1 - Very Low	14	2	16	Accept Threat	Have contingency to the overall project schedule	NJDOT	Plan Implemented	5/14/2014
3	5	As a result of owner objection to access revocation from Block 1703 Lot 1 which would lead to schedule delay	Access	Final Design	3 - Moderate	7 - High	1 - Very Low	21	3	24	Accept Threat	Have contingency to the overall project schedule	NJDOT	Plan Implemented	5/14/2014
6	6	As a result of owner objection to access revocation from Block 1702 Lot 2.01 which would lead to schedule delay	Access	Final Design	2 - Low	7 - High	1 - Very Low	14	2	16	Accept Threat	Have contingency to the overall project schedule	NJDOT	Plan Implemented	5/14/2014
6	7	As a result of owner objection to providing new access and relocating parking spaces at Block 1702 Lot 2.01 which would lead to schedule delay	Access	Final Design	2 - Low	7 - High	1 - Very Low	14	2	16	Accept Threat	Have contingency to the overall project schedule	NJDOT	Plan Implemented	5/14/2014
10	8	As a result of restricted width under the bridge at Route 22 WB and Vauxhall Road which would lead to no improvement in crashes at on ramp to Route 22 WB from Vauxhall Road	Project Management	Final Design	2 - Low	1 - Very Low	1 - Very Low	2	2	4	Accept Threat		NJDOT	No Action Plan	5/14/2014
1	9	As a result of delay in utility relocation during construction which may occur, which would lead to schedule delays	Construction	Construction	3 - Moderate	10 - Very High	1 - Very Low	30	3	33	Mitigate Threat	Have utility relocation item removed from critical path	Designer and NJDOT	Plan Implemented	5/14/2014
4	10	As a result of not maintaining driveway access to commercial properties which would lead to public complaints	Project Management	Construction	2 - Low	7 - High	4 - Moderate	14	8	22	Avoid Threat	Have the resident engineer present at site and follow the plans and speci	Contractor and NJDOT	Plan Implemented	5/14/2014
11	11	As a result of contamination found in environmental sensitive parcels Blcok 1806 Lot 3.02 and Block 1806 Lot 4 which may occur, which would lead to increase project cost and schedule delays	Environmental	Final Design	1 - Very Low	1 - Very Low	1 - Very Low	1	1	2	Accept Threat	Have contingency to the overall project schedule and project cost	NJDOT	Plan Implemented	5/14/2014

APPENDIX P

FINAL DESIGN PUBLIC INVOLVEMENT ACTION PLAN

ROUTE 22 WB VICINITY OF VAUXHALL ROAD TO WEST OF BLOY STREET

(MP 55.9 –MP 56.4)

PRELIMINARY ENGINEERING UPC# 058003

Union Township, Union County

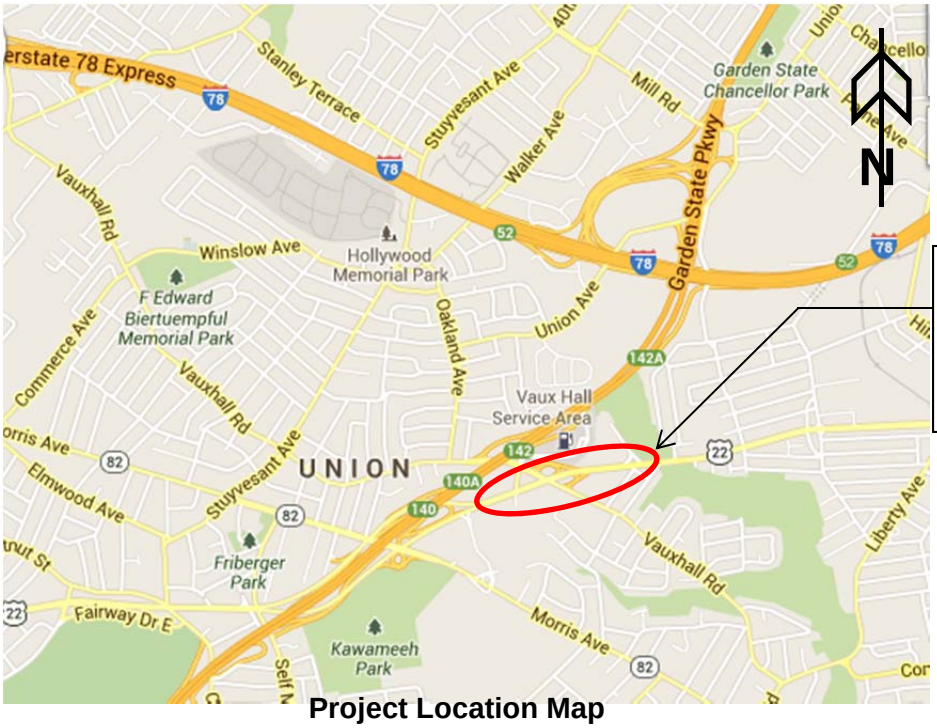
PUBLIC INVOLVEMENT ACTION PLAN (PIAP)

Date: March 31, 2014

This Public Involvement Action Plan (PIAP) is based on a variety of factors including the community, its context and concerns within the community, the impacts to the community, as well as the complexity of the project, its needs, the proposed improvements, and technical aspects of the project. The plan includes a number of strategies intended to provide opportunities for stakeholders, particularly those to be impacted by the project, to have a dialogue with the project team.

The plan described below will serve as a draft plan for the project. The plan will be based on the information known about the project at the time the document is drafted.

Project Description:



Project Location Map

PURPOSE AND NEED

The purpose for the project is to address safety concerns arising from the substandard layout geometry of the intersection and interchange ramps of Route 22 WB vicinity of Vauxhall Road to West of Bloy Street from MP 55.9 to MP 56.4. In particular, the absence

of acceleration and deceleration lanes along Route 22 significantly contributes to the higher than statewide accident rate along this segment of Route 22.

The following summarizes existing conditions and project needs.

Roadway Needs

The following roadway needs have been identified:

- Improve highway safety within the project limits by correcting Controlling Substandard Design Elements where practicable to satisfy the requirements of the NJDOT Roadway Design Manual and the NJDOT Design Exceptions Manual. The Following geometric features were evaluated in accordance with these standards:
    - Cross Slope
    - Acceleration/Deceleration Lanes
    - Horizontal Stopping Sight Distance
    - Vertical Stopping Sight Distance
    - Minimum Radius of Curve Exit Ramp
    - Superelevation
    - Left & Right Shoulder widths
    - Vertical Clearance

Goals and Objectives

A set of project goals and objectives has been developed based upon the project's purpose and need described above, findings from previous reports, and information and requests obtained during the Local Officials Meeting. While the project may not be able to satisfy all goals and objectives listed below, the goal will be to address as many as possible. The project's goals and objectives are as follows:

- Improve safety and reduce the average crash rate
- Maintain all traffic lanes during construction
- Develop an expedited construction schedule that minimizes delays to the public
- Avoid or minimize property acquisitions
- Avoid or minimize utility facility relocations
- Avoid, minimize, or mitigate environmental impacts
- Maintain Access to Businesses at all times
- Accommodate the NJ Transit Route 114/65

Existing Conditions

The existing Route 22 WB roadway typical section consists of a 6-foot median with a 2-foot median barrier, two 12-foot wide travel lanes and a 6-foot wide right shoulder in each direction with a 9-foot border area for utility poles. The existing Route 22 ROW width outside the interchange area is 86 feet. The existing pavement cross slopes on Route 22 WB vary from 0.34% to 4.27%. The existing condition of the Vauxhall Road (CR 630) overpass (Structure No. 2004150) over NJ Route 22 (MP 56.2) is not deficient

and requires normal maintenance. The sufficiency rating of the Vauxhall Road overpass is 76.5 as determined by the NJDOT Bridge Management System (2011).

The following are existing deficiencies within the Route 22 WB vicinity of Vauxhall Road to West of Bloy Street from MP 55.9 to MP 56.4 Project area.

- No acceleration/deceleration lane along Route 22 WB between Gary Road and the Vauxhall Road exit ramp
- No acceleration lane from Vauxhall Road northbound to Route 22 westbound
- No deceleration lane from Route 22 westbound to Sayre Road
- No acceleration lane from Sayre Road to Route 22 westbound.

Proposed Improvements:

The following improvements are proposed by the Route 22 WB vicinity of Vauxhall Road to West of Bloy Street Project:

- Improve Pavement Cross Slopes
- Provide an auxiliary lane along Route 22 WB from Gary Road to the Vauxhall Road exit ramp
- Provide a foreshortened deceleration and foreshortened acceleration lane for Route 22WB exit to and from Sayre Road
- Provide sidewalk along Route 22 WB between Vauxhall Road and Sayre Road.
- Improve the drainage system by adding inlets along Route 22 WB to address spread at low points and along widened pavement
- Mill and overlay existing pavement with 3 inches of asphalt.

Project Limits:

The project limits are along Route 22 westbound from MP 55.9 to MP 56.4.

Proposed PIAP for Current Project:

Developing a clear, cooperative message is a necessary pre-requisite to any public involvement program. Based on the project description, the complexity of the project and its history, if necessary the project will include the following components:

- One (1) Local Officials Meeting with Union Township.
- One (1) Public Information Center in Union Township.

Local Officials Meeting:

This meeting will be held for NJDOT to present improvements and discuss any design and construction staging issues. Participants will include NJDOT, Designer, Township Engineers, Fire Departments, and Police Departments. Minutes of meeting will be prepared and distributed to the attendees. If deemed necessary, hold a smaller key stakeholder meeting with property owners, businesses, and neighborhood association who might be impacted by the project construction. Minutes of the meeting will be recorded.

Evaluate the public involvement and make appropriate recommendations for the construction phase.

Public Information Center:

This meeting will be held for NJDOT to present improvements and discuss any design and construction staging issues. Participants will include NJDOT, Designer, Township Officials,Property Owners, Township Residents, and Business Owners within the project limits.

PIAP Deliverables:

Meeting minutes, Project fact sheet, Display board.

Concurrence by:

Office of Community and Constituent Relations — Date: 4/28/14

Division of Project Management — Date: 04/28/14

APPENDIX Q

FINAL DESIGN PHASE SCOPE STATEMENT

NJDOT Scope Statement

Final Design

Route 22 WB Vicinity of Vauxhall Rd to West of Bloy St - Union, New Jersey

Purpose: The Final Design (FD) Scope Statement lists the project's deliverables and the activities required to create those deliverables in the Final Design phase of the project delivery process. The scope statement also provides a common understanding of the project's scope to stakeholders, subject matter experts and the designer, and it lists the project's major objectives. It enables the Project Manager to perform Final Design and it helps guide the design team's work during execution, and provides the baseline for evaluating whether change requests or additional work are contained within or outside the project's boundaries.

Notes: The intent of the FD Scope Statement is to provide useful project information to designers who will be performing the FD work for this project. In addition, it will be used to solicit a man-hour estimate and cost proposal. The FD Scope Statement identifies the key elements of FD that are necessary to advance the proposed project to construction.

The FD Scope Statement is developed by the Division of Project Management (DPM) Project Manager and the Preliminary Engineering (PE) Designer near the conclusion of the PE phase, prior to requesting the services of a designer to perform FD. The Scope of Work section is approved by the appropriate Subject Matter Experts (SMEs).

Section 1 of the document focuses on Proposed Project Identification Information and FD and Construction data including the project's location and description. Section 2 of the document specifies the Scope of Work for FD.

PROPOSED PROJECT IDENTIFICATION INFORMATION

PROPOSED PROJECT SPECIFICS

Proposed Project Name	**Limits**
Route 22 WB Vicinity of Vauxhall Road to West of Bloy Street	MP 55.9 to MP 56.4
NJDOT Project Manager	**NJDOT Program Manager**
Hardev Davé	Atul Shah
Counties	**Municipalities**
Union Select County 2 Select County 3	Union Township _____ _____
UPC Number	058003
DB Number	658B
Legislative District(s)	20 _____ _____
Congressional District (s)	10 _____ _____
Route	22
Start Milepost	55.9
End Milepost	56.4
Alternate Route	_____
Alternate Start Milepost	_____
Alternate End Milepost	_____
STIP Information	Design Funds in FY 2015
Structure Numbers	2004150
Project Classification:	4 - Widening and Resurfacing
MPO	NJTPA

NJDOT Scope Statement

Final Design

PROJECT ESTIMATE

List the Project Estimates for each category.

Project Item:	FD Phase Estimated Amount
Design	$500,000
ROW	$350,000
Utility Relocation	$1,300,000
Construction	$2,000,000
Construction Engineering	$600,000
Contingencies	$0
Total	$4,750,000

CONCEPT DEVELOPMENT AND PRELIMINARY ENGINEERING INFORMATION

Date of Concept Development Report:	May 2009	**Date of Federal Approval of CD Report:**	June 2010
Date of Preliminary Engineering Report:	April 2014	**Date of Design Exception Report:**	Feb. 2014
Date of Federal Approval of Environmental Classification: NEPA	December 2010	**Date of Project Plan:**	February 2014
Date of CPC decision to advance project to PE:	January 2012		
PE Designer:	The Louis Berger Group, Inc.		
FD to be Completed by (check one):	☐ In-House ☒ Consultant		

Purpose and Need: The Transportation Problem Statement for the Route 22 Corridor Study, which was prepared in 2003, states the Vaux Hall Road interchange with Route 22 should be reconstructed to provide ramps that conform to current engineering standards and alleviate unsafe conditions. The accident rate at this section of Route 22 is higher than the statewide rate. The problem statement further notes that Rte 22 westbound lacks acceleration/deceleration lanes necessary to reduce conflicting movements between through traffic and entering/exiting traffic.

Description of Preliminary Preferred Alternative: The project provides an auxiliary lane using the existing right shoulder and widening along Route 22 WB from Gary Road to Vauxhall Road exit ramp. The project will also provide a short deceleration lane and acceleration lane along Route 22 WB at the Sayre Road intersection for right in and right out traffic movements. Minor drainage improvments planned to accommodate widening and control spread. The roadway will be resurfaced and striped in order to improve overall safety.

Project Goals and Objectives: Resurfacing & Widening of Route 22 westbound by adding auxillary and aceeleration/deceleration lanes to improve safety.

FINAL DESIGN INFORMATION (to be filled in upon selection of a designer)

NJDOT Scope Statement

Final Design

FD Designer:	_____		
FMIS Contract ID Number (e.g., 89 00766):	_____	**Funding Source:**	_____
Agreement Number (e.g., 2001PM03):	_____		
Type of Specifications:	2007		

CONSTRUCTION INFORMATION

CM Job Number:	_____	**Duration of Construction:**	1 Year
Award Date (actual/anticipated):	_____	**Estimated Construction Year:**	2017

NJDOT Scope Statement

Final Design

FINAL DESIGN DELIVERABLES

4.1 Final Design Initiation	☐ Seismic Retrofit Analysis	☐ Alternatives of Accommodation plan
☐ Financial Plan (for Major Projects)	☐ Noise Barrier Detail Plans	**4.6 Quality Management-Certifications**
4.2 Roadway Engineering	☐ Geotechnical Roadway and Rock Engineering Report	☒ FD Quality Management Certification
☐ Pavement Life Cycle Cost Analysis	☐ Boring and In-situ Testing Layout Plan	☒ Department Certification
☒ Final Horizontal/Vertical Geometry	☐ Boring Contract Specifications	**4.7 Communications**
☐ Final Design Supplemental Survey	☐ Boring Data Submission	☒ Design Communications Report
☒ Traffic Lighting Design Report	**4.4 Right of Way and Access**	☒ Community Relations
☒ Traffic Control and Staging Plans	☒ Final Right of Way Cost Estimate	☒ Resolution of Support
☒ Soil Erosion and Sediment Control Report	☒ Pre-Final Right of Way Submission	**4.8 Environmental Documents**
☐ Soil Erosion and Sediment Control Plans	☒ Final Right of Way Submission	☒ Environmental Reevaluations
☐ Jurisdictional Limit Maps and Agreement	☒ Right of Way Authorization	☐ Environmental Permits and Licenses
☒ Final Drainage Plans	☒ Acquired Right of Way	☒ Final Environmental Plans
☒ Final Drainage Design Report	☐ Riparian License Application	☐ State House Commission Approval for Green Acres Parcels
☒ Final Lighting Plans	☒ Access Cut-Outs	☐ Conceptual Wetlands Mitigation Plans
☒ Final Roadway Plans	☒ Access Impact Assistance Report	☐ Final Noise Study
☒ Final Traffic Signing, Striping and Signal Plans	☐ Lot Owner Lease Agreement	☐ Reforestation Application
☐ Final Landscape Plans	☐ Lot Owner Access Concurrence	☐ Final Wetlands Mitigation Plans
☐ Final ITS Facilities Plans	☐ Green Acres Compensation Appraisal	☐ Asbestos Survey
☐ Hydrologic and Hydraulic Stream Analysis	☐ Title Summary Document	☐ Remedial Action Workplan
☐ Flood Hazard Area Permit Application	☒ Entire Tract Map	☐ PAECE Report
☐ Railroad 60% Submission	☒ General Property Parcel Maps	☐ Noise Mitigation Questionnaire
☐ Diagnostic Team Meeting (DTM) Memo of Record or Order	☒ Individual Parcel Maps	☐ Wetlands Monitoring Plan
☐ Railroad 100% Submission	☒ Parcel Descriptions	☐ Wetlands Delineation Report
☐ Final Design Systems Engineering Review Form (SERF)	**4.5 Utility Engineering**	☐ Cultural Resources Mitigation Report
4.3 Structural Engineering	☒ Utility Owner Design Authorization Checklist	☐ Environmental Summary Memorandum
☐ Final Structure Appraisal and Design Report	☒ Utility Agreement Plans, Specs., & Estimates	☒ Site Investigation Report
☐ Geotechnical Foundation Engineering Report	☒ Utility Agreement Modifications	☐ Remedial Investigation Report
☐ Final Structures Documents	☐ Utility Master Agreement Change Order	
☐ Scour Analysis	☒ Utility Authorization	

NJDOT Scope Statement

Final Design

4.9 Final Design Submission	**4.10 Certified Plans, Specifications, and Estimate**	**4.11 Contracts**
☐ Interim Design Submission (Optional)	☐ Pre-PS&E Package (Full Oversight Only)	☒ Consultant Agreement Addendums
☒ Project Plans	☒ Final Project Plans	☐ Municipal Police Agreements
☒ Project Specifications	☒ Final Project Specifications	☒ Final Invoice
☒ Construction Cost Estimate	☒ Final Construction Cost Estimate	**4.12 Final Design Approvals**
☒ Construction Schedule	☒ Final Construction Schedule	☒ Advertising Authorization Package
	☒ Certifications and Clearances	☒ Authorization to Advertise
		☐ Updated PM Plans (Major Projects)

SUMMARY OF COMMITMENTS

List any commitments made to the public, local officials or other government agencies:

Project Commitment	Unit Requesting the Commitment	Unit Fulfilling Commitment	Special Needs
Reduce ROW impacts at the frontage of commercial properites.	Union Township	ROW	
Minimize Utility impacts	Utilities	Designer	
Avoid permanent detours	Union Twp	DOT/Designer	
Businesses open during Construction	Union Twp	DOT/Designer	

List any anticipated commitments that may be made:

Use of State Police	DOT	Union Twp	

NJDOT Scope Statement

Final Design

APPROVAL

Name	Title	Date Approved
HARDEV DAVE	Project Manager Division of Project Management	02/25/15
ATUL SHAH	Program Manager Division of Project Management	2/27/15
ELI D. LAMBERT	Director Division of Project Management	3/11/15
JOE SWEGER	Manager Bureau of Landscape Architecture and Environmental Solutions	12 Mar 2015
SNEHAL PATEL	Director Division of Construction Services and Materials	3/17/15

FINAL DESIGN SCOPE STATEMENT

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NOTE: The FD Designer will perform the tasks associated with FD as marked, in preparation for construction. The Project Manager will review and negotiate the proposal, execute the Agreement and instruct the designer to begin work. The Project Manager will direct the project through FD.

Right of Way

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4600	Conduct Title Search	☒ Yes ☐ No	☐ Designer ☒ ROW	
4605	Prepare ROW Plans and Documents	☒ Yes ☐ No	☒ Designer	
4610	Review ROW Plans and Documents	☒ Yes ☐ No	☒ DPM	
4615	Prepare Pre-Final ROW Submission	☒ Yes ☐ No	☒ Designer	
4620	Review Pre-Final ROW Submission	☒ Yes ☐ No	☒ ROW ☒ DPM ☒ Designer	
4625	Prepare Final ROW Submission	☒ Yes ☐ No	☒ Designer	
4630	Process Final ROW Submission	☒ Yes ☐ No	☒ ROW	
4635	Hold ROW Acquisition Kickoff Meeting	☒ Yes ☐ No	☐ ROW ☒ DPM ☒ Designer	
4650	Authorize Right of Way	☒ Yes ☐ No	☐ DPM ☒ ROW ☒ FHWA	
4655	Prepare Riparian License Application	☐ Yes ☐ No	☐ ROW ☐ Designer	
4660	Secure Riparian License	☐ Yes ☐ No	☐ ROW	
4665	Perform Asbestos Survey	☐ Yes ☐ No	☐ ROW ☐ DPM ☐ Designer ☐ CM ☐ Consultant	
4670	Acquire ROW	☒ Yes ☐ No	☒ ROW ☐ DAG ☐ Consultant ☐ DPM ☐ Designer ☐ CM	

Total Number of Parcels: 8

1. Fee Parcel /Easements

Number of fee parcels (partial):	3	**Number of fee parcels (entire):**	0	**Number of residential relocations:**	0
Number of permanent easements (E parcels):	6	**Number of temporary easements:**	12	**Number of commercial relocations:**	0

2. List any known or potential environmental problems or issues that may impact Right of Way processes or decisions (cross reference with the Environmental section of the Scope Statement document: Potential hazardous waste or groundwater contamination

3. List any environmentally sensitive parcels (ESPs), underground storage tanks, freshwater wetlands: Block 1806 Lots 3.02 and 4.

4. Identify Riparian Parcels (currently flowed), Easements and/or Green Acres Diversions by contacting NJDEP for any Right of Way to be acquired: None

5. Identify parcels that can be eliminated by design change modifications and attempts to mitigate damages suffered by the remaining properties. None

6. Decision to expand parcel for further use or contingency. None

7. List the number of Non Real Estate Engineering (NRE) parcels. None

8. List any commitments and conditions made to the public or to private property owners that may impact Right of Way processes or decisions: None
(Also list commitments in the Summary of Commitments page in Section 1 above.)

9. Green Acres mitigation method: ☐ **Dollar Reimbursement** ☐ **Property Replacement**

10. List any full parcel takings: None **How much lead time is needed to meet the schedule?** N/A

11. List any parcels containing structures that need maintenance, or other parcels that may need maintenance, and the type of maintenance: (e.g., boarding up windows, mowing, shoveling snow off sidewalks, etc.) None

12. List any parcels that will need asbestos testing or asbestos removal: None
List any parcels that have structures that will have a demo contract: None
How much lead time is needed to meet the schedule? N/A

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include number and type of parcels, known environmental problems, riparian parcels, public commitments, etc.

Access

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4705	Prepare Access Cut-Outs	☒ Yes ☐ No	☒ Designer	
4710	Review Access Cut-Outs	☒ Yes ☐ No	☒ OAD ☐ Designer	
4715	Administer Access Alterations	☒ Yes ☐ No	☒ OAD ☐ Designer	

Number of Adjustments:	Nine	**Number of Modifications:**	2	**Number of Revocations:**	5

Note any pending agreements or access applications within the project limits: _____

1. Are left turn lanes in compliance with the Access Level? ☐ **Yes** ☒ **No**

2. Is the Typical Section of the roadway in compliance with the Highway Access Code? ☒ **Yes** ☐ **No**

3. Total Number of Driveways impacted: Sixteen

4. Are there any commercial properties with access modifications and/or Revocations that have potential impacts to site parking slots, circulations and operation of business? ☐ **Yes** ☒ **No**
If yes, provide details of impact with Block and Lot Nos. _____

5. Are there any commercial properties that will require necessary assistance in the establishment of the alternative access (as per NJAC 16:47-4.33)?

☐ **Yes** ☒ **No**

If yes, provide details of assistance with Block and Lot Nos. _____

6. Are there any commercial properties that will require the preparation of an Access Impact Assistance (AIA) report. ☒ **Yes** ☐ **No**

If yes, provide Block and Lot Nos. Block 1806 Lot No. 3.01

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments in the Summary of Commitments in Section 1 above.

Examples of information for this section include number of driveways impacted, pending agreements or major access permit applications, driveway modifications causing circulation issues, alternative access issues, Access Impact Assistance issues, etc.

Drainage

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4270	Complete Drainage Design	☒ Yes ☐ No	☐ H & H ☒ Designer	
4310	Complete Hydrologic & Hydraulic Analysis	☐ Yes ☒ No	☐ H & H ☐ Designer	
4315	Complete Final Bridge Analysis	☐ Yes ☒ No	☐ H & H ☐ Designer	

1. **Identify all existing drainage deficiencies (undersized system, excessive spread into travel lanes, insufficient inlets, flooding at low points, etc.):** Nothing major.
2. **List proposed improvements including outfalls (especially tidal):** Upgrade Inlets to accommodate widening and control spread.
3. **Is compliance with Stormwater Management rules triggered (> 1/4 acre new impervious surface, or 1 acre disturbance)?** ☐ **Yes** ☒ **No**
4. **Identify all NJDEP permits required:** No
5. **List proposed structural Best Management Practices (BMP) (Bioretention System, Constructed Wetlands, extended detention basins, infiltration system, wet ponds, porous pavement and etc.):** N/A
6. **List proposed nonstructural BMP (such as Vegetation and Landscaping, Minimized Site Disturbance, Impervious Area Management, and Time of Concentration Modifications):** N/A
7. **Identify drainage outflow owner: _____ Will property rights need to be acquired?** No

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include drainage deficiencies, new/improved outfalls, storm water management rules, permits, Best Management Practices (structural and non-structural), easements/right of way, etc. List any commitments in the Summary of Commitments in Section 1 above.

Landscape

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4175	Prepare Noise Barrier Details	☐ Yes ☒ No	☐ Designer ☐ Landscape	
4260	Develop Landscape Architectural Design	☐ Yes ☒ No	☐ Designer ☐ Landscape	
4265	Complete Landscape Architectural Design	☐ Yes ☒ No	☐ Landscape ☐ Designer	
4375	Prepare Final Wetlands Mitigation Plans	☐ Yes ☒ No	☐ Environmental ☐ Designer ☐ Landscape	
4440	Submit Reforestation Applicaton	☐ Yes ☒ No	☐ Landscape	
4450	NJDEP Reviews Reforestation Application	☐ Yes ☒ No	☐ Comm. Forest Council ☐ DEP	

1. List any landscape architecture related commitments such as:

a. Wetland or Riparian Mitigation Planting:	
b. Historic Site commitments	
c. Vegetative Screens or Buffers	
d. Noise Barrier Aesthetics:	
e. Architectural Treatments on Structures (e.g., Bridges, Retaining Walls, Parapets, Noise Barriers, Visible drainage culverts/structures, etc.)	
f. Tree Removal Mitigation:	
g. Urban Design Work (paving, streetscapes):	
h. Aesthetic plantings:	
i. Existing tree preservation and protection:	
j. Reforestation Application:	
k. Pocket Parks	

l. Green Acres Mitigation	
m. Acid Soils	
n. Storm Water Management facilities	

2. Anticipated visualization work for in-house and public information meetings:

a. Rendered Plans:	
b. 2D computer generated before & after photographs:	
c. 3D computer generated mode:	

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments in the Summary of Commitments in Section 1 above.

Examples of information for this section include screens or buffers, aesthetic plantings, mitigation plantings, reforestation, etc.

Environmental

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4075	Obtain Utility Environmental Reevaluation	☒ Yes ☐ No	☒ Environmental	
4140	Submit Draft Final Noise Study	☐ Yes ☒ No	☐ Environmental ☐ Designer	
4145	Obtain Noise Mitigation Community Support	☐ Yes ☒ No	☐ Environmental ☐ CCR ☐ Designer	
4150	Submit Final Noise Study	☐ Yes ☒ No	☐ Environmental ☐ Designer	
4360	Delineate Wetlands	☐ Yes ☒ No	☐ Environmental ☐ Designer	
4350	Prepare Conceptual Wetlands Mitigation Plans	☐ Yes ☒ No	☐ Environmental ☐ Designer	
4355	Prepare Wetlands Monitoring Plan	☐ Yes ☒ No	☐ Environmental	
4375	Prepare Final Wetlands Mitigation Plans	☐ Yes ☒ No	☐ Environmental ☐ Designer ☐ Landscape	
4380	NJDEP Approves Wetland Mitigation Plans	☐ Yes ☒ No	☐ Environmental ☐ DEP	
4385	Prepare Permit Application	☐ Yes ☒ No	☐ Environmental ☐ Designer	
4390	Review and Submit Permit Application	☐ Yes ☒ No	☐ Environmental ☐ Designer ☐ H&H	
4395	Secure Permits	☐ Yes ☒ No	☐ Environmental ☐ Designer ☐ H&H ☐ Permit. Agencies	
4410	Prepare Soil Erosion and Sediment Control Report and Plans	☒ Yes ☐ No	☒ Designer	If soil disturbance > 5000 Sq Ft
4430	Review Soil Erosion and Sediment Control Report	☒ Yes ☐ No	☒ Environmental ☐ Landscape	

4520	Conduct Contamination Site Investigation (Intial Sampling)	☒ Yes ☐ No	☐ Environmental ☒ Designer	
4540	Conduct Remedial Investigation (Delineation Sampling)	☒ Yes ☐ No	☐ Environmental ☒ Designer ☐ LSRP	
4550	Develop Cultural Resources Mitigation Measures	☐ Yes ☒ No	☐ Environmental ☐ Landscape ☐ Designer ☐ DPM	
4570	Prepare Material Management Plan	☒ Yes ☐ No	☐ Environmental ☒ Designer ☐ LSRP	
4585	Complete Environmental Plans	☒ Yes ☐ No	☐ Environmental ☒ Designer	
4590	Prepare PAECE Report	☒ Yes ☐ No	☐ Environmental ☒ Designer	
4645	Obtain ROW Environmental Reevaluation	☒ Yes ☐ No	☒ Environmental	
4720	Prepare Green Acres Pre-Application	☐ Yes ☒ No	☐ Environmental	
4725	Owner Submits Green Acres Pre-Application	☐ Yes ☒ No	☐ Owner ☐ Environmental	
4730	Obtain Resolution of Support for Green Acres Pre-Application	☐ Yes ☒ No	☐ Owner ☐ Environmental	
4735	NJDEP Reviews Green Acres Pre-Application	☐ Yes ☒ No	☐ DEP (Green Acres)	
4740	Prepare Green Acres Final Application	☐ Yes ☒ No	☐ Environmental	
4745	Owner Submits Green Acres Final Application	☐ Yes ☒ No	☐ Owner ☐ Environmental	
4750	Hold Green Acres Public Hearing	☐ Yes ☒ No	☐ Environmental ☐ DPM ☐ Owner ☐ Comm. Relations	
4755	Obtain Resolution of Support for Green Acres Final Application	☐ Yes ☒ No	☐ Owner ☐ Environmental	
4760	Submit Green Acres Final Application Supplemental Information	☐ Yes ☒ No	☐ Owner ☐ Environmental	
4765	NJDEP Reviews Green Acres Final Application	☐ Yes ☒ No	☐ DEP (Green Acres)	
4770	Obtain State House Commission Approval	☐ Yes ☒ No	☐ DEP (Green Acres)	

			☐ State House Comm	
4775	Acquire Green Acres Parcels	☐ Yes ☒ No	☐ ROW ☐ DAG ☐ DPM	
4780	Obtain Green Acres Compensation Appraisal	☐ Yes ☒ No	☐ Environmental ☐ DAG ☐ ROW ☐ DPM	
4850	Certify Soil Erosion and Sediment Control	☒ Yes ☐ No	☒ Environmental	If soil disturbance > 5000 Sq Ft
4860	Obtain Construction Environmental Reevaluation	☒ Yes ☐ No	☒ Environmental	

NJDOT Scope Statement

Final Design

Environmental Document: ☒ CE ☐ EA ☐ EIS ☐ EO 215 Approval Date: Dec 2010

Total Number of Permits: None

1. List any environmental impacts and/or issues: _____

2. List any environmental commitments (made in approved environmental documents, through Memoranda of Agreement with environmental agencies, other commitments made to the public, local officials or other government agencies) such as 4f, Section 106 (historic architecture, archaeology), air, noise, hazardous waste and ecology: _____ List commitments that other units must fulfill in the Summary of Commitments table in Section 1 above.

3. Check the environmental clearances or permits required on the project:

Federal

- ☐ U.S. Coast Guard (Bridge)
- ☐ USACOE Section 404 (Individual/Nationwide) discharge of fill
- ☐ USACOE Section 10 (Navigable Waters)
- ☐ USACOE Section 9 (Dam or Dike)
- ☐ National (or State) Wild & Scenic Rivers
- ☐ USDOA Forms AS-1006
- ☐ Section 7 Endangered Species Consultation
- ☐ NMFS Essential Fish Habitat Study

State

- ☐ CAFRA
- ☐ NJDEP Water Lowering
- ☐ NJDEP Riparian
- ☐ Hazardous Waste Site Investigation (SI/RI)
- ☐ HazWaste Remedial Action Work plan
- ☐ NJDEP Sanitary Facilities
- ☐ NJDEP Tidal Wetlands
- ☐ NJDEP Waterfront Development
- ☐ NJDEP Freshwater Wetlands
- ☐ NJDEP NJPDES Stormwater Construction GP (RFA)
- ☐ NJDEP Pollutant Discharge
- ☐ NJDEP Flood Hazard Area
- ☐ NJDEP Water Quality Certificate

Other

- ☐ Delaware River Basin Commission
- ☐ Delaware & Raritan Canal Commission
- ☐ Hackensack Meadowlands Commission
- ☐ Pinelands Commission
- ☐ Highlands Commission
- ☐ State Agriculture Development Commission

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments that other units must fulfill in the Summary of Commitments in Section 1 above.

Examples of information for this section include any additional information related to permits anticipated, anticipated environmental impacts and environmental commitments made in any of the previous phases, etc.

Quality Management Services

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4810	Review Final Design Submission	☒ Yes ☐ No	☒ QMS ☒ Procurement ☒ CM ☒ Civil Rights ☒ DPM ☒ Designer ☒ SMEs	

Quality Management Services Reviewed: ☒ Yes ☐ No
Value Analysis to be Performed: ☐ Yes (if total cost of project >$20 million) ☒ No
Combined Estimated Cost of Construction, ROW and Utilities: ☐ <$3 million ☒ $3-5 million ☐ $5-$15 million ☐ >$15 million
Lane Occupancy Charges and Road User Costs to be completed: ☒ Yes ☐ No

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments in the Summary of Commitments in Section 1 above.

Examples of information for this section include QMS review, lane occupancy charges/road user cost information, etc.

Utilities

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4035	Determine Utility Master Agreement Applicability	☐ Yes ☒ No	☒ DPM ☐ Designer ☐ Utilities ☐ Utility Companies	
4040	Prepare Utility Master Agreement Change Order	☐ Yes ☒ No	☐ DPM ☐ Utilities	
4045	Execute Utility Master Agreement Change Order	☐ Yes ☒ No	☐ DPM ☐ Utilities	
4050	Develop Alternatives of Accommodation	☒ Yes ☐ No	☐ DPM ☒ Designer ☐ Utility Companies	
4055	Prepare Utility Owner Design Authorization Checklist	☒ Yes ☐ No	☒ Utility Companies ☒ DPM ☒ Designer	
4060	Prepare Utility Agreement Plans, Specifications and Estimates	☒ Yes ☐ No	☒ Designer ☒ Utility Companies	
4065	Approve Utility Agreement Plans, Specifications and Estimates	☒ Yes ☐ No	☒ DPM ☐ Designer	
4070	Prepare Utility Agreement Modifications	☒ Yes ☐ No	☒ DPM ☒ Designer	
4080	Authorize Utility Work	☒ Yes ☐ No	☒ DPM ☐ Designer ☐ Program Coord.	
4090	Incorporate Utility Design in Contract Documents	☒ Yes ☐ No	☒ Designer	

Total Number of Utility Companies: Seven

Utility Type	Utility Company	Size (Units of Measure)	Location (aerial/underground)
Gas	Elizabetown Gas	4" Pressure Pipe	Underground
Electric	PSE&G	4 Kilo Volts	Aerial and Underground
Cable	Comcast	Trunk Cable Pairs/ Strands	Aerial
Telephone	Verizon	900+144 (FOC) Pairs/ Strands	Aerial
Water	New Jersey American Water	12" Cast Iron Pipe	Underground
Sewer	Township of Union	18" RCP Pipe	
Fiber-Optic (non-Department)	Sunesys	24 Pairs/Strand	Aerial
NJDOT ITS Utilities			

Other:			
Other:			
Other:			

1. **Identify if the Utility Discovery and Verification requires subsurface utility exploration:** No

2. **Is a SUE (Subsurface Utility Exploration) Consultant required?** ☐ **Yes** ☒ **No**

3. **Identify Potential Conflicts:** No

4. **Identify Temporary Relocations that are needed during construction:** No

5. **Number of poles?** 10

6. **Number of guy wires on existing poles?** 3

7. **Are there cell towers or substations?** No

8. **Can utility relocations be avoided or performed in advance of the project?** No

9. **Can utility design/construction be performed by designer/contractor?** No

10. **Can ROW needed for utilities be identified?** Yes
    Will guying rights be obtained by the utility owner, if outside the State ROW? Yes

11. **List any known seasonal restrictions to working on the utility facilities (e.g., electric transmission in summer).** Gas in summer

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments that other units must fulfill in the Summary of Commitments in Section 1 above.

Examples of information for this section include location of cell towers, location/presence of fiber optic lines, etc.

If an unknown underground utility is discovered during final design then the Unit recommends to perform SUE for verification to ensure that there are no conflicts when relocationg poles.

Jurisdiction

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4100	Prepare Jurisdicitional Limit Maps and Agreements	☐ Yes ☒ No	☐ Designer ☐ DPM ☐ DAG	
4105	Execute Jurisdictional Agreements	☐ Yes ☒ No	☐ DPM ☐ Various Agencies	

Total number of maps: _____ **Total number of agreements:** _____

Are there streetscape or aesthetic items intended for this project? ☐ **Yes** ☒ **No**

If yes, has a resolution of support been acquired for jurisdictional assignment? ☐ **Yes** ☐ **No** ☒ **NA**

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments in the Summary of Commitments in Section 1 above.

An example of information for this section: details of a local approval.

Geometrics & Roadway

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4210	Complete Horizontal / Vertical Geometry	☒ Yes ☐ No	☒ Designer	
4220	Prepare Final Roadway Plans	☒ Yes ☐ No	☒ Designer	

Construction Plans/Estimated Number of Sheets

Roadway and Bridges

1	Key Map	3	Grades	____	Method of Cross Sections
1	Estimate-Distribution of Quantities	____	Traffic Control and Staging Plans	12	Cross Sections
2	Typical Sections	8	Traffic Control Plans	____	Alternate Retaining Wall System
____	Plan Sheet Index	____	ITS Plans	____	Estimate of Quantities – Bridge
3	Construction Plans	____	Electrical Details	____	Earthwork Summary
____	Drainage Plans	____	Traffic Signal Plans	____	Structural Plans
5	Environmental Plans	2	Highway Lighting Plans	____	Earthwork Chart Sheet
2	Profiles	____	Landscape Plans	____	Non-standard Roadway Construction Details
1	Ties	3	Traffic Signing and Striping Plans	____	Non-standard Bridge Construction Details
13	Construction Details				

Right of Way Documents

2	Entire Tract Map	1	Tabulation Sheets	8	Individual Property Maps (IPM)
3	General Property Parcel Maps	1	Parcel Descriptions	____	Alignment Sheets

Other Documents

____	Jurisdictional Maps	20	Utility Agreements Plans	____	Railroad Crossing Element Plans
1	Project specific Specifications	20	Utility Plans		

Are there any additional documents? ☐ **Yes** ☒ **No**

Please identify any additional documents: ____

1. Existing Roadway(s):

	Roadway No. 1	Roadway No. 2	Roadway No. 3	Roadway No. 4
Roadway Name:	NJ Route 22			
Posted Speed(s):	**45**			
Highway Classification:	Urban Principal Arterial			
Significance (local or regional):	Arterial for Newark			
No. of Interchanges:	1			
Traffic Volumes:	35,351 (WB)			
Design Speeds:	50			
Development Class:	Widening and Resurfacing			
No. of Traffic Signals:	0			
No. of Intersections:	3			

2. Typical Section(s):

	Typical Section No. 1	Typical Section No. 2	Typical Section No. 3	Typical Section No. 4
Right of Way Width:	86' (outside of interchange)			
Number of Lanes:	2-3			
Lane width & cross slope:	11' -15' Wide & 1.5-2.5%			
Shoulder width & cross slope:	N/A			
Median width:	4'			
Sidewalk/border width:	7'/4'			
Median description and the overall roadway width:	F-Shape Barrier/ 43' WB			

3. Intersection/Interchange (describe the existing intersections and/or interchanges including turning and auxiliary lanes.): Vauxhall Road crosses over the eastbound and westbound lanes of Route 22, Access to Vauxhall Road from eastbound Route 22 is by a loop ramp and from westbound Route 22 is by a finger ramp. Access to Route 22 eastbound from Vaux Hall Road is by a finger ramp with a acceleration lane. Access to Route 22 westbound from Vauxhall Road northbound is by a loop ramp with a yield condition, and from Vaux Hall Road southbound through the Sayre Road intersection with a stop condition. There are no acceleration/deceleration lanes on westbound within the intercchange area.

4. Existing Deficiencies (provide an overview of the existing deficiencies. *Geometric*: Substandard horizontal and vertical sight distance, insufficient sight triangle, substandard vertical clearance, substandard or no shoulders, acceleration, deceleration lanes, etc. *Safety Issues*: Check crash data for indicators of specific problems. Substandard/nonexistent guiderail, attenuators, pavement condition, skid resistance, median, etc.). Note on substandard guiderail: the project limits should be extended to include upgrading any existing substandard guiderail run that extends beyond the proposed work limits as required by the Design Manual. Substandard stopping sight distance on vertical crest curve, Substandard stopping sight distance on horizontal curve, substandard minimum radius of curve for exit ramp, substandard superelevation, substandarad left shoulder width, sustandard vertical clearance, substandard acceleration lane from Vauxhall Road northbound to Route 22 westbound.

5. Proposed Improvements (provide a brief narrative of the proposed improvements and how they address the identified deficiencies. Note changes to be made to profiles, alignment, guiderail, and typical section): Provide an auxiliary lane along Route 22 WB between Gary Road and Vauxhall Road. Improve the turning radius from Vauxhall Road to Route 22 WB to allow large trucks to make a right turn into the appropriate lane without encroaching on the adjacent lane. Provide a foreshortened deceleration and a foreshortened acceleration lane to and from Sayre Road along Route 22 WB by widening Route 22 WB pavement converting the existing right shoulder to part of the new auxiliary lane. Provide sidewalk along Route 22 WB between Vauxhall Road and Sayre Road. Improve the drainage system by adding inlets along Route 22 WB to address spread at low points and along widened pavement. Existing Route 22 WB travel lanes will be milled 2 inches and overlay with 2 inches asphalt. The existing pavement cross slopes and elevations on the travel lanes may remain the same.

6. Bicycle/Pedestrian Compatible? ☐ Yes ☒ No

If no, please explain: Due to the nature of this Urban Principal Arterial, its slim roadway width, limited room at Vauxhall Road bridge overpass, and the tight right-of-way corridor with business frontages, bicycle lane and modern pedestrian sidewalk connectivity on this project is very impractical within the project limits and can become extremely costly. The addtion of such facilities would significantly increase the scope and footprint of the intended project.

7. Has Design Exception approval been obtained? ☒ **Yes** ☐ **No** ☐ **N/A** **Comments:** _____

8. List any commitments made to the public, local officials or other government agencies in the Summary of Commitments table in Section 1 above.

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments that other units must fulfill in the Summary of Commitments in Section 1 above.

Examples of information for this section include a discussion of substandard design elements, design exceptions, perhaps a quick description of the proposed geometry if it is unusual, and commitments made to the community, etc.

1) As per the e-mail on Oct. 11, 2013 between Louis Berger and our office, it is our understanding that cross slopes will be improved.
2) Guide Rail must be updated with in the project limits.
3) All cross walks and curb ramps must be brought up to ADA standards.

Pavement

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4340	Perform Pavement Life Cycle Cost Analysis	☐ Yes ☒ No	☐ Designer ☐ Pavement	

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments in the Summary of Commitments in Section 1 above.

Examples of information for this section include evidence of subsurface drainage issues, settlement problems, stability problems, etc.

Structures

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4175	Prepare Noise Barrier Details	☐ Yes ☒ No	☐ Designer ☐ Landscape	
4160	Prepare Final Structures Documents	☐ Yes ☒ No	☐ Designer ☐ H&H ☐ Structures	
4315	Complete Final Bridge Analysis	☐ Yes ☒ No	☐ Designer ☐ H&H ☐ Structures	

Total Number of New Bridges:	0	**Total Number of New Spans:**	0
Total Number of Rehab Bridges:	0	**Total Number of Rehab Spans:**	0
Total Number of Replacement Bridges:	0	**Total Number of Replacement Spans:**	0

1. Condition of existing bridge(s):

	Bridge No. 1	Bridge No. 2	Bridge No. 3	Bridge No. 4
a. NJDOT Structure Number:	2004150			
b. Year Built:	1940			
c. Date/type of any major modifications:				
d. Type & material of superstructure:	Stringer/Girder Steel			
e. Type and material of substructure:	Concrete			
f. Feature that is spanned:	NJ Route 22			
g. Type of roadway it carries:	County Road 630			
h. Vertical Clearance of structure:	13'-11" (WB)			
i. Number of Spans:	2			
j. Length of Structure:	120 ft			
k. Width of Structure:	54.7 ft			
l. Horizontal Clearance of the pier / abutment with respect to the riding lane:	11 ft Right; 1 ft Left			
m. Typical Section (number of lanes, width and cross slope, shoulders and width of each sidewalk):	2 lanes & left turn lane, 12' SB, 12' SB LT, 18' NB 6' sidewalk both sides			

	Bridge No. 1	Bridge No. 2	Bridge No. 3	Bridge No. 4
n. Parapet railing type:	Concrete Balustrade			
o. Existing aesthetic/historical architectural treatments:				
p. Identify the structural deficiencies:	N/A			
q. Bridges over waterways: Identify scouring evaluation, bridge opening capacity, and frequency of storm, etc.	N/A			

2. Proposed Bridge(s)/Bridge Improvements:

	Bridge No. 1	Bridge No. 2	Bridge No. 3	Bridge No. 4
a. Number of spans:				
b. Identify the type of maintenance of traffic that will be used (staging or detour):				
c. Identify the changes to the typical section of the existing structure:				
d. Number of Spans:				
e. Vertical Clearance of structure::				
f. Length of Structure:				
g. Width of Structure:				
h. Type & material of superstructure:				
i. Type and material of substructure:				
j. Horizontal Clearance of the pier/abutment with respect to the riding lane:				
k. Typical Section (number of lanes, width and cross slope, shoulders and width of each sidewalk):				
l. Parapet railing type:				
m. Existing aesthetic/historical architectural treatments:				
n. Identify the structural deficiencies:				
o. Coast Guard Permit Required:				

3. Are the minimum vertical clearance requirements over waterways, roadways, railroads met? ☐ **Yes** ☒ **No**
If no, please explain? Substandard Vertical Clearance

4. List other substandard features of proposed bridge: _____

5. Other Existing Structure(s):
5a. Identify existing minor structures (Noise barriers, Retaining Walls (cast in place or alternate system), Gabions, High Tower Lighting foundations, Pre-cast Culverts, Culvert extensions, Type and number of Overhead Sign Structures): _____
5b. Specify type and number of each substandard feature: _____

6. If there is a deck replacement: Has a site inspection been completed by Structures personnel ☐ **Yes Date:** _____ ☐ **No**
Has a bridge inspection report which is less than two years old been reviewed? ☐ **Yes Date of inspection report:** _____ ☐ **No.**
State reasons to justify that the superstructure is not being replaced: _____

7. Proposed Other Structure(s):

	Structure No. 1	**Structure No. 2**	**Structure No. 3**	**Structure No. 4**
a. Identify changes in the existing minor structure that are being improved:				
b. List substandard features to be included in the design exception:				
c. Length:				
d. Width:				
e. Number of spans/units:				

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments in the Summary of Commitments in Section 1 above.

Examples of information for this section include scour, unusual existing or proposed structural elements, clearances, substandard elements, design exceptions, etc.

Modificatons to the Vauxhall Road Bridge on CR 603(Str #2004150) is outside of the scope of work for this project.

Geotechnical

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4300	Develop Subsurface Exploration Program	☐ Yes ☒ No	☐ Geotech ☐ Designer	
4305	Gather Subsurface Information	☐ Yes ☒ No	☐ Geotech ☐ Designer ☐ Contractor	
4320	Conduct Geotechnical Foundation, Roadway and Rock Slope Design	☐ Yes ☒ No	☐ Geotech ☐ Designer	

1. **Is there evidence of subsurface drainage problems?** No
2. **Is there evidence of settlement problems?** No
3. **Is there evidence of stability problems?** No
4. **Is there evidence of scour problems?** No
5. **Are there existing soil-borings within the project limits?** Yes
6. **Are there rock slopes/cuts located within the project limits?** No
    a. **Are there rock cuts listed in the Rockfall Hazard Rating System?** _____
    b. **Do catchment areas need to be cleaned or modified?** _____
    c. **Are there apparent safety problems with protruding rock, sight lines, rock-fall, and substandard existing mitigation measure?** _____
7. **Alternate site exploration (test pits)?** _____
8. **Is a foundation report required?** ☐ **Yes** ☒ **No**

9. **List any existing or proposed structures that may be impacted by construction activities such as vibration, settlement, or noise:**

   Structure: _____ **impacted by:** _____

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments that other units must fulfill in the Summary of Commitments in Section 1 above.

Examples of information for this section include rock slope issues, soil borings, scour, unusual existing or proposed structural elements, clearances, etc.

Modificatons to the Vauxhall Road Bridge on CR 603(#2004150) is outside of the scope of work on this project.

Survey

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4215	Conduct Supplemental Surveys	☒ Yes ☐ No	☒ Designer ☒ Survey	Driveways and Property lines where ROW is required

1. **Identify available mapping information (aerial/conventional methods/ 3-D surface models):** Conventional
2. **How were the existing and proposed baselines established?** As-Built Plans
3. **How were the existing and proposed ROW lines established?** Tax maps
4. **How was the horizontal and vertical control established and which existing monumentation was used?** _____
5. **Is project in Tidal area?** ☐ **Yes** ☒ **No** **If yes, then current mean high water elevation must be established in tidal water areas under Tidelands Bureau jurisdiction.** _____
6. **Has NJDOT Regional Survey office been contacted regarding existing Control, and as built plans within the project area?** Yes
7. **Is compliance with MAP filing law required?** ☒ **Yes** ☐ **No**
8. **Has NJDOT Geodetic Survey been contacted regarding existing control within the project?** ☒ Yes ☐ No
9. **Does Primary Control exist within the project limits or immediately adjacent to the project?** ☒ Yes ☐ No

   If yes, what year was control established in? _____

   If no, will primary control be required? _____

10. **Will plans be developed from aerial photogrammetry or as-built plans and conventional survey?** Aerial and Conventional Survey
11. **Geodetic Survey Services will be provided by:** ☐ In-House ☒ Consultant

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include base mapping obtained during PE or earlier, tidal issues, compliance with MAP filing laws, geodetic control issues, etc.

Railroads

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4110	Prepare Railroad 60% Submission	☐ Yes ☒ No	☐ Railroads ☐ Designer	
4115	Address Railroad 60% Comments	☐ Yes ☒ No	☐ Railroad Co. ☐ Utilities ☐ Designer	
4120	Prepare Railroad 100% Submission	☐ Yes ☒ No	☐ Railroads ☐ Designer	
4125	Review Railroad 100% Submission	☐ Yes ☒ No	☐ Railroad Company	
4130	Revisit Railroad Diagnostic Team Meeting	☐ Yes ☒ No	☐ Railroads	

Railroads Affected Select RR Line Select RR Line 2 Select RR Line 3 _____ _____ _____

1. **Grade Crossings Affected?** ☐ Yes ☒ No **How many?** _____
2. **Is there sufficient overhead structure clearance?** ☐ Yes ☐ No
3. **Diagnostic Team Meeting Required:** ☐ Yes ☐ No
4. **Diagnostic Team Meeting Held:** _____ (DATE)

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments in the Summary of Commitments in Section 1 above.

Examples of information for this section include presence of at-grade crossings, overhead structure clearances, diagnostic team meetings, etc.

Modificatons to any railroad facilities are outside of the scope of work on this project.

Construction

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4275	Develop Construction Cost Estimate	☒ Yes ☐ No	☒ Designer ☐ Construction	
4280	Develop Specifications	☒ Yes ☐ No	☒ Designer ☐ Construction	
4285	Develop Construction Schedule	☒ Yes ☐ No	☒ Designer ☐ Construction	

1. **List any commitments made to the public, local officials or other government agencies:** None
2. **Traffic Staging: How many lanes of traffic need to be maintained?** Two lanes **What will be the available working hours?** Off peak and nights **Can the project duration be significantly reduced by reducing the number of stages?** No **Can detours be used?** Yes **Provide a brief summary of the proposed staging.** The operational characteristics of the Route 22 WB exit and entry ramps require the proposed improvements be constructed adjacent to active travel lanes with the work zone being protected by construction barrier. Construction barrier can be placed to provide 24 feet between the median barrier and construction barrier and thus have a 16-foot wide work zone. Pavement milling and final paving of the improvement must be performed at night time to provide sufficient work area and ensure the quality of the new bituminous concrete surface course.
3. **Schedule: Identify scheduling constraints (environmental, seasonal construction limitations, community). _____ What is the optimum period to start construction?** Spring construction would be ideal.
4. **Utilities: Can utility relocations be avoided or performed in advance of the project?** No **Can utility design/construction be performed by designer/contractor?** No. **Can ROW needed for utilities be identified?** Yes
5. **Is the scope focused on replacement or rehabilitation of road/bridge?** Resurfacing and Widening. **Is condition likely to change/deteriorate between scoping and construction?** Minor.

6. **Lane Miles: (Lane Miles = Length of Road * Number of Lanes) (Shoulders are not included in these calculations.)**

Lane Miles for:	New	Rehabilitation
Interstate Highway		
State Routes		1 mile
Primary Routes		
County Routes		
Side Streets		
All Ramps		

7. **Total Number of Bridges:** None to be affected
8. **Total new bridge span lanes (width is in feet): Bridge Span Lanes = (Width * #Spans) / 12′** 0
9. **Total superstructure replacement span lanes (width is in feet): Bridge Span Lanes = (Width * #Spans) / 12′** 0
10. **Total culvert span lanes (width is in feet): Culvert Span Lanes = Width / 12′** _____
11. **Total square feet of retaining walls:** 0
12. **Total square feet of noise walls:** 0

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments in the Summary of Commitments in Section 1 above.

Examples of information for this section include commitments made to local officials or other agencies, staging details, detour discussion, schedule constraints, utility conflicts, etc.

Traffic Signal and Safety Engineering

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4230	Complete Lighting Design	☒ Yes ☐ No	☐ TSSE ☒ Designer	
4240	Complete Traffic Signal, Signing and Striping Plans	☒ Yes ☐ No	☐ TSSE ☒ Designer	

Number of New Traffic Signals:		**Number of Revised Traffic Signals:**	
New overhead signs and sign structures	☐ Yes ☒ No	**Revised overhead signs and sign structures**	☐ Yes ☒ No
New Guide Signs	☒ Yes ☐ No	**Revised Guide Signs**	☒ Yes ☐ No
Number of Roundabouts		**Signal pre-emption (Rail/Movable Bridge/emergency vehicles/etc.)**	☐ Yes ☒ No
Revised Highway Lighting	☐ Yes ☒ No	**Temporary Lighting for staging or diversion roadways**	☐ Yes ☒ No
Raised Pavement Markers	☒ Yes ☐ No		

1. **What type of maintenance of traffic will be used during construction (i.e., staging, detour, permanent lane closures, or diversion road):** Construction barrier with two lanes open most times and staged lane closures and ramp closures with signed temporary detours.

2. **Identify the number and location of temporary traffic signal(s) required during Staging or Detours:** None

3. **Is there adequate corner ROW cutout for signal equipment installation?** ☐ **Yes** ☐ **No**

4. **Identify if a new or revised traffic signal agreement is required?** No

5. **Identify overhead utility conflicts for traffic signals to be identified and resolved:** N/A

6. **Is current traffic count data and analysis available? (If so provide year of data.):** 2009

7. **For new traffic signals, are the signal warrants met? (provide year it meets):** N/A

8. **For existing traffic signals, are the current TS and Electrical plans available in MicroStation format?** _____ **filename:** _____

9. Is the existing or proposed signal interconnected to other signals, time based coordination or an isolated intersection? _____

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments in the Summary of Commitments in Section 1 above.

Examples of information for this section include discussion of need for temporary signals, right of way constraints (related to traffic signal equipment), utility conflicts, etc.

Electrical

Activity No.	Activity Name	Execute	Responsible Unit	Comments
		☐ Yes ☐ No		

1. **Do any elements of this project scope include new roadway / electrical appurtenances that would require specialized training, equipment or materials to properly maintain the item (e.g., ornamental lighting)? ☐ Yes ☒ No**
   If yes, provide details: _____

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments in the Summary of Commitments in Section 1 above.

Examples of information for this section include elements of the design that will necessitate an increase in maintenance personnel or equipment, etc.

Maintenance and Operations

Activity No.	Activity Name	Execute	Responsible Unit	Comments
		☐ Yes ☐ No		

1. Regional Maintenance has been consulted for needs and impacts? ☒ Yes ☐ No

Identify needs and impacts. _____

Maintenance agrees with the scope, and impact of the project: ☒ Yes ☐ No Comments: _____

2. Operations Support has been consulted for needs and impacts? ☒ Yes ☐ No

Identify needs and impacts. _____

3. Do any elements of this project scope require additional planned maintenance activities that would necessitate an increase in personnel or equipment resources? ☐ Yes ☒ No If yes, provide details: _____

4. Do any elements of this project scope include new roadway / electrical appurtenances that would require specialized training, equipment or materials to properly maintain the item (e.g., Vortech drainage chamber, ornamental lighting, brick pavers)? ☐ Yes ☒ No
If yes, provide details: _____

2. Does this project scope include or overlap sections of roadway that are simultaneously being planned or scheduled for Operations maintenance/construction activities? ☐ Yes ☒ No If yes, provide details: _____

3. Should consideration be given to canceling or postponing the Operations activity? ☐ Yes ☒ No If yes, provide details: _____

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments in the Summary of Commitments in Section 1 above.

Examples of information for this section include maintenance repairs, operational issues, simple safety improvements, etc.

Traffic Operations and Intelligent Transportation System (ITS) Engineering

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4235	Complete Final Design Systems Engineering Review Form	☐ Yes ☒ No	☐ Designer ☐ ITS ☐ Traffic Ops	
4250	Prepare ITS Facilities Layout Plan	☐ Yes ☒ No	☐ Designer ☐ ITS ☒ Traffic Ops	To analyze possibility at begin FD
4255	Complete ITS Facililties Plans	☐ Yes ☒ No	☐ Designer ☐ ITS ☐ Traffic Ops	

1. Project scope complies with the requirements of the latest ITS Investment Strategy and ITS Architecture? ☐ **Yes** ☒ **No**

2. Traffic Operations (North / South) has been consulted for needs and impacts? ☒ **Yes** ☐ **No**

Identify needs and impacts. A late request to add DMS and CCTV

3. Transportation Data Development has been consulted for needs and impacts? ☒ **Yes** ☐ **No**

Identify needs and impacts. _____

4. Project limits have been visually inspected for the existing ITS facilities? ☒ **Yes** ☐ **No**

5. Check if the project includes the construction or relocation of any of the following Intelligent Transportation System (ITS) facilities:

☐ Controlled Traffic Signal Systems (CTSS)
☐ Weigh-in-Motion (WIM)
☐ Closed Circuit TV Cameras (CCTV)
☐ Traffic Volume Stations
☐ Dynamic Message Signs (DMS)
☐ Roadway Weather Information Systems (RWIS)
☐ Highway Advisory Radio (HAR)
☐ In-Road Sensors
☐ Traffic Detection systems
☐ Fiber Optic Conduit and/or Cable
☐ Bridge Sensors
☐ Electrical or Communication Installations for the above systems
☐ Other ITS Devices: _____

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments in the Summary of Commitments in Section 1 above.

Examples of information for this section include compliance with latest ITS Investment Strategy and Architecture, consultation with Traffic Ops during CD or PE, etc.

Traffic Management Systems (North) has a request to explore possibility of including DMS and CCTV.

Commuter Mobility

Activity No.	Activity Name	Execute	Responsible Unit	Comments
		☐ Yes ☐ No		

Has NJ Transit or other affected bus companies been contacted? YesBus Route No. 65/66 Newark Mountainsie Somerville, Bus Route No. 114 Bridgewater New York Somerville **(NJ Transit has strongly expressed their desire to be "in the loop" early and again during construction.)**

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

List any commitments in the Summary of Commitments in Section 1 above.

Examples of information for this section include bicycle and pedestrian compatibility, Complete Streets compliance, presence of bus stops, interruption of pedestrian accommodations during construction, ADA issues, etc.

Technical and Administrative Activities

Activity No.	Activity Name	Execute	Responsible Unit	Comments
4010	Intiate FD	☒ Yes ☐ No	☒ DPM	
4015	Prepare Municipal Police Agreement	☐ Yes ☒ No	☐ DPM ☐ Designer ☐ CM	
4020	Approve Municipal Police Agreement	☐ Yes ☒ No	☐ Municipality ☐ DPM	
4025	Request Municipal Agreement Funding and DAG Approval	☐ Yes ☒ No	☐ DPM ☐ CIPD ☐ DAG	
4030	Execute Municipal Police Agreement	☐ Yes ☒ No	☐ DPM ☐ CPM	
4290	Prepare Final Design Submission Package	☒ Yes ☐ No	☐ DPM ☒ Designer	
4785	Prepare Financial Plan (Major Projects)	☐ Yes ☒ No	☐ DPM	
4790	Update Project Management Plan (Major Projects)	☐ Yes ☒ No	☐ DPM ☐ FHWA ☐ SMEs ☐ Designer	
4795	Execute Final Design Public Involvement Action Plan	☒ Yes ☐ No	☒ DPM ☐ DAG ☒ Comm. Relations	
4805	FHWA Reviews Final Design Submission	☐ Yes ☒ No	☒ DPM ☐ FHWA	
4815	Finalize Specifications for Comptroller Approval (Projects >$10M)	☐ Yes ☒ No	☐ DPM ☐ Designer ☐ Construction	
4825	Comptroller Approves Specifications (Projects >$10M)	☐ Yes ☒ No	☐ State Comptroller	
4830	Resolve Final Design Submission Comments	☒ Yes ☐ No	☒ DPM ☒ Designer	
4835	Prepare Pre-PS&E Package	☐ Yes ☒ No	☐ DPM ☐ Designer	
4840	Submit PS&E Package	☒ Yes ☐ No	☐ DPM ☒ Designer	

4845	FHWA Reviews Pre-PS&E	☐ Yes ☒ No	☐ DPM ☐ FHWA	
4865	Execute Consultant Agreement Addendum (CAA)	☒ Yes ☐ No	☒ DPM ☐ Designer	
4875	Prepare Advertising Authorization Package	☒ Yes ☐ No	☐ DPM ☒ CM ☐ EDU ☐ FHWA ☐ Designer ☐ Prog Coordination	
4885	Receive Authorization to Advertise	☒ Yes ☐ No	☒ CM ☐ FHWA ☒ Prog Coordination	
4895	Complete FD Closeout	☒ Yes ☐ No	☒ DPM ☒ Designer	

1. Have the objectives of the Public Involvement Action Plan (PIAP) been satisfied: ☒ Yes ☐ No

2. Number of Local Workshop Meetings conducted in PE: None

3. Public Information Centers conducted in PE (number of meetings, location & dates): July 13, 2011, Union Twp.

4. Number of Officials Briefings conducted in PE: Not required.

5. List Issues, Commitments or Concerns: None

6. Is the mailing list up to date? ☒ Yes ☐ No

7. Are the Displays adequate to reuse in FD: ☐ Yes ☒ No

8. Resolution of Support Number: 2011-253 **Resolution of Support Date:** September 13, 2011

9. Other Coordination:

a. List additional organizations (e.g., Historic Society, Chamber of Commerce, Board of Education, Fire Company's etc.) or authorities (NJ Transit, NJ Turnpike, NJ Highway Authority, Port Authority, etc.) that have interest in the project: None

b. Proposed Formal Public Involvement Program (estimate number of Official Briefings and Public Info Centers/Meetings/Hearings): 1 breifing & 1 pre-Construction PIC.

c. If additional displays are required, provide the specifics (number, scale, special graphics 3D, simulations, models, etc): 1 - full scale

d. If a mailing list is required, provide the approximate number of property owners: 25 **Who is responsible for putting the mailing list together and providing mail labels?** ☒ Consultant ☐ In-house Design ☐ Other (Specify) _____

e. If handouts are required (provide the specifics, number, size, color or black and white, mapping, etc): letter size flyer in black/white, letter size location map in color

f. List special needs (e.g., Community Involvement Sub-Consultant, Facility Needs, Interpreter, Website, etc.): None

ADDITIONAL INPUT

This section has been provided for the PE designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Include any commitments made to the community or outside agencies including NJDEP in Section 1 above. Please be clear and concise. Provide your unit's contact person and number.

Summary of Approvals

SME Unit	Manager	Approval	SME Involved	Remarks
Right of Way	Dave Kook	03/04/14	Paul Ignarri	
Access	Richard Dube	03/14/14	Raj Brahmbhatt	
Drainage	Joseph Sweger	03/20/14	David Ahdout	
Landscape	Joseph Sweger	03/20/14	Paul Pospiech	
Environmental	Joseph Sweger	03/20/14	Edmund Osian	
Quality Management Services	MarkHauske	03/19/14	Robert Abitz	
Utilities	Frahat Salim	03/14/14	Frank Pinto	See additional input
Jurisdiction	N/A			
Geometrics & Roadway	Mark Hauske	03/19/14	Robert Abitz	See additional input
Pavement	Robert Blight	No response	Narendra Kohli	No comment
Structures	N/A			
Geotechnical	Jayant Dalal	03/18/14	Amanda McElwain	
Survey	John Knapp	No Response	David Hall	No comment
Railroads	N/A			
Construction	Ron Maruca	03/04/14	Tom Loftus	
Traffic Signal and Safety Engineering	Chris Barretts	03/17/14	Syed Kazmi	
Electrical	John Nizolek	03/17/14	Claudette Bailey	
Maintenance and Operations	Steve Ruskan	03/21/14	Scott Sheldon	

Traffic Operations & ITS	Mike Pilsbury	03/26/14	Eddy Exantus	
Commuter Mobility	Debbie Kingland	03/13/14	Joseph Powell	See additional input

APPENDIX R

PRELIMINARY ENGINEERING QUALITY CERTIFICATION

Program Management Office

Quality Management Process

Preliminary Engineering
Designer Quality Management Certification

PROJECT NAME:	UPC#:
Rt 22 WB Vicinity of Vauxhall Rd to West of Bloy Street	**058003**
CONSULTING FIRM:	DESIGNER PROJECT MANAGER:
The Louis Berger Group, Inc	**Hong Sun**
NJDOT PROJECT MANAGER:	NJDOT PROGRAM MANAGER:
Hardev Dave	**Atul Shah**

In accordance with the current Department Quality Management Process and Procedures, in the Designer's professional opinion, and to the best of the Designer's knowledge, information and belief and based upon the performance of the Designer's duties as set forth in the NJDOT and Designer Agreement, the Designer represents that the above project has been designed in accordance with all applicable State and Federal design standards and requirements and in accordance with the Preliminary Engineering Scope Statement. Comments and decisions made during Interactive Communications with the Department on design elements and features of the project have been incorporated or satisfactorily resolved.

4/1/14

Firm's Project Manager

Firm's Principal

Accepted by NJDOT Project Manager

APPENDIX S

TRAFFIC AND ACCIDENT DATA

THE LOUIS BERGER GROUP, INC.
412 Mount Kemble Avenue PO Box 1946, Morristown, NJ 07962-1946
Tel (973) 407-1000 Fax (973) 267-6468 www.louisberger.com

MEMORANDUM

To: Naveen Gumedelli, P.E.

From: Edgardo Perez, P.E.

Date: January 21, 2010

Ref: **ROUTE 22 WB/VAUX HALL ROAD INTERCHANGE IMPROVEMENTS (M.P. 56.2 TO M.P. 56.4)**

Sub: Signal Warrant Analysis

Cc: A. Paluri, D. Conklin, J. Amorosa

A. INTRODUCTION

As part of the on-going feasibility assessment and alternative analysis being prepared at the westbound Route 22 and Vaux Hall Road/Sayre Road, a signal warrant analysis was performed for the intersection of Vaux Hall Road and the Route 22 westbound on/off-ramp.

The purpose of this study is to analyze the traffic conditions and physical characteristics of the study area to determine if a traffic signal is justified at the referenced intersection given two design alternatives. The goal of the alternative analysis is to provide enhanced safety along westbound Route 22 at Vauxhall Road and Sayre Road through improvements in geometric deficiencies, such as sight distance, curb radii, increased acceleration and deceleration lane lengths; and improved traffic flow. To achieve this, a signal has been proposed for the intersection of Vaux Hall Road and the Route 22 westbound ramps in conjunction with intersection improvements. A description of the intersection, design alternatives, and warrant analysis follows.

B. EXISTING INTERSECTION GEOMETRY

Vaux Hall Road & Westbound US Route 22 Ramp

The intersection of Vaux Hall Road and the westbound US Route 22 ramps is controlled with a “STOP” sign at the ramp junction. Vaux Hall Road is oriented in the north-south direction and the US Route 22 ramps are oriented in the east-west direction. Northbound and southbound Vaux Hall Road consists of a single lane. The westbound US Route 22 ramps consist of a single lane. The only turning movements possible at the intersection are right turns from northbound Vaux Hall Road to the US Route 22 on-ramp and right turns from westbound US Route 22 off-ramp to northbound Vaux Hall Road. (See Figure 1)

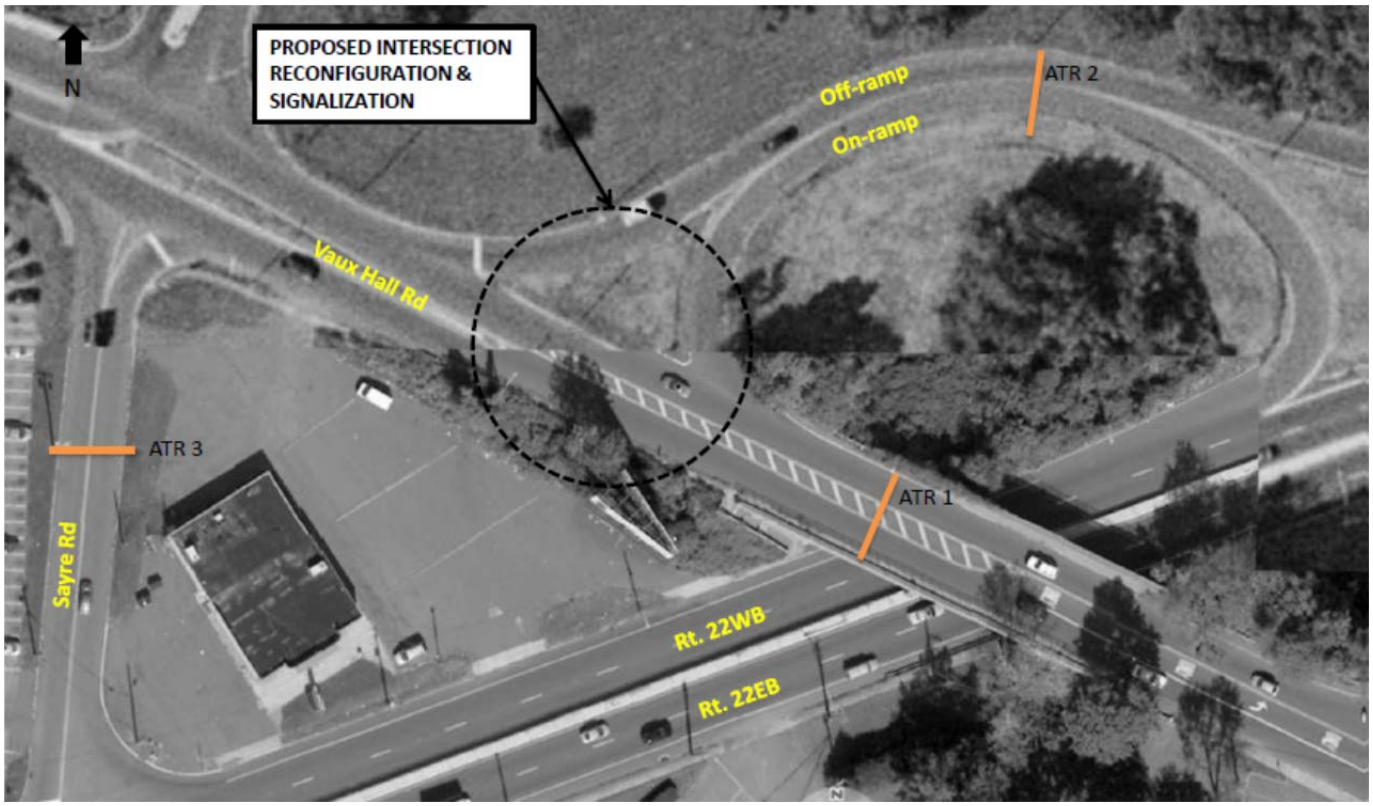


Figure 1: Study Area

C. DESIGN ALTERNATIVES

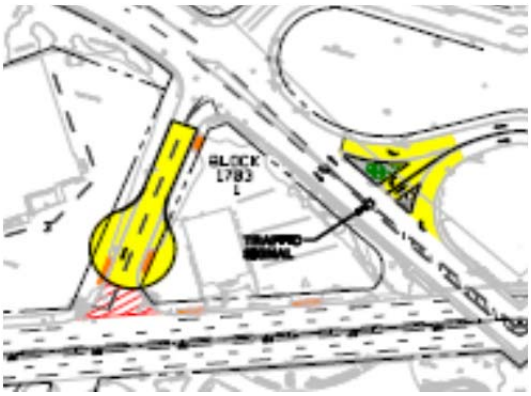
Alternative No. 1
Alternative No. 1 provides improvements to the shared acceleration/deceleration lane on westbound US Route 22. This alternative does not change the geometry of the studied intersection and is not further studied within this signal warrant analysis.

Alternative No. 2
Alternative No. 2 will provide a signalized, "T" Intersection with a left turn lane from the westbound Route 22 off-ramp at the intersection of Vaux Hall Road. Under this alternative, traffic currently making a right turn from Sayre Road will make a left turn onto Vaux Hall at the proposed signalized intersection. Traffic accessing Route 22 westbound will continue to make a right turn from Sayre Road. The intersection of Sayre Road and Route 22 will be redesigned.



Alternative No. 3

Alternative No. 3 will provide a signalized "T" Intersection with full access to the westbound US Route 22 on/off-ramps intersecting Vaux Hall Road. Left and right turn movements will be provided through the proposed signalized intersection. Currently, the left turn movement from southbound Vaux Hall Road to westbound US Route 22 is completed by making a right turn onto Sayre Road and continuing south to westbound US Route 22. Sayre Road will be converted into a cul-de-sac, with no direct access to US Route 22.



D. TRAFFIC DATA COLLECTION

A count program was conducted at the intersection of Vaux Hall Road and the westbound US Route 22 ramps. The count program consisted of automatic traffic recorder counts (ATR). Figure 1 shows the study intersection with locations of ATR noted. ATR counts were conducted from Tuesday, January 12, 2010 to Thursday, January 14, 2010. The ATR data was used to conduct the signal warrant analysis. The count data was used also used to reroute traffic for each design alternative. The data is shown in the Appendix of this report.

Additionally, crash data was collected and compiled into a collision diagram to depict types of crashes occurring for years 2006, 2007, and 2008. The crash data was used to determine crash rates for the intersection locations and to compare to the statewide averages.

E. SIGNAL WARRANT ANALYSIS

Methodology

The signal warrant analysis has been conducted using the procedures described in the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD, 2009 Edition). According to the guidelines set forth in the MUTCD, the need for a traffic control signal shall include an analysis of the applicable factors contained in the nine (9) traffic signal warrants. A traffic control signal shall not be installed unless one or more of these warrants are met. The following sections discuss the methodology for the signal warrant analysis and present the results of the analysis using the warrants from the MUTCD manual.

A signal warrant analysis requires a comprehensive investigation of traffic conditions and physical characteristics of the location to determine the necessity for a signal installation. For this purpose, data has been obtained by means of an engineering study and compared with the requirements set forth in the warrants presented in the MUTCD. Within this analysis, an "average day" is defined as a day representing traffic volumes normally and repeatedly found at the location, either a weekday or weekend day depending upon surrounding land uses. The following are the nine traffic signal warrants investigated:

- Warrant 1 - Eight-Hour Vehicular Volume
- Warrant 2 - Four-Hour Vehicular Volume
- Warrant 3 – Peak Hour
- Warrant 4 - Pedestrian Volume
- Warrant 5 - School Crossing
- Warrant 6 - Coordinated Signal System
- Warrant 7 - Crash Experience

- Warrant 8 - Roadway Network
- Warrant 9 - Intersection Near a Grade Crossing

For the purposes of the warrant analysis, the major approach is Vaux Hall Road and the minor approach is the westbound Route 22 ramp.

Warrant 1 - Eight-Hour Vehicular Volume

Requirements:
This warrant is satisfied when, for each of any eight (8) hours of an average day, the traffic volumes given in MUTCD Table 4C-1 exist on the major street and on the higher-volume minor-street approach to the intersection. Two conditions may be used during analysis. Condition A is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal. Condition B is intended for application at locations where Condition A is not satisfied and where the traffic volume on the major street is so heavy that the traffic on the minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

The major-street and minor-street volumes are for the same 8 hours. During those 8 hours, the direction of higher volume on the minor street is not required to be on the same approach for each of the 8 hours.

Table 1: MUTCD Table 4C-1

Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume
[b] Used for combination of Conditions A and B after adequate trial of other remedial measures
[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000
[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Source: MUTCD, 2009 Edition.

Warrant 1 Analysis Results:
Defining the critical hours as those hours with the highest volumes of the major and minor streets

combined, which are the most likely to satisfy the warrant, the eight (8) hour volumes for the existing conditions are listed below:

Table 2: Alternative No. 2
Warrant 1, Eight-Hour Vehicular Volume

Time		Vaux Hall Road & WB 22 Ramps			
From	To	Vaux Hall Rd Major Street (Both Approaches)	WB 22 Ramps Minor Street (One Approach Only)	Condition A Meets Requirements?	Condition B Meets Requirements?
11:00 AM	12:00 PM	937	76	No	Yes
12:00 PM	1:00 PM	1201	92	No	Yes
1:00 PM	2:00 PM	1208	112	No	Yes
2:00 PM	3:00 PM	1399	116	No	Yes
3:00 PM	4:00 PM	1623	126	No	Yes
4:00 PM	5:00 PM	1596	124	No	Yes
5:00 PM	6:00 PM	1789	120	No	Yes
6:00 PM	7:00 PM	1458	113	No	Yes

Table 3: Alternative No. 3
Warrant 1, Eight-Hour Vehicular Volume

Time		Vaux Hall Road & WB 22 Ramps			
From	To	Vaux Hall Rd Major Street (Both Approaches)	WB 22 Ramps Minor Street (One Approach Only)	Condition A Meets Requirements?	Condition B Meets Requirements?
12:00 PM	1:00 PM	1081	76	No	Yes
1:00 PM	2:00 PM	1335	92	No	Yes
2:00 PM	3:00 PM	1365	112	No	Yes
3:00 PM	4:00 PM	1562	116	No	Yes
4:00 PM	5:00 PM	1779	126	No	Yes
5:00 PM	6:00 PM	1822	124	No	Yes
6:00 PM	7:00 PM	1961	120	No	Yes
7:00 PM	8:00 PM	1635	113	No	Yes

Based on the analysis, it was found that Condition A is not met, while Condition B is met for both alternatives. Warrant 1 is satisfied for the intersection of Vaux Hall Road and westbound US Route 22 ramps for both design alternatives.

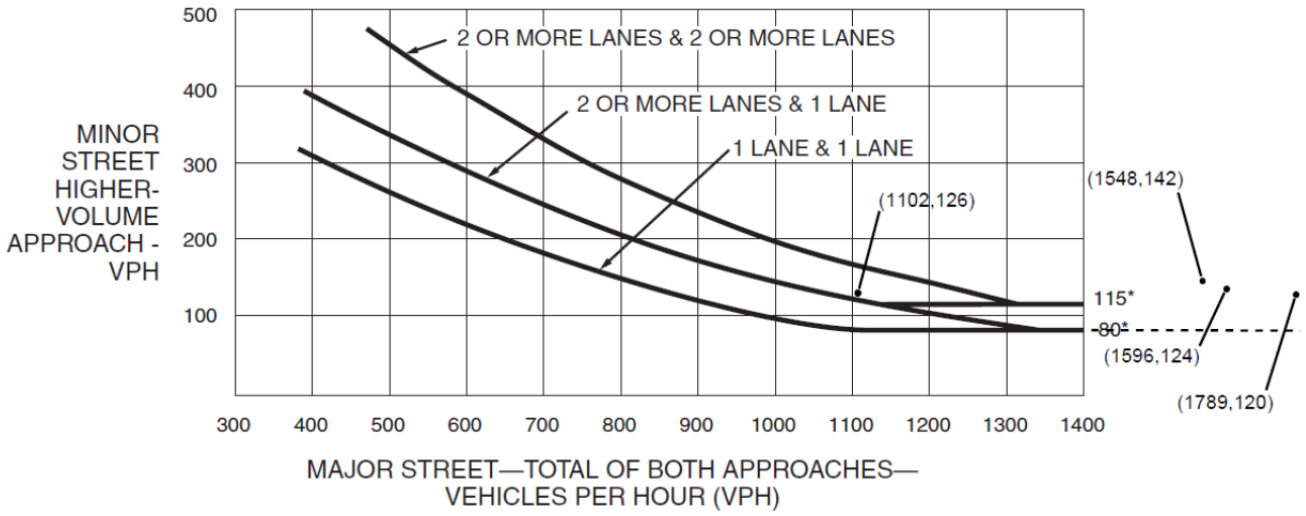
Warrant 2 - Four-Hour Vehicular Volume

Requirements:
The need for a traffic control signal shall be considered if an engineering study finds that, for each of any four (4) hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) all fall above the applicable curve in MUTCD Figure 4C-1 for the existing combination of approach lanes.

Warrant 2 Analysis Results:

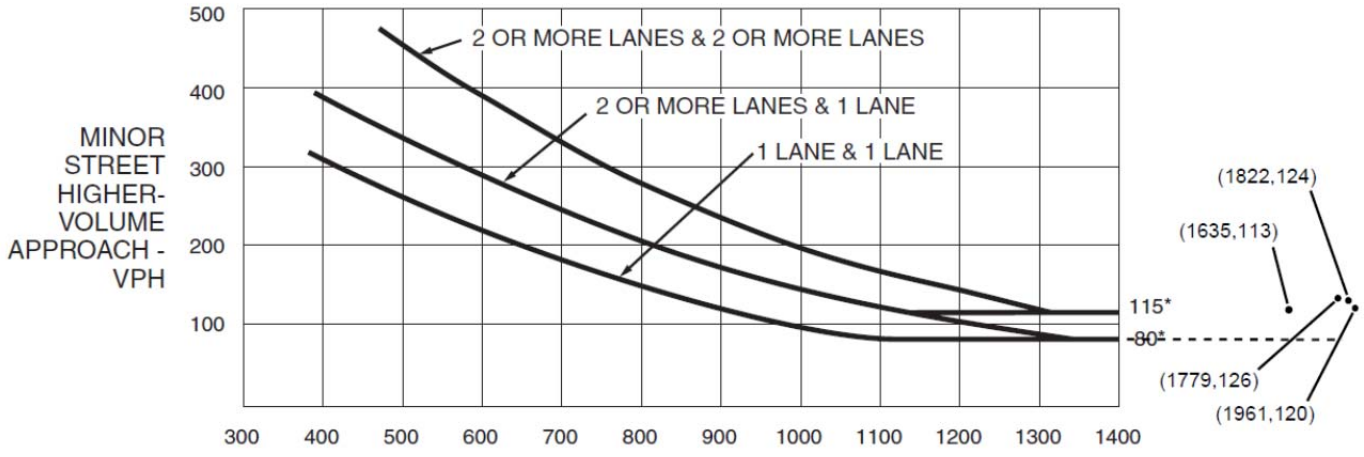
Defining the critical hours as those hours with the highest volumes of the major and minor streets combined, the four (4) hour volumes for existing years are above the lower the 80 vehicle threshold for one lane on each approach. (See Figures 2 and 3)

Figure 2: Alternative No. 2
Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 3: Alternative No. 3
Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Based on the analysis, it was found that Warrant 2 is satisfied for the intersection of Vauxhall Road and westbound US Route 22 ramps for both design alternatives.

Warrant 3 – Peak Hour

Requirements:
The Peak Hour signal warrant is intended for use at a location where traffic conditions are such that for a minimum of one hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street.

This signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time. The need for a traffic control signal shall be considered if an engineering study finds that the criteria in either of the following two categories are met:

A. If all three of the following conditions exist for the same one hour (any four consecutive 15-minute periods) of an average day:

   1. The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: four (4) vehicle-hours for a one-lane approach; or five (5) vehicle-hours for a two-lane approach, and

   2. The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes, and

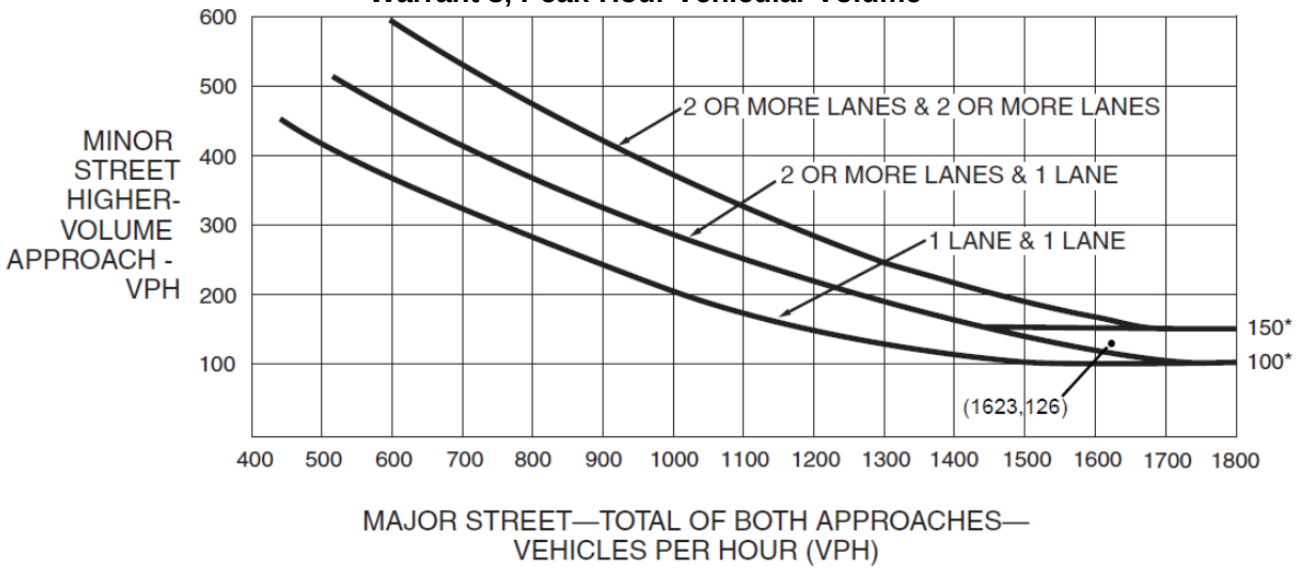
   3. The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

B. The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in MUTCD Figure 4C-3 for the existing combination of approach lanes.

Warrant 3 Analysis Results:
Condition A
Condition A was not analyzed.

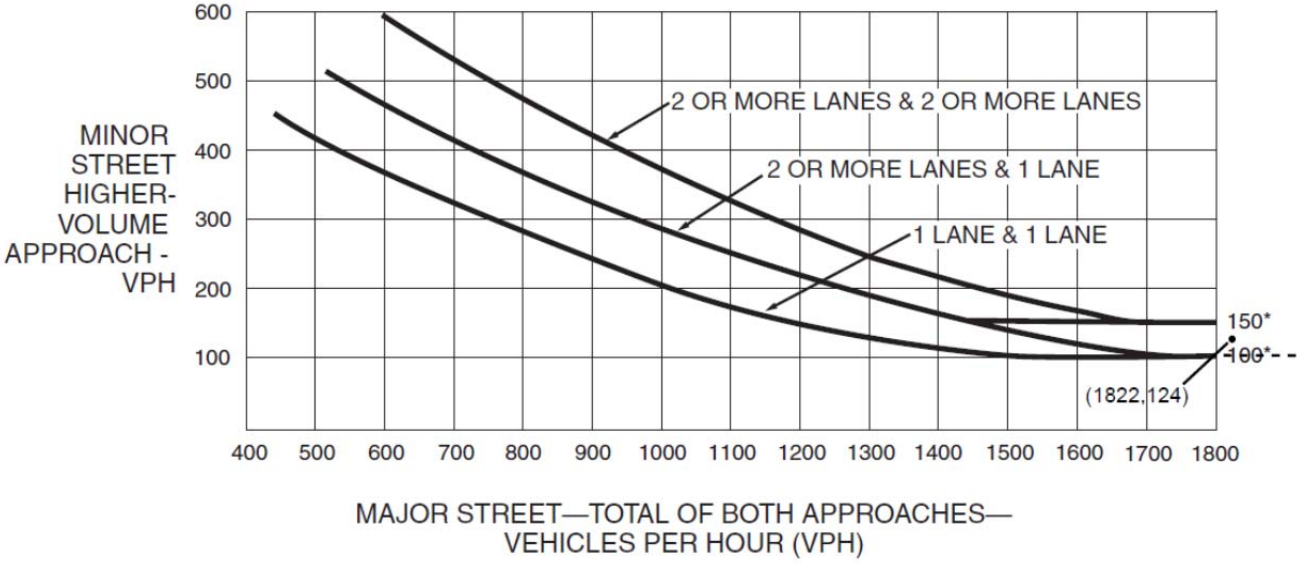
Category B
The traffic volumes for the peak hour were plotted in MUTCD Figure 4C-3. The volumes are above the minimum volume threshold of 100 vph for both design alternatives. (See Figures 4 and 5)

Figure 4: Alternative No. 2
Warrant 3, Peak-Hour Vehicular Volume



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 5: Alternative No. 3
Warrant 3, Peak-Hour Vehicular Volume



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Based on the analysis, it was found that Warrant 3 is satisfied for the intersection of Vauxhall Road and westbound US Route 22 ramps for both design alternatives.

Warrant 4 – Pedestrian Volume

Requirements:
The Pedestrian Volume signal warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

The need for a traffic control signal at an intersection or mid-block crossing shall be considered if an engineering study finds that one of the following criteria are met:

A. For each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) all fall above the curve in Figure 4C-5; or d

B. For 1 hour (any four consecutive 15-minute periods) of an average day, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) falls above the curve in Figure 4C-7.

Warrant 4 Analysis Results:
The Pedestrian Warrant is not satisfied for the existing conditions for the studied intersection.

Warrant 5 – Pedestrian Volume

Requirements:
The School Crossing signal warrant is intended for application where the fact that schoolchildren cross the major street is the principal reason to consider installing a traffic control signal. For the purposes of this warrant, the word “schoolchildren” includes elementary through high school students.

The need for a traffic control signal shall be considered when an engineering study of the frequency and adequacy of gaps in the vehicular traffic stream as related to the number and size of groups of schoolchildren at an established school crossing across the major street shows that the number of adequate gaps in the traffic stream during the period when the schoolchildren are using the crossing is less than the number of minutes in the same period (see Section 7A.03) and there are a minimum of 20 schoolchildren during the highest crossing hour.

Before a decision is made to install a traffic control signal, consideration shall be given to the implementation of other remedial measures, such as warning signs and flashers, school speed zones, school crossing guards, or a grade-separated crossing.

The School Crossing signal warrant shall not be applied at locations where the distance to the nearest traffic control signal along the major street is less than 300 ft, unless the proposed traffic control signal will not restrict the progressive movement of traffic.

If this warrant is met and a traffic control signal is justified by an engineering study, then:

A. If it is installed at an intersection or major driveway location, the traffic control signal should also control the minor-street or driveway traffic, should be traffic-actuated, and should include pedestrian detection.

B. If it is installed at a non-intersection crossing, the traffic control signal should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs, and should be pedestrian-actuated. If the traffic control signal is installed at a non-intersection crossing, at least one of the signal faces should be over the traveled way for each approach, parking and

other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the crosswalk or site accommodations should be made through curb extensions or other techniques to provide adequate sight distance, and the installation should include suitable standard signs and pavement markings.

C. Furthermore, if installed within a signal system, the traffic control signal should be coordinated.

Warrant 5 Analysis Results:
The studied intersection is not located in direct proximity to a school, nor posses the pedestrian traffic of school children to satisfy this warrant. Therefore, the School Crossing warrant is not applicable to the studied intersection.

Warrant 6 – Coordinated Signal System

Progressive movement in a coordinated signal system necessitates installing traffic control signals at intersections where they would not otherwise be needed in order to maintain proper platooning of vehicles.

Requirements:
The need for a traffic control signal shall be considered if an engineering study finds that one of the following criteria is met:

A. On a one-way street or a street that has traffic predominantly in one direction; the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.

B. On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.

Warrant 6 Analysis Results:
The subject intersection is not located within a coordinated traffic control system. The Coordinated Signal System warrant is not applicable.

Warrant 7 – Crash Experience

Requirements:
The Crash Experience signal warrant conditions are intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal.

The need for a traffic control signal shall be considered if an engineering study finds that all of the following criteria are met:

A. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency; and
B. Five (5) or more reported crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period, each crash involving personal injury or property damage apparently exceeding the applicable requirements for a reportable crash; and

C. For each of any 8 hours of an average day, the vehicles per hour (vph) given in both of the 80 percent columns of Condition A in Table 4C-1 (see Section 4C.02), or the vph in both of the 80

percent columns of Condition B in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection, or the volume of pedestrian traffic is not less than 80 percent of the requirements specified in the Pedestrian Volume warrant. These major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.

Warrant 7 Analysis Results:

Criteria A

The New Jersey Department of Transportation has studied the Vaux Hall Road and Sayre Road interchanges previously and determined that safety improvements are required.

Criteria B

Traffic crash data were obtained from the NJDOT. Crash data was used to determine what types of crashes occurred and to determine if any pattern of crashes was apparent within the study area. For the analysis, crash data was obtained for three years summarized (2006 through 2008).

Table 3: Crash Data Summary

WB 22 near Sayre Road and Vaux Hall Road Ramps (MP 55.94 - MP 56.51)	
Types of Crashes	2006-2008
Rear End	37
Overtake	11
Right Turn	3
Overturned	1
Out of Control	6
Total	58

Criteria C

Table 6 show the eight (8) critical hours of an average day, vehicles per hour, defining the highest volumes of the major and minor streets combined, which are the most likely to satisfy the warrant. These volumes were compared to MUTCD Table 4C-1, under Condition A and Condition B to determine if the warrant is satisfied.

Table 6: Alternative No. 2
Warrant 7C, Eight-Hour Vehicular Volume

Time		Vaux Hall Road & WB 22 Ramps			
From	To	Vaux Hall Rd Major Street (Both Approaches)	WB 22 Ramps Minor Street (One Approach Only)	Condition A @ 80% Meets Requirements?	Condition B @ 80% Meets Requirements?
11:00 AM	12:00 PM	937	76	No	Yes
12:00 PM	1:00 PM	1201	92	No	Yes
1:00 PM	2:00 PM	1208	112	No	Yes
2:00 PM	3:00 PM	1399	116	No	Yes
3:00 PM	4:00 PM	1623	126	Yes	Yes
4:00 PM	5:00 PM	1596	124	Yes	Yes
5:00 PM	6:00 PM	1789	120	No	Yes
6:00 PM	7:00 PM	1458	113	No	Yes

Table 6: Alternative No. 3
Warrant 7C, Eight-Hour Vehicular Volume

Time		Vaux Hall Road & WB 22 Ramps			
From	To	Vaux Hall Rd Major Street (Both Approaches)	WB 22 Ramps Minor Street (One Approach Only)	Condition A @ 80% Meets Requirements?	Condition B @ 80% Meets Requirements?
11:00 AM	12:00 PM	1081	76	No	Yes
12:00 PM	1:00 PM	1335	92	No	Yes
1:00 PM	2:00 PM	1365	112	No	Yes
2:00 PM	3:00 PM	1562	116	No	Yes
3:00 PM	4:00 PM	1779	126	Yes	Yes
4:00 PM	5:00 PM	1822	124	Yes	Yes
5:00 PM	6:00 PM	1961	120	No	Yes
6:00 PM	7:00 PM	1635	113	No	Yes

Condition A is not met, while Condition B is met for both design alternatives. The Crash Experience warrant is met for the intersection of Vauxhall Road and westbound US Route 22 ramps for both design alternatives.

Warrant 8 - Roadway Network

Requirements:
Installing a traffic control signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway network.

The need for a traffic control signal shall be considered if an engineering study finds that the common intersection of two or more major routes meets one or both of the following criteria:

A. The intersection has a total existing, or immediately projected, entering volume of at least 1,000

vehicles per hour during the peak hour of a typical weekday and has 5-year projected traffic volumes, based on an engineering study, that meet one or more of Warrants 1, 2, and 3 during an average weekday; or

B. The intersection has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of any five (5) hours of a non-normal business day (Saturday or Sunday).

A major route as used in this signal warrant shall have one or more of the following characteristics:

A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow; or
B. It includes rural or suburban highways outside, entering, or traversing a city; or
C. It appears as a major route on an official plan, such as a major street plan in an urban area traffic and transportation study.

Warrant Analysis Results:
The Roadway Network Warrant is not applicable to the studied intersection.

Warrant 9 – Intersection Near a Grade Crossing

Requirements:
The Intersection Near a Grade Crossing signal warrant is intended for use at a location where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic control signal.

This signal warrant should be applied only after adequate consideration has been given to other alternatives or after a trial of an alternative has failed to alleviate the safety concerns associated with the grade crossing. Among the alternatives that should be considered or tried are:

A. Providing additional pavement that would enable vehicles to clear the track or that would provide space for an evasive maneuver, or
B. Reassigning the stop controls at the intersection to make the approach across the track a non-stopping approach.

The need for a traffic control signal shall be considered if an engineering study finds that both of the following criteria are met:

A. A grade crossing exists on an approach controlled by a STOP or YIELD sign and the center of the track nearest to the intersection is within 140 feet of the stop line or yield line on the approach; and
B. During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the minor-street approach that crosses the track (one direction only, approaching the intersection) falls above the applicable curve in MUTCD Figure 4C-9 or 4C-10 for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance as defined in Section 1A.13

Warrant 9 Analysis Results:
The subject intersection is not located near a grade crossing. The Intersection near a Grade Crossing

Warrant is not applicable.

F. CONCLUSION

As a result of this warrant analysis study, four warrants are satisfied. Therefore, a traffic signal is warranted at the proposed signalized intersection of Vaux Hall Road and westbound US Route 22 ramps for both design alternatives. A summary of the traffic signal warrant analysis is shown in Tables 7A and 7B.

Table 7A: Alternative No. 2 Warrant Analysis Summary

Warrant	Warrant Met?
Warrant 1: Eight-Hour Vehicular Volume	Yes
Warrant 2: Four-Hour Vehicular Volume	Yes
Warrant 3: Peak Hour	Yes
Warrant 4: Pedestrian Volume	N/A
Warrant 5: School Crossing	N/A
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	Yes
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection Near a Grade Crossing	N/A

Table 7B: Alternative No. 3 Warrant Analysis Summary

Warrant	Warrant Met?
Warrant 1: Eight-Hour Vehicular Volume	Yes
Warrant 2: Four-Hour Vehicular Volume	Yes
Warrant 3: Peak Hour	Yes
Warrant 4: Pedestrian Volume	N/A
Warrant 5: School Crossing	N/A
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	Yes
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection Near a Grade Crossing	N/A

Volume				
File Name: Untitled Volume				
Start Date: 1/12/2010				
Start Time: 11:15:00 AM				
Site Code: #1 Vaux Hall Rd over US 22				
Station ID:				
Location 1:				
Location 2:				
Longitude: -999' 0.000 South				
Latidude: -999' 0.000 East				
Project: CC 897				
Station:#1				
Location:Vaux Hall Road				
City Union County NJ.				
Number	Date	Time	NB	SB
1	1/12/2010	11:15 AM	55	72
2	1/12/2010	11:30 AM	155	148
3	1/12/2010	11:45 AM	172	147
4	1/12/2010	12:00 PM	161	169
5	1/12/2010	12:15 PM	152	158
6	1/12/2010	12:30 PM	194	185
7	1/12/2010	12:45 PM	188	180
8	1/12/2010	01:00 PM	193	173
9	1/12/2010	01:15 PM	180	156
10	1/12/2010	01:30 PM	167	192
11	1/12/2010	01:45 PM	143	183
12	1/12/2010	02:00 PM	179	183
13	1/12/2010	02:15 PM	182	201
14	1/12/2010	02:30 PM	190	235
15	1/12/2010	02:45 PM	152	248
16	1/12/2010	03:00 PM	166	244
17	1/12/2010	03:15 PM	166	268
18	1/12/2010	03:30 PM	182	292
19	1/12/2010	03:45 PM	191	222
20	1/12/2010	04:00 PM	294	200
21	1/12/2010	04:15 PM	259	192
22	1/12/2010	04:30 PM	255	231
23	1/12/2010	04:45 PM	276	202
24	1/12/2010	05:00 PM	302	230
25	1/12/2010	05:15 PM	288	234
26	1/12/2010	05:30 PM	286	209
27	1/12/2010	05:45 PM	240	212
28	1/12/2010	06:00 PM	277	174
29	1/12/2010	06:15 PM	233	202
30	1/12/2010	06:30 PM	190	175
31	1/12/2010	06:45 PM	217	183
32	1/12/2010	07:00 PM	168	166
33	1/12/2010	07:15 PM	167	180
34	1/12/2010	07:30 PM	172	170
35	1/12/2010	07:45 PM	130	142
36	1/12/2010	08:00 PM	154	114
37	1/12/2010	08:15 PM	111	117
38	1/12/2010	08:30 PM	117	91
39	1/12/2010	08:45 PM	123	86
40	1/12/2010	09:00 PM	121	141
41	1/12/2010	09:15 PM	101	105
42	1/12/2010	09:30 PM	99	123
43	1/12/2010	09:45 PM	106	121

Number	Date	Time	NB	SB
44	1/12/2010	10:00 PM	103	123
45	1/12/2010	10:15 PM	93	107
46	1/12/2010	10:30 PM	68	109
47	1/12/2010	10:45 PM	62	60
48	1/12/2010	11:00 PM	72	65
49	1/12/2010	11:15 PM	60	65
50	1/12/2010	11:30 PM	59	60
51	1/12/2010	11:45 PM	49	49
52	1/13/2010	12:00 AM	52	47
53	1/13/2010	12:15 AM	48	32
54	1/13/2010	12:30 AM	33	27
55	1/13/2010	12:45 AM	25	20
56	1/13/2010	01:00 AM	22	23
57	1/13/2010	01:15 AM	13	21
58	1/13/2010	01:30 AM	13	13
59	1/13/2010	01:45 AM	12	17
60	1/13/2010	02:00 AM	17	26
61	1/13/2010	02:15 AM	6	16
62	1/13/2010	02:30 AM	12	13
63	1/13/2010	02:45 AM	6	6
64	1/13/2010	03:00 AM	9	13
65	1/13/2010	03:15 AM	11	9
66	1/13/2010	03:30 AM	9	16
67	1/13/2010	03:45 AM	16	14
68	1/13/2010	04:00 AM	8	20
69	1/13/2010	04:15 AM	10	21
70	1/13/2010	04:30 AM	17	21
71	1/13/2010	04:45 AM	14	34
72	1/13/2010	05:00 AM	21	34
73	1/13/2010	05:15 AM	28	48
74	1/13/2010	05:30 AM	46	50
75	1/13/2010	05:45 AM	37	63
76	1/13/2010	06:00 AM	70	77
77	1/13/2010	06:15 AM	87	102
78	1/13/2010	06:30 AM	113	142
79	1/13/2010	06:45 AM	135	164
80	1/13/2010	07:00 AM	171	150
81	1/13/2010	07:15 AM	184	214
82	1/13/2010	07:30 AM	222	212
83	1/13/2010	07:45 AM	212	236
84	1/13/2010	08:00 AM	194	197
85	1/13/2010	08:15 AM	204	203
86	1/13/2010	08:30 AM	203	213
87	1/13/2010	08:45 AM	172	247
88	1/13/2010	09:00 AM	148	198
89	1/13/2010	09:15 AM	134	158
90	1/13/2010	09:30 AM	132	175
91	1/13/2010	09:45 AM	129	136
92	1/13/2010	10:00 AM	116	119
93	1/13/2010	10:15 AM	117	119
94	1/13/2010	10:30 AM	119	150
95	1/13/2010	10:45 AM	138	133
96	1/13/2010	11:00 AM	123	140
97	1/13/2010	11:15 AM	127	139
98	1/13/2010	11:30 AM	136	129
99	1/13/2010	11:45 AM	125	162
100	1/13/2010	12:00 PM	148	158
101	1/13/2010	12:15 PM	159	176

Number	Date	Time	NB	SB
102	1/13/2010	12:30 PM	156	185
103	1/13/2010	12:45 PM	172	181
104	1/13/2010	01:00 PM	158	180
105	1/13/2010	01:15 PM	141	168
106	1/13/2010	01:30 PM	172	184
107	1/13/2010	01:45 PM	169	193
108	1/13/2010	02:00 PM	157	188
109	1/13/2010	02:15 PM	192	212
110	1/13/2010	02:30 PM	212	195
111	1/13/2010	02:45 PM	201	205
112	1/13/2010	03:00 PM	257	231
113	1/13/2010	03:15 PM	227	220
114	1/13/2010	03:30 PM	235	211
115	1/13/2010	03:45 PM	210	188
116	1/13/2010	04:00 PM	240	254
117	1/13/2010	04:15 PM	247	158
118	1/13/2010	04:30 PM	244	236
119	1/13/2010	04:45 PM	251	192
120	1/13/2010	05:00 PM	281	217
121	1/13/2010	05:15 PM	289	218
122	1/13/2010	05:30 PM	272	207
123	1/13/2010	05:45 PM	270	207
124	1/13/2010	06:00 PM	238	199
125	1/13/2010	06:15 PM	227	190
126	1/13/2010	06:30 PM	220	199
127	1/13/2010	06:45 PM	183	179
128	1/13/2010	07:00 PM	195	179
129	1/13/2010	07:15 PM	165	172
130	1/13/2010	07:30 PM	137	137
131	1/13/2010	07:45 PM	136	129
132	1/13/2010	08:00 PM	156	128
133	1/13/2010	08:15 PM	130	104
134	1/13/2010	08:30 PM	113	121
135	1/13/2010	08:45 PM	114	111
136	1/13/2010	09:00 PM	135	143
137	1/13/2010	09:15 PM	114	123
138	1/13/2010	09:30 PM	102	106
139	1/13/2010	09:45 PM	94	101
140	1/13/2010	10:00 PM	95	120
141	1/13/2010	10:15 PM	78	116
142	1/13/2010	10:30 PM	72	66
143	1/13/2010	10:45 PM	66	54
144	1/13/2010	11:00 PM	76	90
145	1/13/2010	11:15 PM	80	73
146	1/13/2010	11:30 PM	62	50
147	1/13/2010	11:45 PM	57	57
148	1/14/2010	12:00 AM	51	43
149	1/14/2010	12:15 AM	48	39
150	1/14/2010	12:30 AM	29	23
151	1/14/2010	12:45 AM	21	21
152	1/14/2010	01:00 AM	17	21
153	1/14/2010	01:15 AM	20	21
154	1/14/2010	01:30 AM	17	19
155	1/14/2010	01:45 AM	15	22
156	1/14/2010	02:00 AM	8	18
157	1/14/2010	02:15 AM	11	24
158	1/14/2010	02:30 AM	11	16
159	1/14/2010	02:45 AM	7	11

Number	Date	Time	NB	SB
160	1/14/2010	03:00 AM	7	11
161	1/14/2010	03:15 AM	15	13
162	1/14/2010	03:30 AM	9	18
163	1/14/2010	03:45 AM	12	13
164	1/14/2010	04:00 AM	11	11
165	1/14/2010	04:15 AM	8	20
166	1/14/2010	04:30 AM	9	26
167	1/14/2010	04:45 AM	18	28
168	1/14/2010	05:00 AM	29	39
169	1/14/2010	05:15 AM	32	47
170	1/14/2010	05:30 AM	43	40
171	1/14/2010	05:45 AM	40	65
172	1/14/2010	06:00 AM	71	72
173	1/14/2010	06:15 AM	84	107
174	1/14/2010	06:30 AM	117	149
175	1/14/2010	06:45 AM	143	161
176	1/14/2010	07:00 AM	194	175
177	1/14/2010	07:15 AM	179	227
178	1/14/2010	07:30 AM	202	206
179	1/14/2010	07:45 AM	229	260
180	1/14/2010	08:00 AM	236	259
181	1/14/2010	08:15 AM	180	203
182	1/14/2010	08:30 AM	187	197
183	1/14/2010	08:45 AM	188	229
184	1/14/2010	09:00 AM	145	169
185	1/14/2010	09:15 AM	147	159
186	1/14/2010	09:30 AM	156	162
187	1/14/2010	09:45 AM	132	144
188	1/14/2010	10:00 AM	115	141
189	1/14/2010	10:15 AM	126	164
190	1/14/2010	10:30 AM	149	108
191	1/14/2010	10:45 AM	139	136
192	1/14/2010	11:00 AM	142	134
193	1/14/2010	11:15 AM	126	135
194	1/14/2010	11:30 AM	168	152
195	1/14/2010	11:45 AM	139	177
196	1/14/2010	12:00 PM	176	158
197	1/14/2010	12:15 PM	170	187

Volume				
File Name: Untitled Volume				
Start Date: 1/12/2010				
Start Time: 11:30:00 AM				
Site Code: #2 Ramp to from US 22 WB to Vaux Hall Rd				
Station ID:				
Location 1:				
Location 2:				
Longitude: -999' 0.000 South				
Latidude: -999' 0.000 East				
Project:CC 897				
Station:#2				
Location;Ramp				
City; Union County NJ.				
Number	Date	Time	NB	SB
1	1/12/2010	11:30 AM	2	1
2	1/12/2010	11:45 AM	52	37
3	1/12/2010	12:00 PM	41	35
4	1/12/2010	12:15 PM	51	29
5	1/12/2010	12:30 PM	46	33
6	1/12/2010	12:45 PM	39	28
7	1/12/2010	01:00 PM	51	29
8	1/12/2010	01:15 PM	42	28
9	1/12/2010	01:30 PM	59	27
10	1/12/2010	01:45 PM	55	19
11	1/12/2010	02:00 PM	38	21
12	1/12/2010	02:15 PM	79	19
13	1/12/2010	02:30 PM	55	37
14	1/12/2010	02:45 PM	65	40
15	1/12/2010	03:00 PM	68	26
16	1/12/2010	03:15 PM	67	30
17	1/12/2010	03:30 PM	76	41
18	1/12/2010	03:45 PM	89	20
19	1/12/2010	04:00 PM	96	26
20	1/12/2010	04:15 PM	88	29
21	1/12/2010	04:30 PM	88	41
22	1/12/2010	04:45 PM	94	28
23	1/12/2010	05:00 PM	82	39
24	1/12/2010	05:15 PM	88	41
25	1/12/2010	05:30 PM	82	32
26	1/12/2010	05:45 PM	100	37
27	1/12/2010	06:00 PM	98	37
28	1/12/2010	06:15 PM	85	39
29	1/12/2010	06:30 PM	92	25
30	1/12/2010	06:45 PM	97	36
31	1/12/2010	07:00 PM	82	32
32	1/12/2010	07:15 PM	62	21
33	1/12/2010	07:30 PM	54	24
34	1/12/2010	07:45 PM	55	24
35	1/12/2010	08:00 PM	63	15
36	1/12/2010	08:15 PM	64	23
37	1/12/2010	08:30 PM	48	8
38	1/12/2010	08:45 PM	43	12
39	1/12/2010	09:00 PM	36	18
40	1/12/2010	09:15 PM	39	15
41	1/12/2010	09:30 PM	29	14
42	1/12/2010	09:45 PM	34	7
43	1/12/2010	10:00 PM	30	14

Number	Date	Time	NB	SB
44	1/12/2010	10:15 PM	36	11
45	1/12/2010	10:30 PM	35	8
46	1/12/2010	10:45 PM	31	6
47	1/12/2010	11:00 PM	21	2
48	1/12/2010	11:15 PM	26	5
49	1/12/2010	11:30 PM	25	2
50	1/12/2010	11:45 PM	16	2
51	1/13/2010	12:00 AM	18	4
52	1/13/2010	12:15 AM	12	4
53	1/13/2010	12:30 AM	20	3
54	1/13/2010	12:45 AM	9	1
55	1/13/2010	01:00 AM	7	6
56	1/13/2010	01:15 AM	8	3
57	1/13/2010	01:30 AM	9	0
58	1/13/2010	01:45 AM	12	0
59	1/13/2010	02:00 AM	6	0
60	1/13/2010	02:15 AM	4	2
61	1/13/2010	02:30 AM	6	0
62	1/13/2010	02:45 AM	4	3
63	1/13/2010	03:00 AM	6	1
64	1/13/2010	03:15 AM	5	3
65	1/13/2010	03:30 AM	4	1
66	1/13/2010	03:45 AM	6	4
67	1/13/2010	04:00 AM	3	6
68	1/13/2010	04:15 AM	8	1
69	1/13/2010	04:30 AM	5	2
70	1/13/2010	04:45 AM	5	1
71	1/13/2010	05:00 AM	5	5
72	1/13/2010	05:15 AM	5	4
73	1/13/2010	05:30 AM	10	2
74	1/13/2010	05:45 AM	14	8
75	1/13/2010	06:00 AM	16	9
76	1/13/2010	06:15 AM	11	8
77	1/13/2010	06:30 AM	27	15
78	1/13/2010	06:45 AM	39	12
79	1/13/2010	07:00 AM	49	17
80	1/13/2010	07:15 AM	46	16
81	1/13/2010	07:30 AM	45	26
82	1/13/2010	07:45 AM	67	29
83	1/13/2010	08:00 AM	59	35
84	1/13/2010	08:15 AM	58	32
85	1/13/2010	08:30 AM	72	30
86	1/13/2010	08:45 AM	60	26
87	1/13/2010	09:00 AM	49	29
88	1/13/2010	09:15 AM	46	25
89	1/13/2010	09:30 AM	34	25
90	1/13/2010	09:45 AM	35	24
91	1/13/2010	10:00 AM	55	30
92	1/13/2010	10:15 AM	44	24
93	1/13/2010	10:30 AM	39	21
94	1/13/2010	10:45 AM	42	23
95	1/13/2010	11:00 AM	41	21
96	1/13/2010	11:15 AM	42	20
97	1/13/2010	11:30 AM	43	18
98	1/13/2010	11:45 AM	69	24
99	1/13/2010	12:00 PM	57	24
100	1/13/2010	12:15 PM	43	30
101	1/13/2010	12:30 PM	44	29

Number	Date	Time	NB	SB
102	1/13/2010	12:45 PM	54	47
103	1/13/2010	01:00 PM	57	22
104	1/13/2010	01:15 PM	54	23
105	1/13/2010	01:30 PM	47	24
106	1/13/2010	01:45 PM	42	19
107	1/13/2010	02:00 PM	67	31
108	1/13/2010	02:15 PM	65	30
109	1/13/2010	02:30 PM	68	37
110	1/13/2010	02:45 PM	77	42
111	1/13/2010	03:00 PM	78	33
112	1/13/2010	03:15 PM	69	40
113	1/13/2010	03:30 PM	67	27
114	1/13/2010	03:45 PM	76	26
115	1/13/2010	04:00 PM	85	24
116	1/13/2010	04:15 PM	89	21
117	1/13/2010	04:30 PM	89	30
118	1/13/2010	04:45 PM	82	34
119	1/13/2010	05:00 PM	80	34
120	1/13/2010	05:15 PM	77	33
121	1/13/2010	05:30 PM	74	33
122	1/13/2010	05:45 PM	97	28
123	1/13/2010	06:00 PM	95	30
124	1/13/2010	06:15 PM	93	34
125	1/13/2010	06:30 PM	92	28
126	1/13/2010	06:45 PM	97	31
127	1/13/2010	07:00 PM	74	33
128	1/13/2010	07:15 PM	100	24
129	1/13/2010	07:30 PM	93	26
130	1/13/2010	07:45 PM	78	15
131	1/13/2010	08:00 PM	65	19
132	1/13/2010	08:15 PM	58	24
133	1/13/2010	08:30 PM	62	11
134	1/13/2010	08:45 PM	40	13
135	1/13/2010	09:00 PM	40	12
136	1/13/2010	09:15 PM	32	13
137	1/13/2010	09:30 PM	37	8
138	1/13/2010	09:45 PM	43	12
139	1/13/2010	10:00 PM	33	9
140	1/13/2010	10:15 PM	34	8
141	1/13/2010	10:30 PM	28	8
142	1/13/2010	10:45 PM	36	3
143	1/13/2010	11:00 PM	23	8
144	1/13/2010	11:15 PM	28	8
145	1/13/2010	11:30 PM	21	5
146	1/13/2010	11:45 PM	16	5
147	1/14/2010	12:00 AM	30	1
148	1/14/2010	12:15 AM	15	2
149	1/14/2010	12:30 AM	26	2
150	1/14/2010	12:45 AM	12	8
151	1/14/2010	01:00 AM	10	4
152	1/14/2010	01:15 AM	10	3
153	1/14/2010	01:30 AM	9	1
154	1/14/2010	01:45 AM	10	0
155	1/14/2010	02:00 AM	6	0
156	1/14/2010	02:15 AM	10	1
157	1/14/2010	02:30 AM	13	3
158	1/14/2010	02:45 AM	7	0
159	1/14/2010	03:00 AM	1	0

Number	Date	Time	NB	SB
160	1/14/2010	03:15 AM	6	1
161	1/14/2010	03:30 AM	6	2
162	1/14/2010	03:45 AM	7	3
163	1/14/2010	04:00 AM	4	3
164	1/14/2010	04:15 AM	0	1
165	1/14/2010	04:30 AM	1	1
166	1/14/2010	04:45 AM	10	0
167	1/14/2010	05:00 AM	8	3
168	1/14/2010	05:15 AM	11	4
169	1/14/2010	05:30 AM	7	6
170	1/14/2010	05:45 AM	26	11
171	1/14/2010	06:00 AM	19	9
172	1/14/2010	06:15 AM	18	12
173	1/14/2010	06:30 AM	31	13
174	1/14/2010	06:45 AM	35	9
175	1/14/2010	07:00 AM	42	25
176	1/14/2010	07:15 AM	53	28
177	1/14/2010	07:30 AM	46	32
178	1/14/2010	07:45 AM	67	24
179	1/14/2010	08:00 AM	60	30
180	1/14/2010	08:15 AM	48	40
181	1/14/2010	08:30 AM	66	30
182	1/14/2010	08:45 AM	67	24
183	1/14/2010	09:00 AM	45	44
184	1/14/2010	09:15 AM	49	29
185	1/14/2010	09:30 AM	38	33
186	1/14/2010	09:45 AM	37	27
187	1/14/2010	10:00 AM	44	24
188	1/14/2010	10:15 AM	48	23
189	1/14/2010	10:30 AM	41	24
190	1/14/2010	10:45 AM	48	31
191	1/14/2010	11:00 AM	43	24
192	1/14/2010	11:15 AM	36	21
193	1/14/2010	11:30 AM	42	21
194	1/14/2010	11:45 AM	59	27
195	1/14/2010	12:00 PM	50	32
196	1/14/2010	12:15 PM	43	29
197	1/14/2010	12:30 PM	50	40

Volume				
File Name: Untitled Volume				
Start Date: 1/12/2010				
Start Time: 12:00:00 PM				
Site Code: #3 Sayre Rd South of Vaux Hall Rd				
Station ID:				
Location 1:				
Location 2:				
Longitude: -999' 0.000 South				
Latidude: -999' 0.000 East				
Project:CC 897				
Station;#3				
Location:Sayers				
City: Union County NJ.				
Number	Date	Time	SB	NB
1	1/12/2010	12:00 PM	24	14
2	1/12/2010	12:15 PM	46	31
3	1/12/2010	12:30 PM	41	19
4	1/12/2010	12:45 PM	42	16
5	1/12/2010	01:00 PM	34	14
6	1/12/2010	01:15 PM	35	22
7	1/12/2010	01:30 PM	47	23
8	1/12/2010	01:45 PM	43	25
9	1/12/2010	02:00 PM	43	29
10	1/12/2010	02:15 PM	31	21
11	1/12/2010	02:30 PM	38	30
12	1/12/2010	02:45 PM	43	17
13	1/12/2010	03:00 PM	40	28
14	1/12/2010	03:15 PM	39	26
15	1/12/2010	03:30 PM	42	38
16	1/12/2010	03:45 PM	62	50
17	1/12/2010	04:00 PM	33	31
18	1/12/2010	04:15 PM	50	29
19	1/12/2010	04:30 PM	46	32
20	1/12/2010	04:45 PM	56	25
21	1/12/2010	05:00 PM	39	31
22	1/12/2010	05:15 PM	50	29
23	1/12/2010	05:30 PM	46	32
24	1/12/2010	05:45 PM	48	37
25	1/12/2010	06:00 PM	50	36
26	1/12/2010	06:15 PM	76	39
27	1/12/2010	06:30 PM	49	29
28	1/12/2010	06:45 PM	45	32
29	1/12/2010	07:00 PM	49	33
30	1/12/2010	07:15 PM	30	28
31	1/12/2010	07:30 PM	33	31
32	1/12/2010	07:45 PM	41	28
33	1/12/2010	08:00 PM	32	27
34	1/12/2010	08:15 PM	39	15
35	1/12/2010	08:30 PM	18	18
36	1/12/2010	08:45 PM	19	16
37	1/12/2010	09:00 PM	17	14
38	1/12/2010	09:15 PM	19	17
39	1/12/2010	09:30 PM	30	25
40	1/12/2010	09:45 PM	23	30
41	1/12/2010	10:00 PM	20	48
42	1/12/2010	10:15 PM	22	45
43	1/12/2010	10:30 PM	18	35

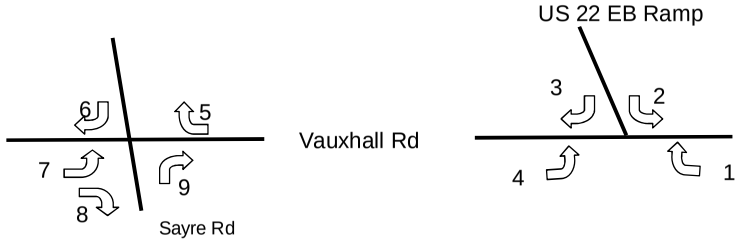
Number	Date	Time	SB	NB
44	1/12/2010	10:45 PM	14	26
45	1/12/2010	11:00 PM	23	16
46	1/12/2010	11:15 PM	9	11
47	1/12/2010	11:30 PM	8	12
48	1/12/2010	11:45 PM	6	16
49	1/13/2010	12:00 AM	9	14
50	1/13/2010	12:15 AM	9	15
51	1/13/2010	12:30 AM	7	7
52	1/13/2010	12:45 AM	7	7
53	1/13/2010	01:00 AM	8	6
54	1/13/2010	01:15 AM	3	2
55	1/13/2010	01:30 AM	7	3
56	1/13/2010	01:45 AM	1	3
57	1/13/2010	02:00 AM	3	2
58	1/13/2010	02:15 AM	3	8
59	1/13/2010	02:30 AM	2	1
60	1/13/2010	02:45 AM	2	4
61	1/13/2010	03:00 AM	5	0
62	1/13/2010	03:15 AM	1	1
63	1/13/2010	03:30 AM	1	2
64	1/13/2010	03:45 AM	6	2
65	1/13/2010	04:00 AM	0	3
66	1/13/2010	04:15 AM	2	4
67	1/13/2010	04:30 AM	2	2
68	1/13/2010	04:45 AM	2	3
69	1/13/2010	05:00 AM	9	1
70	1/13/2010	05:15 AM	9	1
71	1/13/2010	05:30 AM	12	3
72	1/13/2010	05:45 AM	14	4
73	1/13/2010	06:00 AM	18	3
74	1/13/2010	06:15 AM	25	4
75	1/13/2010	06:30 AM	28	6
76	1/13/2010	06:45 AM	33	8
77	1/13/2010	07:00 AM	44	12
78	1/13/2010	07:15 AM	40	10
79	1/13/2010	07:30 AM	37	6
80	1/13/2010	07:45 AM	43	12
81	1/13/2010	08:00 AM	50	12
82	1/13/2010	08:15 AM	43	14
83	1/13/2010	08:30 AM	55	16
84	1/13/2010	08:45 AM	35	21
85	1/13/2010	09:00 AM	45	17
86	1/13/2010	09:15 AM	38	11
87	1/13/2010	09:30 AM	37	11
88	1/13/2010	09:45 AM	52	18
89	1/13/2010	10:00 AM	31	15
90	1/13/2010	10:15 AM	29	12
91	1/13/2010	10:30 AM	33	13
92	1/13/2010	10:45 AM	31	18
93	1/13/2010	11:00 AM	36	24
94	1/13/2010	11:15 AM	29	14
95	1/13/2010	11:30 AM	44	24
96	1/13/2010	11:45 AM	35	14
97	1/13/2010	12:00 PM	28	27
98	1/13/2010	12:15 PM	31	20
99	1/13/2010	12:30 PM	44	20
100	1/13/2010	12:45 PM	31	25
101	1/13/2010	01:00 PM	33	32

Number	Date	Time	SB	NB
102	1/13/2010	01:15 PM	47	28
103	1/13/2010	01:30 PM	39	31
104	1/13/2010	01:45 PM	38	21
105	1/13/2010	02:00 PM	52	28
106	1/13/2010	02:15 PM	37	31
107	1/13/2010	02:30 PM	45	30
108	1/13/2010	02:45 PM	29	27
109	1/13/2010	03:00 PM	40	29
110	1/13/2010	03:15 PM	41	29
111	1/13/2010	03:30 PM	37	35
112	1/13/2010	03:45 PM	38	33
113	1/13/2010	04:00 PM	45	23
114	1/13/2010	04:15 PM	55	36
115	1/13/2010	04:30 PM	62	35
116	1/13/2010	04:45 PM	64	30
117	1/13/2010	05:00 PM	48	28
118	1/13/2010	05:15 PM	43	28
119	1/13/2010	05:30 PM	39	30
120	1/13/2010	05:45 PM	42	34
121	1/13/2010	06:00 PM	41	26
122	1/13/2010	06:15 PM	44	26
123	1/13/2010	06:30 PM	52	33
124	1/13/2010	06:45 PM	40	28
125	1/13/2010	07:00 PM	28	34
126	1/13/2010	07:15 PM	55	42
127	1/13/2010	07:30 PM	34	30
128	1/13/2010	07:45 PM	31	20
129	1/13/2010	08:00 PM	37	19
130	1/13/2010	08:15 PM	37	22
131	1/13/2010	08:30 PM	26	29
132	1/13/2010	08:45 PM	17	20
133	1/13/2010	09:00 PM	19	22
134	1/13/2010	09:15 PM	20	19
135	1/13/2010	09:30 PM	20	29
136	1/13/2010	09:45 PM	18	24
137	1/13/2010	10:00 PM	16	19
138	1/13/2010	10:15 PM	15	44
139	1/13/2010	10:30 PM	15	26
140	1/13/2010	10:45 PM	11	13
141	1/13/2010	11:00 PM	12	15
142	1/13/2010	11:15 PM	16	22
143	1/13/2010	11:30 PM	8	4
144	1/13/2010	11:45 PM	7	4
145	1/14/2010	12:00 AM	9	22
146	1/14/2010	12:15 AM	3	6
147	1/14/2010	12:30 AM	6	6
148	1/14/2010	12:45 AM	6	1
149	1/14/2010	01:00 AM	4	4
150	1/14/2010	01:15 AM	1	1
151	1/14/2010	01:30 AM	2	3
152	1/14/2010	01:45 AM	3	5
153	1/14/2010	02:00 AM	4	10
154	1/14/2010	02:15 AM	1	8
155	1/14/2010	02:30 AM	3	4
156	1/14/2010	02:45 AM	3	5
157	1/14/2010	03:00 AM	0	0
158	1/14/2010	03:15 AM	5	1
159	1/14/2010	03:30 AM	4	2

Number	Date	Time	SB	NB
160	1/14/2010	03:45 AM	1	0
161	1/14/2010	04:00 AM	2	1
162	1/14/2010	04:15 AM	3	2
163	1/14/2010	04:30 AM	3	2
164	1/14/2010	04:45 AM	4	2
165	1/14/2010	05:00 AM	9	1
166	1/14/2010	05:15 AM	5	2
167	1/14/2010	05:30 AM	11	4
168	1/14/2010	05:45 AM	16	3
169	1/14/2010	06:00 AM	19	3
170	1/14/2010	06:15 AM	21	4
171	1/14/2010	06:30 AM	34	7
172	1/14/2010	06:45 AM	34	10
173	1/14/2010	07:00 AM	49	12
174	1/14/2010	07:15 AM	35	16
175	1/14/2010	07:30 AM	37	15
176	1/14/2010	07:45 AM	38	3
177	1/14/2010	08:00 AM	55	19
178	1/14/2010	08:15 AM	51	23
179	1/14/2010	08:30 AM	48	19
180	1/14/2010	08:45 AM	49	15
181	1/14/2010	09:00 AM	69	29
182	1/14/2010	09:15 AM	58	18
183	1/14/2010	09:30 AM	50	14
184	1/14/2010	09:45 AM	44	23
185	1/14/2010	10:00 AM	28	11
186	1/14/2010	10:15 AM	28	20
187	1/14/2010	10:30 AM	29	23
188	1/14/2010	10:45 AM	35	11
189	1/14/2010	11:00 AM	30	11
190	1/14/2010	11:15 AM	41	18
191	1/14/2010	11:30 AM	36	14
192	1/14/2010	11:45 AM	33	22
193	1/14/2010	12:00 PM	36	30
194	1/14/2010	12:15 PM	29	29
195	1/14/2010	12:30 PM	38	38
196	1/14/2010	12:45 PM	60	40

THE LOUIS BERGER GROUP TRAFFIC COUNT SUMMARY

PROJECT NO: US 22 - Vaux Hall Improvements
STREET 1: Vaux Hall Road
STREET 2: US 22
TOWN: Union Township
COUNTY: Union, NJ
DATE(S): March 2, 2010
DAY OF WEEK Wednesday
TIME(S): 7-9-am, 4-6:30-pm
WEATHER: Overcast



TIME PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	GRAND TOTAL
6:00- 6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15- 6:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30- 6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45- 7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOUR TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00- 7:15	17	14	71	97	55	67	46	55	18	0	0	0	0	0	0	0	0	0	440
7:15- 7:30	11	9	68	112	61	79	53	43	15	0	0	0	0	0	0	0	0	0	451
7:30- 7:45	12	15	65	107	47	83	55	46	9	0	0	0	0	0	0	0	0	0	439
7:45- 8:00	7	11	52	105	57	72	47	52	11	0	0	0	0	0	0	0	0	0	414
HOUR TOTAL	47	49	256	421	220	301	201	196	53	0	0	0	0	0	0	0	0	0	1744
8:00- 8:15	9	12	47	95	69	95	56	51	14	0	0	0	0	0	0	0	0	0	448
8:15- 8:30	4	11	52	88	41	57	45	49	13	0	0	0	0	0	0	0	0	0	360
8:30- 8:45	11	11	66	75	38	44	34	42	17	0	0	0	0	0	0	0	0	0	338
8:45- 9:00	13	4	32	93	46	58	44	39	15	0	0	0	0	0	0	0	0	0	344
HOUR TOTAL	37	38	197	351	194	254	179	181	59	0	0	0	0	0	0	0	0	0	1490
9:00- 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15- 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30- 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45-10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOUR TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

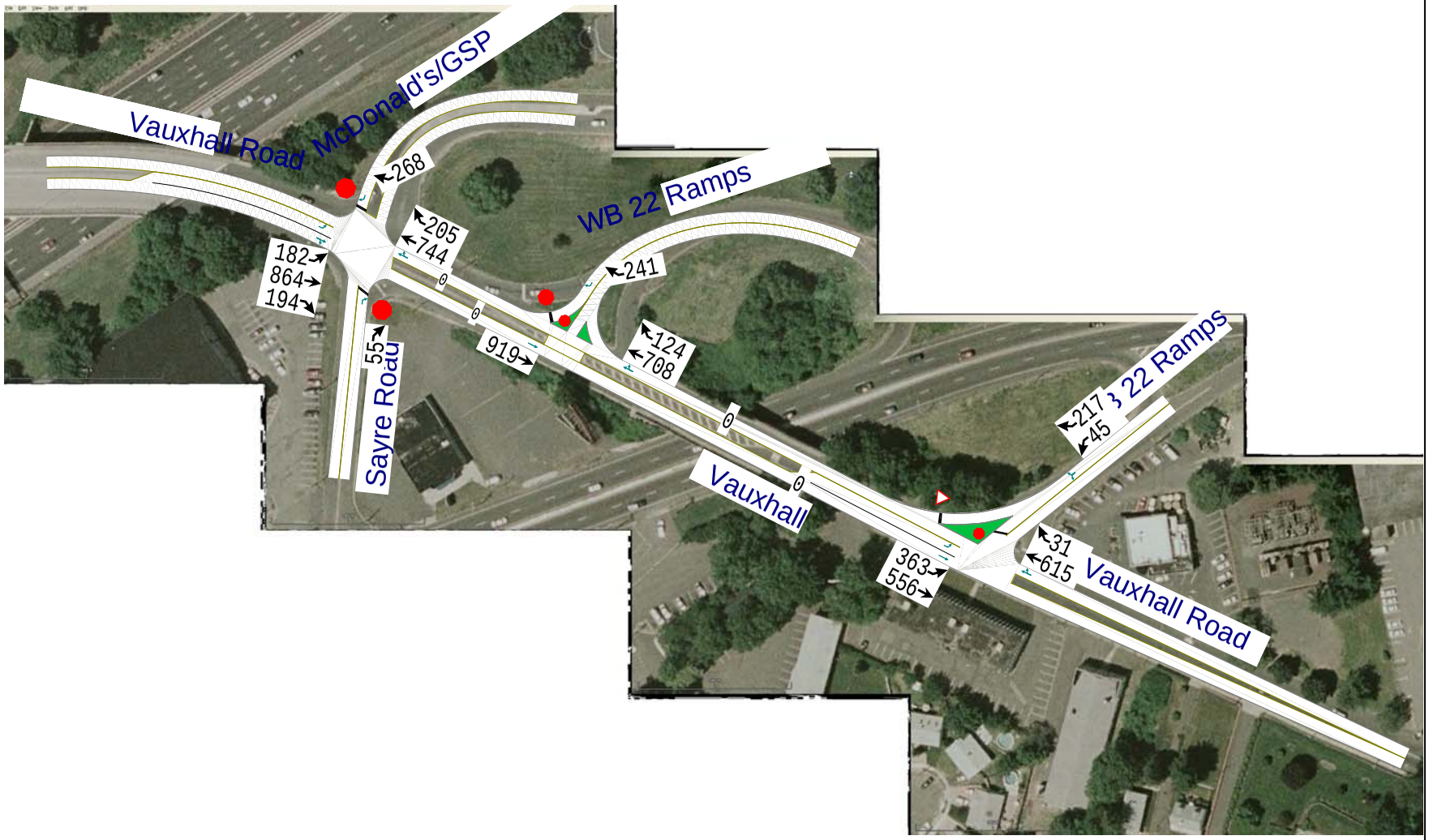
TIME PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	GRAND TOTAL
10:00-10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15-10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30-10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45-11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOUR TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOUR TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45- 1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOUR TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00- 1:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15- 1:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30- 1:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45- 2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOUR TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00- 2:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15- 2:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30- 2:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45- 3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOUR TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00- 3:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15- 3:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30- 3:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45- 4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOUR TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TIME PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	GRAND TOTAL
4:00- 4:15	4	23	141	57	53	56	33	41	28	0	0	0	0	0	0	0	0	0	436
4:15- 4:30	3	22	146	51	56	58	32	39	31	0	0	0	0	0	0	0	0	0	438
4:30- 4:45	7	25	127	72	69	55	33	65	38	0	0	0	0	0	0	0	0	0	491
4:45- 5:00	6	37	133	56	49	34	22	49	45	0	0	0	0	0	0	0	0	0	431
HOUR TOTAL	20	107	547	236	227	203	120	194	142	0	0	0	0	0	0	0	0	0	1796
5:00- 5:15	5	13	111	39	60	59	51	58	41	0	0	0	0	0	0	0	0	0	437
5:15- 5:30	6	19	107	43	51	45	29	38	30	0	0	0	0	0	0	0	0	0	368
5:30- 5:45	3	23	105	59	43	45	21	53	24	0	0	0	0	0	0	0	0	0	376
5:45- 6:00	3	20	116	65	44	47	22	56	36	0	0	0	0	0	0	0	0	0	409
HOUR TOTAL	17	75	439	206	198	196	123	205	131	0	0	0	0	0	0	0	0	0	1590
6:00- 6:15	4	18	107	62	28	26	30	53	36	0	0	0	0	0	0	0	0	0	364
6:15- 6:30	3	19	103	51	27	24	29	49	31	0	0	0	0	0	0	0	0	0	336
6:30- 6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45- 7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOUR TOTAL	7	37	210	113	55	50	59	102	67	0	0	0	0	0	0	0	0	0	700
GRAND TOTAL	128	306	1649	1327	894	1004	682	878	452	0	0	0	0	0	0	0	0	0	7320

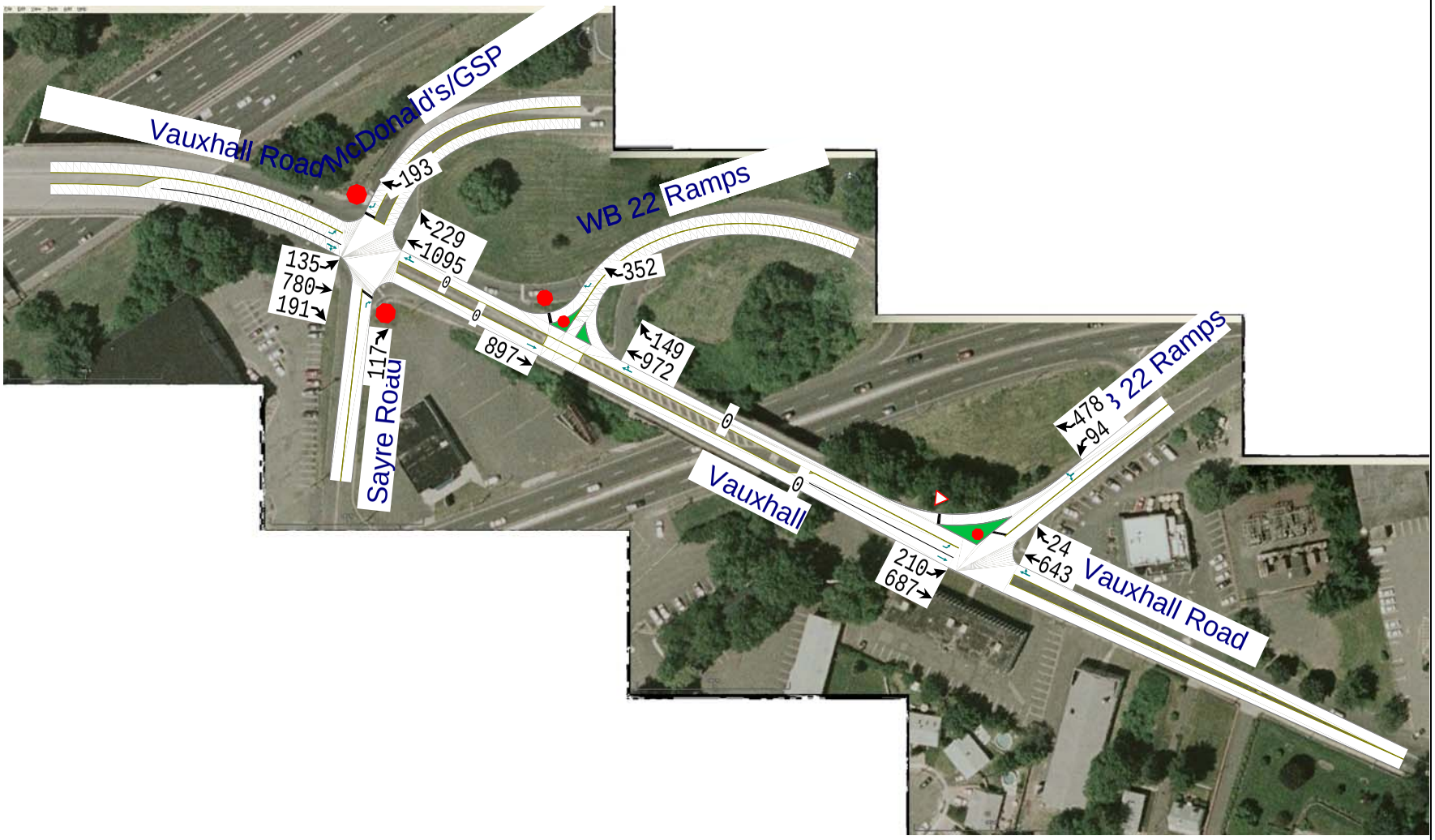
PEAK HOUR VOLUMES:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	TOTAL
7:15- 8:15	39	47	232	419	234	329	211	192	49	0	0	0	0	0	0	0	0	0	1752
----------	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15- 5:15	21	97	517	218	234	206	138	211	155	0	0	0	0	0	0	0	0	0	1797

PEAK HOUR FACTORS:																			
7:15- 8:15	0.81	0.78	0.85	0.94	0.85	0.87	0.94	0.92	0.82	----	----	----	----	----	----	----	----	----	
----------	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
4:15- 5:15	0.75	0.66	0.89	0.76	0.85	0.87	0.68	0.81	0.86	----	----	----	----	----	----	----	----	----	

Existing - AM Volumes - 2010



Existing - PM Volumes - 2010



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	744	205	182	864	194	0	0	55	0	0	268
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	809	223	198	939	211	0	0	60	0	0	291
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1150			1032			2652	2472	1045	2315	2466	920
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1150			1032			2652	2472	1045	2315	2466	920
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			71			100	100	78	100	100	11
cM capacity (veh/h)	608			674			1	21	278	16	21	328

Direction, Lane #	NB 1	SB 1	SB 2	NE 1	SW 1
Volume Total	1032	198	1150	60	291
Volume Left	0	198	0	0	0
Volume Right	223	0	211	60	291
cSH	1700	674	1700	278	328
Volume to Capacity	0.61	0.29	0.68	0.22	0.89
Queue Length 95th (ft)	0	31	0	20	210
Control Delay (s)	0.0	12.6	0.0	21.5	61.5
Lane LOS		B		C	F
Approach Delay (s)	0.0	1.8		21.5	61.5
Approach LOS				C	F

Intersection Summary				
Average Delay	7.9			
Intersection Capacity Utilization	74.9%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	45	217	615	31	363	556
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	236	668	34	395	604
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2079	685			702	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2079	685			702	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	47			56	
cM capacity (veh/h)	33	448			895	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	285	702	395	604
Volume Left	49	0	395	0
Volume Right	236	34	0	0
cSH	141	1700	895	1700
Volume to Capacity	2.02	0.41	0.44	0.36
Queue Length 95th (ft)	566	0	57	0
Control Delay (s)	533.6	0.0	12.2	0.0
Lane LOS	F		B	
Approach Delay (s)	533.6	0.0	4.8	
Approach LOS	F			

Intersection Summary			
Average Delay	78.9		
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	241	708	124	0	919
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	262	770	135	0	999
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1836	837			770	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1836	837			770	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	29			100	
cM capacity (veh/h)	83	367			845	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	262	904	999
Volume Left	0	0	0
Volume Right	262	135	0
cSH	367	1700	1700
Volume to Capacity	0.71	0.53	0.59
Queue Length 95th (ft)	133	0	0
Control Delay (s)	35.9	0.0	0.0
Lane LOS	E		
Approach Delay (s)	35.9	0.0	0.0
Approach LOS	E		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	1095	229	135	780	191	0	0	117	0	0	193
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1190	249	147	848	208	0	0	127	0	0	210
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1055			1439			2770	2684	952	2583	2664	1315
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1055			1439			2770	2684	952	2583	2664	1315
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			69			0	100	60	100	100	0
cM capacity (veh/h)	660			471			0	15	315	8	16	193

Direction, Lane #	NB 1	SB 1	SB 2	NE 1	SW 1
Volume Total	1439	147	1055	127	210
Volume Left	0	147	0	0	0
Volume Right	249	0	208	127	210
cSH	1700	471	1700	315	193
Volume to Capacity	0.85	0.31	0.62	0.40	1.09
Queue Length 95th (ft)	0	33	0	47	249
Control Delay (s)	0.0	16.0	0.0	24.0	140.5
Lane LOS		C		C	F
Approach Delay (s)	0.0	2.0		24.0	140.5
Approach LOS				C	F

Intersection Summary				
Average Delay	11.7			
Intersection Capacity Utilization	90.2%	ICU Level of Service		E
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	94	478	643	24	210	687
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	102	520	699	26	228	747
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1915	712			725	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1915	712			725	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			74	
cM capacity (veh/h)	55	432			878	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	622	725	228	747
Volume Left	102	0	228	0
Volume Right	520	26	0	0
cSH	203	1700	878	1700
Volume to Capacity	3.06	0.43	0.26	0.44
Queue Length 95th (ft)	Err	0	26	0
Control Delay (s)	Err	0.0	10.5	0.0
Lane LOS	F		B	
Approach Delay (s)	Err	0.0	2.5	
Approach LOS	F			

Intersection Summary			
Average Delay	2678.7		
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	352	972	149	0	897
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	383	1057	162	0	975
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2112	1138			1057	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2112	1138			1057	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	0			100	
cM capacity (veh/h)	56	245			659	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	383	1218	975
Volume Left	0	0	0
Volume Right	383	162	0
cSH	245	1700	1700
Volume to Capacity	1.56	0.72	0.57
Queue Length 95th (ft)	583	0	0
Control Delay (s)	307.2	0.0	0.0
Lane LOS	F		
Approach Delay (s)	307.2	0.0	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	45.6		
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		

Intersection and Approach	Lane Group	AM Peak Hour				PM Peak Hour			
		Delay (sec.)	LOS	V/C Ratio	Queue (ft.)	Delay (sec.)	LOS	V/C Ratio	Queue (ft.)
EXISTING CONDITIONS									
2010 Volumes w/ Ex. Lane Geometry									
Vauxhall Road & Sayre Road/GSP McDonald's (Unsignalized)									
Northbound Vauxhall Road	TR	0.0		0.61		0.0		0.85	
Southbound Vauxhall Road	L	12.6	B	0.29	31	16.0	C	0.31	33
	TR	0.0		0.68		0.0		0.62	
Eastbound Sayre Road	R	21.5	C	0.22	20	24.0	C	0.40	47
Westbound GSP/McDonald's	R	61.5	F	0.89	210	140.5	F	1.09	249
Overall Intersection		7.9				11.7			
Vauxhall Road & WB US Route 22 Ramps (Unsignalized)									
Westbound WB US Route 22 Ramps	R	35.9	E	0.71	133	307.2	F	1.56	583
Northbound Vauxhall Road	TR	0.0		0.53		0.0		0.72	
Southbound Vauxhall Road	T	0.0		0.59		0.0		0.57	
Overall Intersection		4.3				45.6			
Vauxhall Road & EB US Route 22 Ramps (Unsignalized)									
Westbound EB US Route 22 Ramps	LR	533.6	F	2.02	566	*	F	3.06	-
Northbound Vauxhall Road	TR	0.0		0.41		0.0		0.43	
Southbound Vauxhall Road	L	12.2	B	0.44	57	10.5	B	0.26	26
	T	0.0		0.36		0.0		0.44	
Overall Intersection		78.9				2678.7			

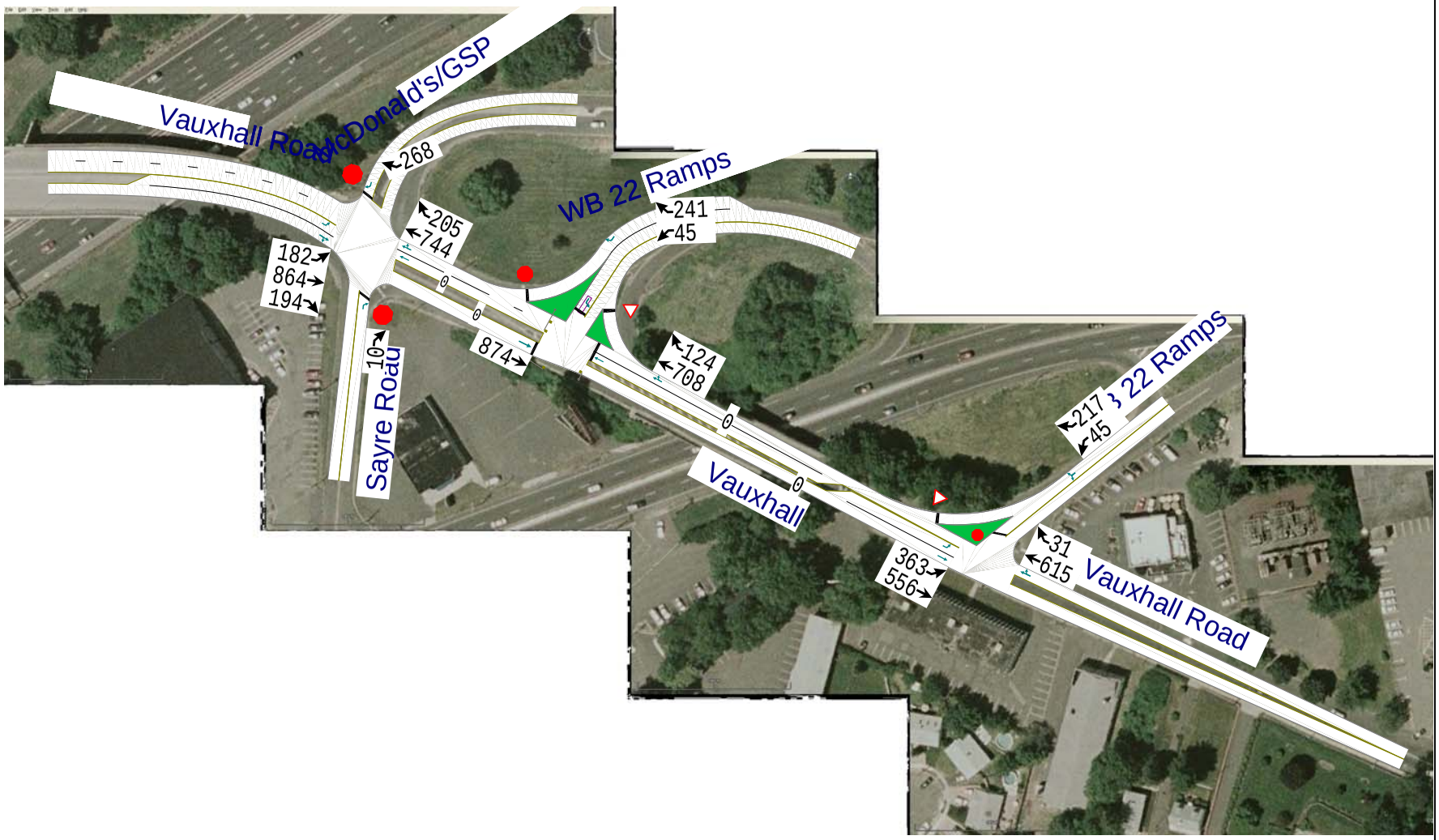
Notes:

(*) Intersection or Approach exceeds capacity and delay.

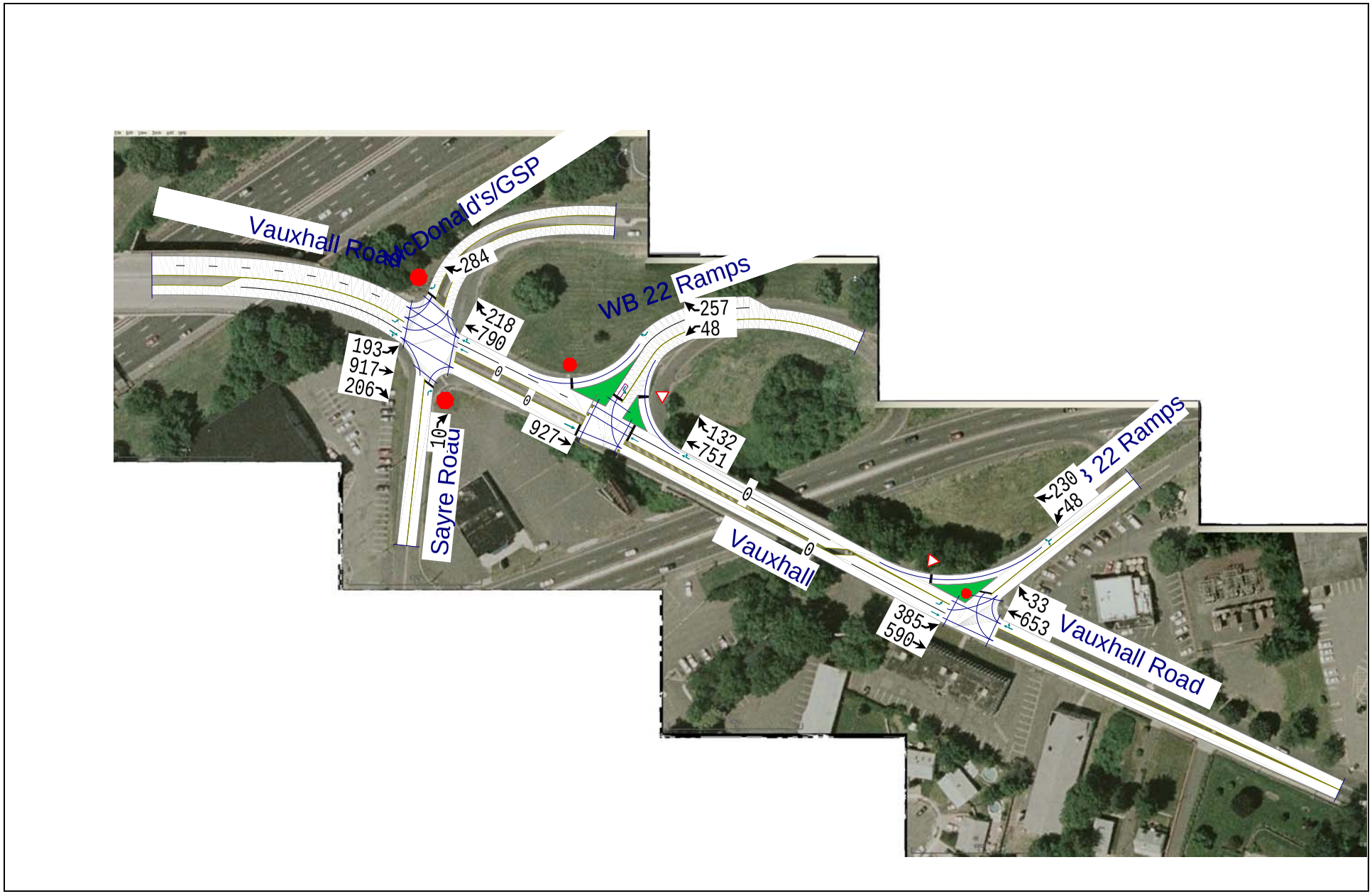
(#) 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maxiumum after two cycles.

Shading represents movements with poor operational conditions, LOS E & F.

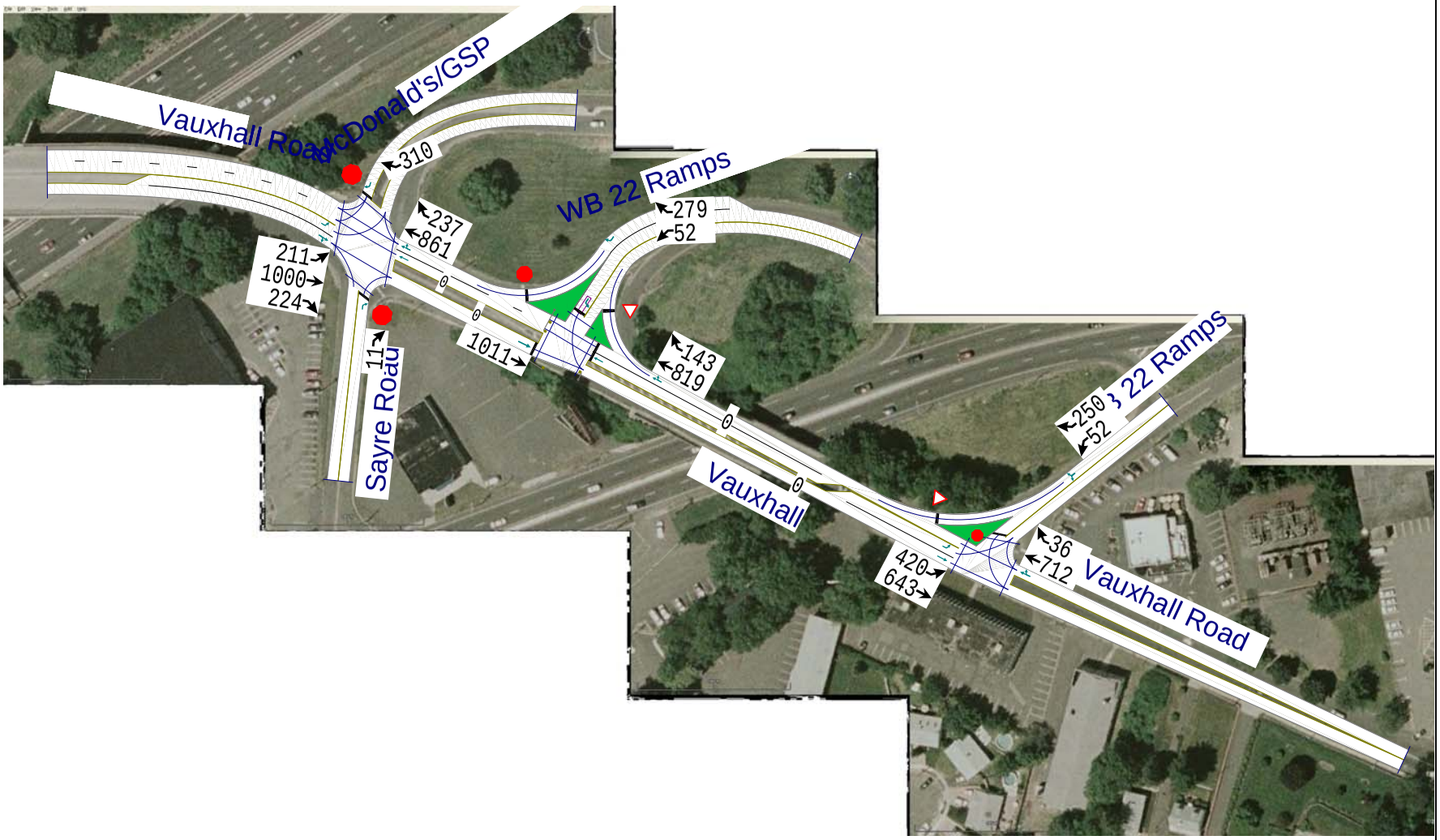
Alternative 2 - AM Volumes - 2010



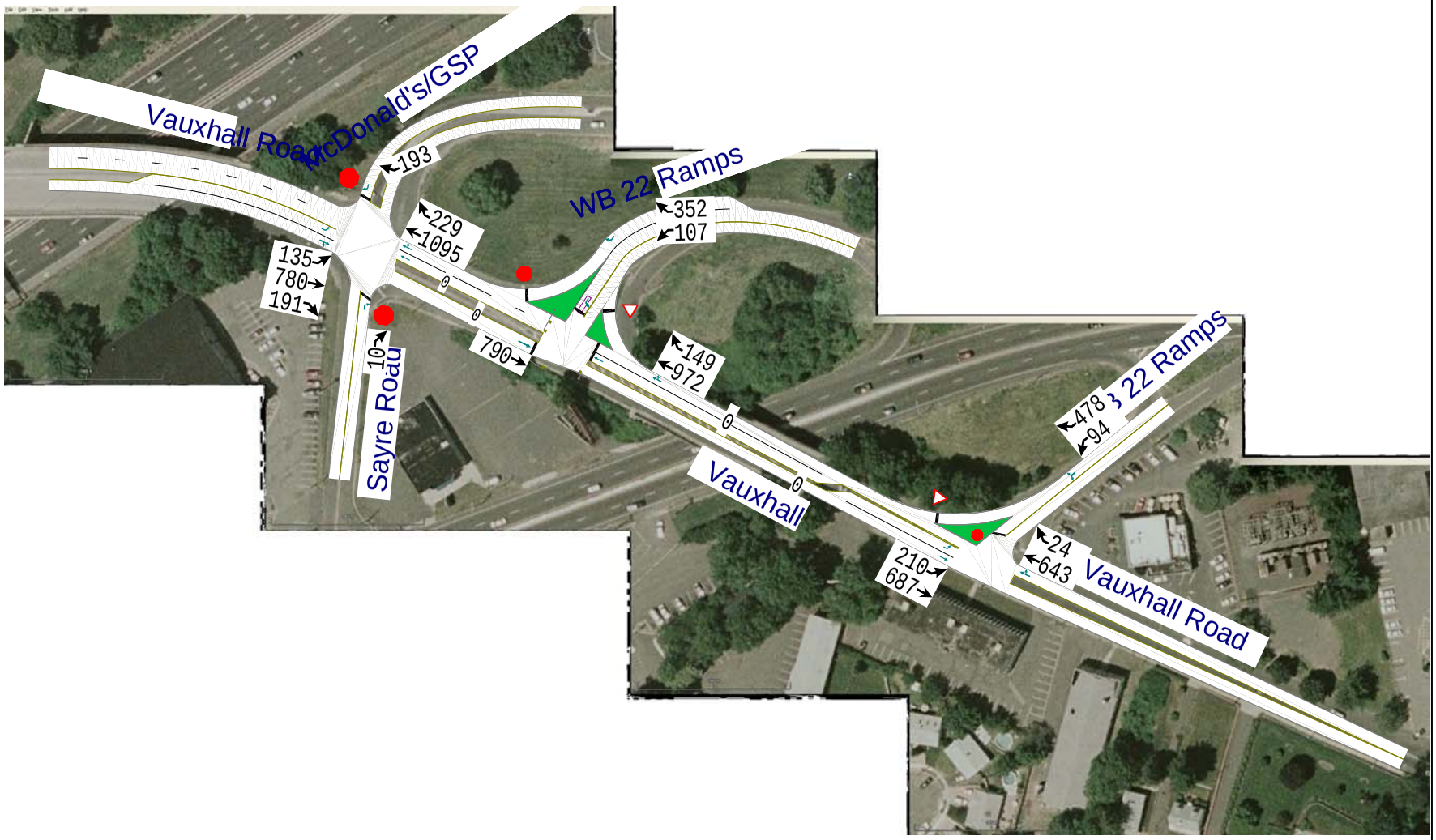
Alternative 2 - AM Volumes - 2013



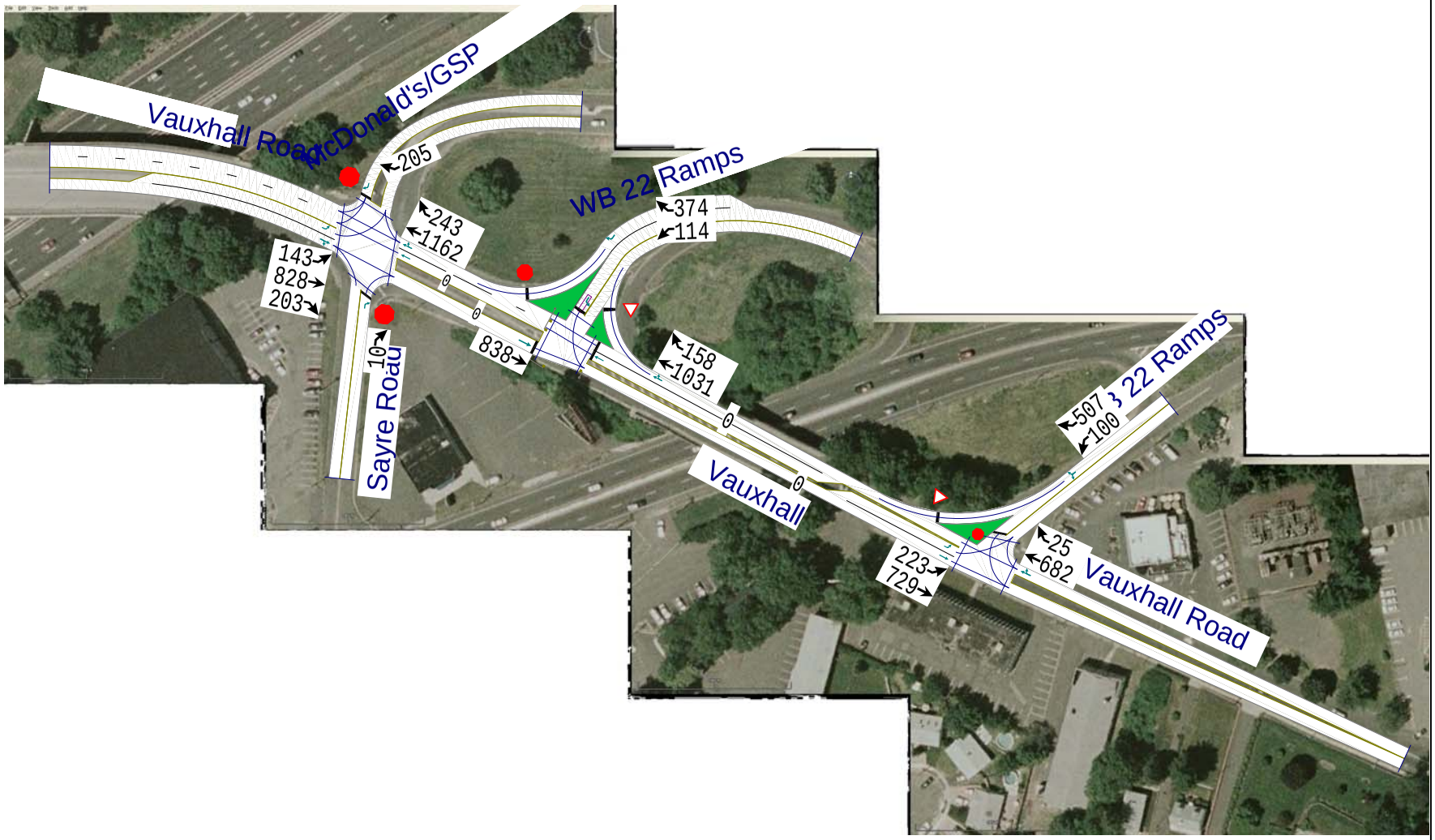
Alternative 2 - AM Volumes - 2033



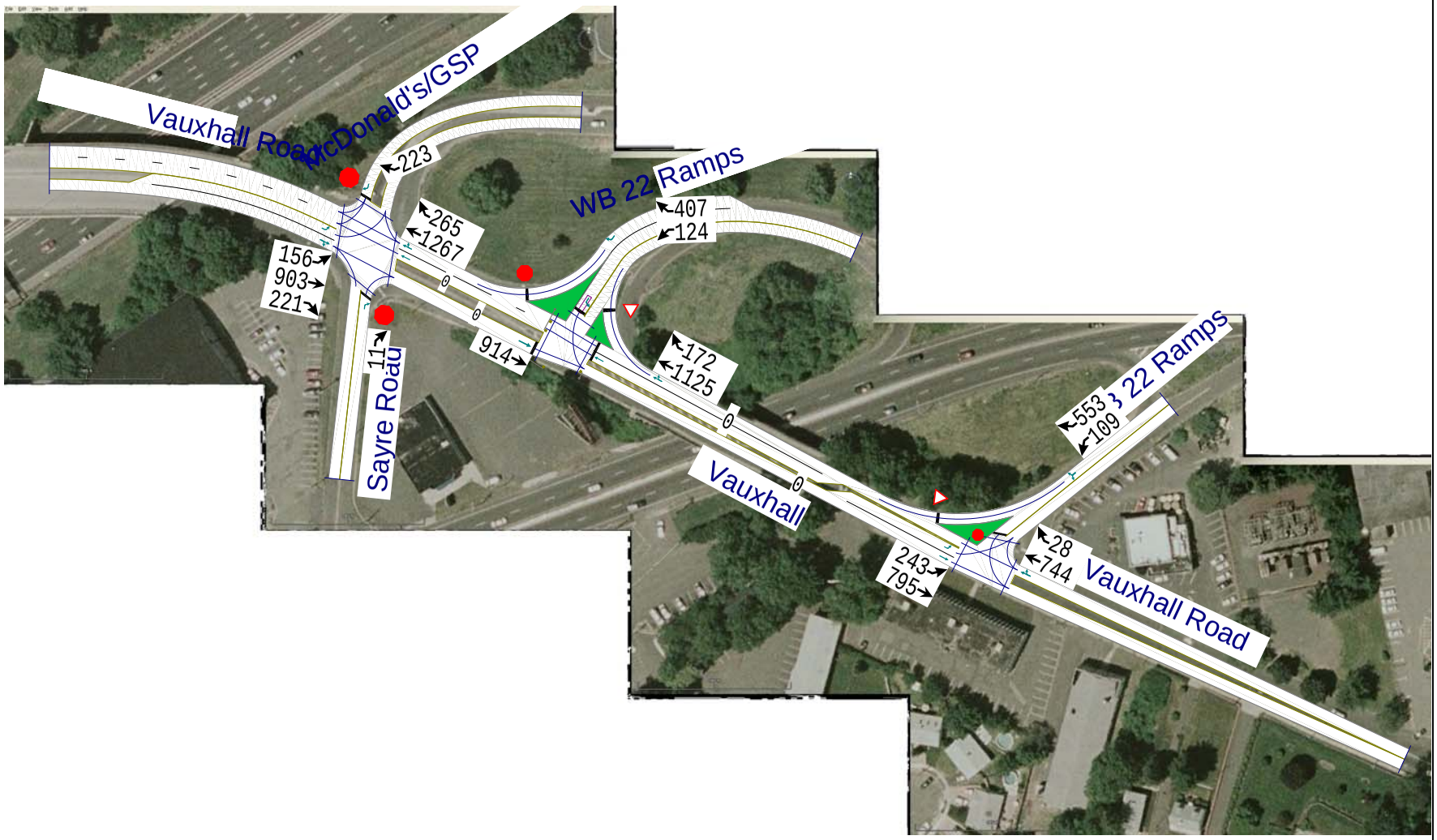
Alternative 2 - PM Volumes - 2010



Alternative 2 - PM Volumes - 2013



Alternative 2 - PM Volumes - 2033



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	744	205	182	864	194	0	0	10	0	0	268
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	845	233	207	982	220	0	0	11	0	0	305
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		233										
pX, platoon unblocked				0.92			0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	1202			1078			2233	2584	1092	2369	2578	539
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1202			903			2163	2546	1092	2311	2539	314
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			70			100	100	95	100	100	51
cM capacity (veh/h)	576			686			10	17	210	14	17	624

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NE 1	SW 1
Volume Total	564	515	207	1202	11	305
Volume Left	0	0	207	0	0	0
Volume Right	0	233	0	220	11	305
cSH	1700	1700	686	1700	210	624
Volume to Capacity	0.33	0.30	0.30	0.71	0.05	0.49
Queue Length 95th (ft)	0	0	32	0	4	67
Control Delay (s)	0.0	0.0	12.5	0.0	23.2	16.1
Lane LOS			B		C	C
Approach Delay (s)	0.0		1.8		23.2	16.1
Approach LOS					C	C

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	67.3%	ICU Level of Service	C	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	45	217	615	31	363	556
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	51	247	699	35	412	632
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						500
pX, platoon unblocked	0.83					
vC, conflicting volume	2173	716			734	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2314	716			734	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	43			53	
cM capacity (veh/h)	18	430			871	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	298	734	412	632
Volume Left	51	0	412	0
Volume Right	247	35	0	0
cSH	88	1700	871	1700
Volume to Capacity	3.39	0.43	0.47	0.37
Queue Length 95th (ft)	Err	0	65	0
Control Delay (s)	Err	0.0	12.8	0.0
Lane LOS	F		B	
Approach Delay (s)	Err	0.0	5.1	
Approach LOS	F			

Intersection Summary			
Average Delay	1436.4		
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

Queues



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	51	274	946	993
v/c Ratio	0.23	0.65	0.39	0.68
Control Delay	27.0	13.6	3.9	7.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.0	13.6	3.9	7.6
Queue Length 50th (ft)	17	7	53	148
Queue Length 95th (ft)	44	#66	73	235
Internal Link Dist (ft)	294		420	153
Turn Bay Length (ft)		200		
Base Capacity (vph)	220	421	2398	1468
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.65	0.39	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	45	241	708	124	0	874
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	14	11	14	12	15
Total Lost time (s)	5.0	5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	0.95			1.00
Frt	1.00	0.85	0.98			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1888	1689	3345			2049
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1888	1689	3345			2049
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	51	274	805	141	0	993
RTOR Reduction (vph)	0	223	0	0	0	0
Lane Group Flow (vph)	51	51	946	0	0	993
Turn Type		Perm				
Protected Phases	6		8			4
Permitted Phases		6				
Actuated Green, G (s)	7.0	7.0	43.0			43.0
Effective Green, g (s)	7.0	7.0	43.0			43.0
Actuated g/C Ratio	0.12	0.12	0.72			0.72
Clearance Time (s)	5.0	5.0	5.0			5.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	220	197	2397			1468
v/s Ratio Prot	0.03		0.28			c0.48
v/s Ratio Perm		c0.03				
v/c Ratio	0.23	0.26	0.39			0.68
Uniform Delay, d1	24.1	24.1	3.4			4.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.5	0.7	0.5			2.5
Delay (s)	24.6	24.8	3.8			7.2
Level of Service	C	C	A			A
Approach Delay (s)	24.8		3.8			7.2
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

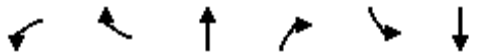
c Critical Lane Group

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	790	218	193	917	206	0	0	10	0	0	284
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	898	248	219	1042	234	0	0	11	0	0	323
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		233										
pX, platoon unblocked				0.89			0.89	0.89		0.89	0.89	0.89
vC, conflicting volume	1276			1145			2369	2743	1159	2514	2736	573
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1276			926			2295	2713	1159	2456	2705	286
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			67			100	100	94	100	100	49
cM capacity (veh/h)	540			656			7	12	189	10	12	636

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NE 1	SW 1
Volume Total	598	547	219	1276	11	323
Volume Left	0	0	219	0	0	0
Volume Right	0	248	0	234	11	323
cSH	1700	1700	656	1700	189	636
Volume to Capacity	0.35	0.32	0.33	0.75	0.06	0.51
Queue Length 95th (ft)	0	0	37	0	5	72
Control Delay (s)	0.0	0.0	13.2	0.0	25.3	16.4
Lane LOS			B		D	C
Approach Delay (s)	0.0		1.9		25.3	16.4
Approach LOS					D	C

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	70.8%	ICU Level of Service	C	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	48	230	653	33	385	590
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	55	261	742	38	438	670
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						500
pX, platoon unblocked	0.76					
vC, conflicting volume	2306	761			780	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2556	761			780	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	36			48	
cM capacity (veh/h)	11	405			838	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	316	780	438	670
Volume Left	55	0	438	0
Volume Right	261	38	0	0
cSH	55	1700	838	1700
Volume to Capacity	5.77	0.46	0.52	0.39
Queue Length 95th (ft)	Err	0	77	0
Control Delay (s)	Err	0.0	13.9	0.0
Lane LOS	F		B	
Approach Delay (s)	Err	0.0	5.5	
Approach LOS	F			

Intersection Summary			
Average Delay	1436.3		
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		

Queues



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	55	292	1003	1053
v/c Ratio	0.21	0.71	0.43	0.75
Control Delay	23.9	18.8	5.0	10.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.9	18.8	5.0	10.5
Queue Length 50th (ft)	17	28	67	193
Queue Length 95th (ft)	43	90	100	340
Internal Link Dist (ft)	294		420	153
Turn Bay Length (ft)		200		
Base Capacity (vph)	325	460	2306	1412
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.17	0.63	0.43	0.75

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	48	257	751	132	0	927
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	14	11	14	12	15
Total Lost time (s)	5.0	5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	0.95			1.00
Frt	1.00	0.85	0.98			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1888	1689	3344			2049
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1888	1689	3344			2049
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	55	292	853	150	0	1053
RTOR Reduction (vph)	0	177	0	0	0	0
Lane Group Flow (vph)	55	115	1003	0	0	1053
Turn Type		Perm				
Protected Phases	6		8			4
Permitted Phases		6				
Actuated Green, G (s)	8.0	8.0	40.0			40.0
Effective Green, g (s)	8.0	8.0	40.0			40.0
Actuated g/C Ratio	0.14	0.14	0.69			0.69
Clearance Time (s)	5.0	5.0	5.0			5.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	260	233	2306			1413
v/s Ratio Prot	0.03		0.30			c0.51
v/s Ratio Perm		c0.07				
v/c Ratio	0.21	0.49	0.43			0.75
Uniform Delay, d1	22.2	23.1	4.0			5.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.4	1.7	0.6			3.6
Delay (s)	22.6	24.8	4.6			9.4
Level of Service	C	C	A			A
Approach Delay (s)	24.4		4.6			9.4
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	861	237	211	1000	224	0	0	11	0	0	310
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	978	269	240	1136	255	0	0	12	0	0	352
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		233										
pX, platoon unblocked				0.87			0.87	0.87		0.87	0.87	0.87
vC, conflicting volume	1391			1248			2585	2991	1264	2741	2984	624
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1391			984			2522	2990	1264	2703	2981	266
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			60			100	100	92	100	100	45
cM capacity (veh/h)	488			606			4	7	161	6	7	637

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NE 1	SW 1
Volume Total	652	595	240	1391	12	352
Volume Left	0	0	240	0	0	0
Volume Right	0	269	0	255	12	352
cSH	1700	1700	606	1700	161	637
Volume to Capacity	0.38	0.35	0.40	0.82	0.08	0.55
Queue Length 95th (ft)	0	0	47	0	6	85
Control Delay (s)	0.0	0.0	14.8	0.0	29.3	17.4
Lane LOS			B		D	C
Approach Delay (s)	0.0		2.2		29.3	17.4
Approach LOS					D	C

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	52	250	712	36	420	643
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	59	284	809	41	477	731
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						500
pX, platoon unblocked	0.67					
vC, conflicting volume	2515	830			850	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3008	830			850	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	23			39	
cM capacity (veh/h)	4	370			788	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	343	850	477	731
Volume Left	59	0	477	0
Volume Right	284	41	0	0
cSH	22	1700	788	1700
Volume to Capacity	15.75	0.50	0.61	0.43
Queue Length 95th (ft)	Err	0	104	0
Control Delay (s)	Err	0.0	16.3	0.0
Lane LOS	F		C	
Approach Delay (s)	Err	0.0	6.4	
Approach LOS	F			

Intersection Summary			
Average Delay	1432.3		
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		

Queues



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	59	317	1093	1149
v/c Ratio	0.21	0.78	0.48	0.83
Control Delay	23.6	27.0	5.6	14.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.6	27.0	5.6	14.5
Queue Length 50th (ft)	19	47	83	255
Queue Length 95th (ft)	45	#147	113	#447
Internal Link Dist (ft)	294		420	153
Turn Bay Length (ft)		200		
Base Capacity (vph)	321	432	2272	1391
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.18	0.73	0.48	0.83

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	52	279	819	143	0	1011
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	14	11	14	12	15
Total Lost time (s)	5.0	5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	0.95			1.00
Frt	1.00	0.85	0.98			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1888	1689	3345			2049
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1888	1689	3345			2049
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	59	317	931	162	0	1149
RTOR Reduction (vph)	0	149	0	0	0	0
Lane Group Flow (vph)	59	168	1093	0	0	1149
Turn Type		Perm				
Protected Phases	6		8			4
Permitted Phases		6				
Actuated Green, G (s)	8.9	8.9	40.0			40.0
Effective Green, g (s)	8.9	8.9	40.0			40.0
Actuated g/C Ratio	0.15	0.15	0.68			0.68
Clearance Time (s)	5.0	5.0	5.0			5.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	285	255	2272			1392
v/s Ratio Prot	0.03		0.33			c0.56
v/s Ratio Perm		c0.10				
v/c Ratio	0.21	0.66	0.48			0.83
Uniform Delay, d1	21.9	23.6	4.5			6.9
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.4	6.3	0.7			5.7
Delay (s)	22.3	29.9	5.2			12.6
Level of Service	C	C	A			B
Approach Delay (s)	28.7		5.2			12.6
Approach LOS	C		A			B

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	1095	229	135	780	191	0	0	10	0	0	193
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1190	249	147	848	208	0	0	11	0	0	210
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		232										
pX, platoon unblocked				0.79			0.79	0.79		0.79	0.79	0.79
vC, conflicting volume	1055			1439			2050	2684	952	2467	2664	720
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1055			1025			1798	2601	952	2326	2574	115
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			72			100	100	96	100	100	71
cM capacity (veh/h)	655			532			22	14	260	12	15	724

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NE 1	SW 1
Volume Total	793	646	147	1055	11	210
Volume Left	0	0	147	0	0	0
Volume Right	0	249	0	208	11	210
cSH	1700	1700	532	1700	260	724
Volume to Capacity	0.47	0.38	0.28	0.62	0.04	0.29
Queue Length 95th (ft)	0	0	28	0	3	30
Control Delay (s)	0.0	0.0	14.3	0.0	19.4	12.0
Lane LOS			B		C	B
Approach Delay (s)	0.0		1.7		19.4	12.0
Approach LOS					C	B

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	62.7%	ICU Level of Service	B	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	94	478	643	24	210	687
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	102	520	699	26	228	747
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						500
pX, platoon unblocked	0.72					
vC, conflicting volume	1915	712			725	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2079	712			725	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			74	
cM capacity (veh/h)	31	432			878	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	622	725	228	747
Volume Left	102	0	228	0
Volume Right	520	26	0	0
cSH	139	1700	878	1700
Volume to Capacity	4.48	0.43	0.26	0.44
Queue Length 95th (ft)	Err	0	26	0
Control Delay (s)	Err	0.0	10.5	0.0
Lane LOS	F		B	
Approach Delay (s)	Err	0.0	2.5	
Approach LOS	F			

Intersection Summary			
Average Delay	2678.7		
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		

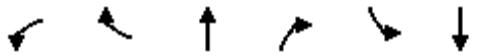
Queues



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	116	383	1219	859
v/c Ratio	0.27	0.83	0.61	0.70
Control Delay	20.1	32.8	9.3	12.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.1	32.8	9.3	12.4
Queue Length 50th (ft)	34	94	133	195
Queue Length 95th (ft)	70	#221	187	319
Internal Link Dist (ft)	294		420	152
Turn Bay Length (ft)		200		
Base Capacity (vph)	485	508	2010	1228
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.24	0.75	0.61	0.70

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	107	352	972	149	0	790
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	14	11	14	12	15
Total Lost time (s)	5.0	5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	0.95			1.00
Frt	1.00	0.85	0.98			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1888	1689	3353			2049
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1888	1689	3353			2049
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	116	383	1057	162	0	859
RTOR Reduction (vph)	0	76	0	0	0	0
Lane Group Flow (vph)	116	307	1219	0	0	859
Turn Type		Perm				
Protected Phases	6		8			4
Permitted Phases		6				
Actuated Green, G (s)	13.4	13.4	35.1			35.1
Effective Green, g (s)	13.4	13.4	35.1			35.1
Actuated g/C Ratio	0.23	0.23	0.60			0.60
Clearance Time (s)	5.0	5.0	5.0			5.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	432	387	2012			1229
v/s Ratio Prot	0.06		0.36			c0.42
v/s Ratio Perm		c0.18				
v/c Ratio	0.27	0.79	0.61			0.70
Uniform Delay, d1	18.5	21.2	7.4			8.1
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.3	10.6	1.4			3.3
Delay (s)	18.9	31.9	8.7			11.4
Level of Service	B	C	A			B
Approach Delay (s)	28.8		8.7			11.4
Approach LOS	C		A			B

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	1162	243	143	828	203	0	0	10	0	0	205
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1263	264	155	900	221	0	0	11	0	0	223
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		232										
pX, platoon unblocked				0.74			0.74	0.74		0.74	0.74	0.74
vC, conflicting volume	1121			1527			2176	2848	1010	2617	2827	764
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1121			1008			1885	2795	1010	2482	2765	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			69			100	100	95	100	100	72
cM capacity (veh/h)	619			505			18	9	238	8	10	802

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NE 1	SW 1
Volume Total	842	685	155	1121	11	223
Volume Left	0	0	155	0	0	0
Volume Right	0	264	0	221	11	223
cSH	1700	1700	505	1700	238	802
Volume to Capacity	0.50	0.40	0.31	0.66	0.05	0.28
Queue Length 95th (ft)	0	0	32	0	4	28
Control Delay (s)	0.0	0.0	15.3	0.0	20.9	11.2
Lane LOS			C		C	B
Approach Delay (s)	0.0		1.9		20.9	11.2
Approach LOS					C	B

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	65.9%	ICU Level of Service	C	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	100	507	682	25	223	729
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	109	551	741	27	242	792
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						500
pX, platoon unblocked	0.64					
vC, conflicting volume	2032	755			768	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2327	755			768	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			71	
cM capacity (veh/h)	19	409			846	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	660	768	242	792
Volume Left	109	0	242	0
Volume Right	551	27	0	0
cSH	92	1700	846	1700
Volume to Capacity	7.14	0.45	0.29	0.47
Queue Length 95th (ft)	Err	0	30	0
Control Delay (s)	Err	0.0	11.0	0.0
Lane LOS	F		B	
Approach Delay (s)	Err	0.0	2.6	
Approach LOS	F			

Intersection Summary			
Average Delay	2679.5		
Intersection Capacity Utilization	96.6%	ICU Level of Service	F
Analysis Period (min)	15		

Queues



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	124	407	1293	911
v/c Ratio	0.24	0.81	0.69	0.80
Control Delay	17.4	30.4	12.3	18.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.4	30.4	12.3	18.4
Queue Length 50th (ft)	33	109	168	250
Queue Length 95th (ft)	68	#232	240	#482
Internal Link Dist (ft)	294		420	152
Turn Bay Length (ft)		200		
Base Capacity (vph)	590	574	1864	1139
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.21	0.71	0.69	0.80

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	114	374	1031	158	0	838
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	14	11	14	12	15
Total Lost time (s)	5.0	5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	0.95			1.00
Frt	1.00	0.85	0.98			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1888	1689	3353			2049
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1888	1689	3353			2049
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	124	407	1121	172	0	911
RTOR Reduction (vph)	0	48	0	0	0	0
Lane Group Flow (vph)	124	359	1293	0	0	911
Turn Type		Perm				
Protected Phases	6		8			4
Permitted Phases		6				
Actuated Green, G (s)	15.6	15.6	32.1			32.1
Effective Green, g (s)	15.6	15.6	32.1			32.1
Actuated g/C Ratio	0.27	0.27	0.56			0.56
Clearance Time (s)	5.0	5.0	5.0			5.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	510	457	1865			1140
v/s Ratio Prot	0.07		0.39			c0.44
v/s Ratio Perm		c0.21				
v/c Ratio	0.24	0.79	0.69			0.80
Uniform Delay, d1	16.4	19.5	9.2			10.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	8.6	2.1			5.9
Delay (s)	16.7	28.1	11.4			16.1
Level of Service	B	C	B			B
Approach Delay (s)	25.4		11.4			16.1
Approach LOS	C		B			B

Intersection Summary			
HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	57.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	1267	265	156	903	221	0	0	11	0	0	223
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1377	288	170	982	240	0	0	12	0	0	242
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		232										
pX, platoon unblocked				0.69			0.69	0.69		0.69	0.69	0.69
vC, conflicting volume	1222			1665			2372	3106	1102	2854	3082	833
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1222			1053			2083	3155	1102	2787	3120	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			62			100	100	94	100	100	67
cM capacity (veh/h)	566			450			10	5	207	4	5	743

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NE 1	SW 1
Volume Total	918	747	170	1222	12	242
Volume Left	0	0	170	0	0	0
Volume Right	0	288	0	240	12	242
cSH	1700	1700	450	1700	207	743
Volume to Capacity	0.54	0.44	0.38	0.72	0.06	0.33
Queue Length 95th (ft)	0	0	43	0	5	35
Control Delay (s)	0.0	0.0	17.7	0.0	23.5	12.2
Lane LOS			C		C	B
Approach Delay (s)	0.0		2.2		23.5	12.2
Approach LOS					C	B

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	109	553	744	28	243	795
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	118	601	809	30	264	864
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						500
pX, platoon unblocked	0.56					
vC, conflicting volume	2216	824			839	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2784	824			839	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			67	
cM capacity (veh/h)	8	373			796	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	720	839	264	864
Volume Left	118	0	264	0
Volume Right	601	30	0	0
cSH	43	1700	796	1700
Volume to Capacity	16.88	0.49	0.33	0.51
Queue Length 95th (ft)	Err	0	36	0
Control Delay (s)	Err	0.0	11.8	0.0
Lane LOS	F		B	
Approach Delay (s)	Err	0.0	2.8	
Approach LOS	F			

Intersection Summary			
Average Delay	2678.9		
Intersection Capacity Utilization	104.5%	ICU Level of Service	G
Analysis Period (min)	15		

Queues



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	135	442	1410	993
v/c Ratio	0.25	0.86	0.77	0.89
Control Delay	17.5	36.5	14.4	24.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.5	36.5	14.4	24.9
Queue Length 50th (ft)	36	130	196	295
Queue Length 95th (ft)	74	#275	277	#552
Internal Link Dist (ft)	294		420	152
Turn Bay Length (ft)		200		
Base Capacity (vph)	580	554	1831	1119
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.80	0.77	0.89

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	124	407	1125	172	0	914
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	14	11	14	12	15
Total Lost time (s)	5.0	5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	0.95			1.00
Frt	1.00	0.85	0.98			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1888	1689	3353			2049
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1888	1689	3353			2049
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	135	442	1223	187	0	993
RTOR Reduction (vph)	0	36	0	0	0	0
Lane Group Flow (vph)	135	406	1410	0	0	993
Turn Type		Perm				
Protected Phases	6		8			4
Permitted Phases		6				
Actuated Green, G (s)	16.6	16.6	32.0			32.0
Effective Green, g (s)	16.6	16.6	32.0			32.0
Actuated g/C Ratio	0.28	0.28	0.55			0.55
Clearance Time (s)	5.0	5.0	5.0			5.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	535	478	1831			1119
v/s Ratio Prot	0.07		0.42			c0.48
v/s Ratio Perm		c0.24				
v/c Ratio	0.25	0.85	0.77			0.89
Uniform Delay, d1	16.2	19.8	10.4			11.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	13.2	3.2			10.5
Delay (s)	16.5	33.1	13.6			22.2
Level of Service	B	C	B			C
Approach Delay (s)	29.2		13.6			22.2
Approach LOS	C		B			C

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

ALTERNATIVE 2

Intersection and Approach	2010 Volumes w/ Alt. 2 Lane Geometry									2013 Volumes w/ Alt. 2 Lane Geometry									2033 Volumes w/ Alt. 2 Lane Geometry								
	Lane Group	AM Peak Hour				PM Peak Hour				Lane Group	AM Peak Hour				PM Peak Hour				Lane Group	AM Peak Hour				PM Peak Hour			
		Delay (sec.)	LOS	V/C Ratio	Queue (ft.)	Delay (sec.)	LOS	V/C Ratio	Queue (ft.)		Delay (sec.)	LOS	V/C Ratio	Queue (ft.)	Delay (sec.)	LOS	V/C Ratio	Queue (ft.)		Delay (sec.)	LOS	V/C Ratio	Queue (ft.)	Delay (sec.)	LOS	V/C Ratio	Queue (ft.)
Vauxhall Road & Sayre Road/GSP McDonald's (Unsignalized)																											
Northbound Vauxhall Road	T	0.0		0.33		0.0		0.47		T	0.0		0.35		0.0		0.50		T	0.0		0.38		0.0		0.54	
	TR	0.0		0.30		0.0		0.38		TR	0.0		0.32		0.0		0.40		TR	0.0		0.35		0.0		0.44	
Southbound Vauxhall Road	L	12.5	B	0.30	32	14.3	B	0.28	28	L	13.2	B	0.33	37	15.3	C	0.31	32	L	14.8	B	0.40	47	17.7	C	0.38	43
	TR	0.0		0.71		0.0		0.62		TR	0.0		0.75		0.0		0.66		TR	0.0		0.82		0.0		0.72	
Eastbound Sayre Road	R	23.2	C	0.05	4	19.4	C	0.04	3	R	25.3	D	0.06	5	20.9	C	0.05	4	R	29.3	D	0.08	6	23.5	C	0.06	5
Westbound GSP/McDonald's	R	16.1	C	0.49	67	12.0	B	0.29	30	R	16.4	C	0.51	72	11.2	B	0.28	28	R	17.4	C	0.55	85	12.2	B	0.33	35
Overall Intersection		2.8				1.7					2.8				1.7					3.1				1.9			
Vauxhall Road & WB US Route 22 Ramps (Signalized)																											
Westbound WB US Route 22 Ramps	L	24.6	C	0.23	44	18.9	B	0.27	70	L	22.6	C	0.21	43	16.7	B	0.24	68	L	22.3	C	0.21	45	16.5	B	0.25	74
	R	24.8	C	0.26	#66	31.9	C	0.79	#221	R	24.8	C	0.49	90	28.1	C	0.79	#232	R	29.9	C	0.66	#147	33.1	C	0.85	#275
Northbound Vauxhall Road	T-TR	3.8	A	0.39	73	8.7	A	0.61	187	T-TR	4.6	A	0.43	100	11.4	B	0.69	240	T-TR	5.2	A	0.48	113	13.6	B	0.77	277
Southbound Vauxhall Road	T	7.2	A	0.68	235	11.4	B	0.70	319	T	9.4	A	0.75	340	16.1	B	0.80	#482	T	12.6	B	0.83	#447	22.2	C	0.89	#552
Overall Intersection		8.3	A	0.62		13.5	B	0.72			9.5	A	0.70		15.7	B	0.79			11.8	B	0.80		19.5	B	0.87	
Vauxhall Road & EB US Route 22 Ramps (Unsignalized)																											
Westbound EB US Route 22 Ramps	LR	*	F	3.39	-	*	F	4.48	-	LR	*	F	5.77	-	*	F	7.14	-	LR	*	F	15.75	-	*	F	16.88	-
Northbound Vauxhall Road	TR	0.0		0.43		0.0		0.43		TR	0.0		0.46		0.0		0.45		TR	0.0		0.50		0.0		0.49	
Southbound Vauxhall Road	L	12.8	B	0.47	65	10.5	B	0.26	26	L	13.9	B	0.52	77	11.0	B	0.29	30	L	16.3	C	0.61	104	11.8	B	0.33	36
	T	0.0		0.37		0.0		0.44		T	0.0		0.39		0.0		0.47		T	0.0		0.43		0.0		0.51	
Overall Intersection		1436.4				2678.7					1436.3				2679.5					1432.3				2678.9			

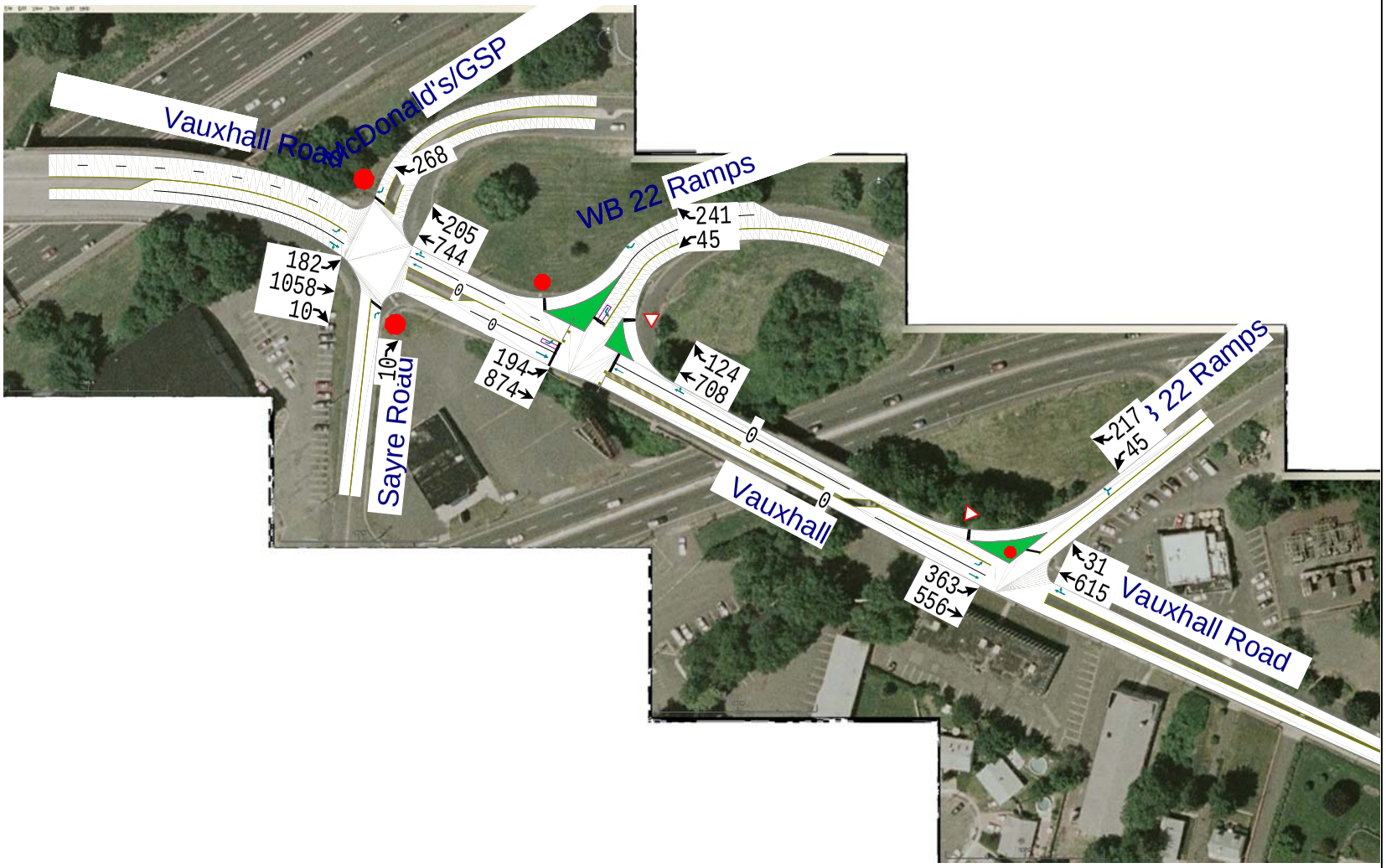
Notes:

(*) Intersection or Approach exceeds capacity and delay.

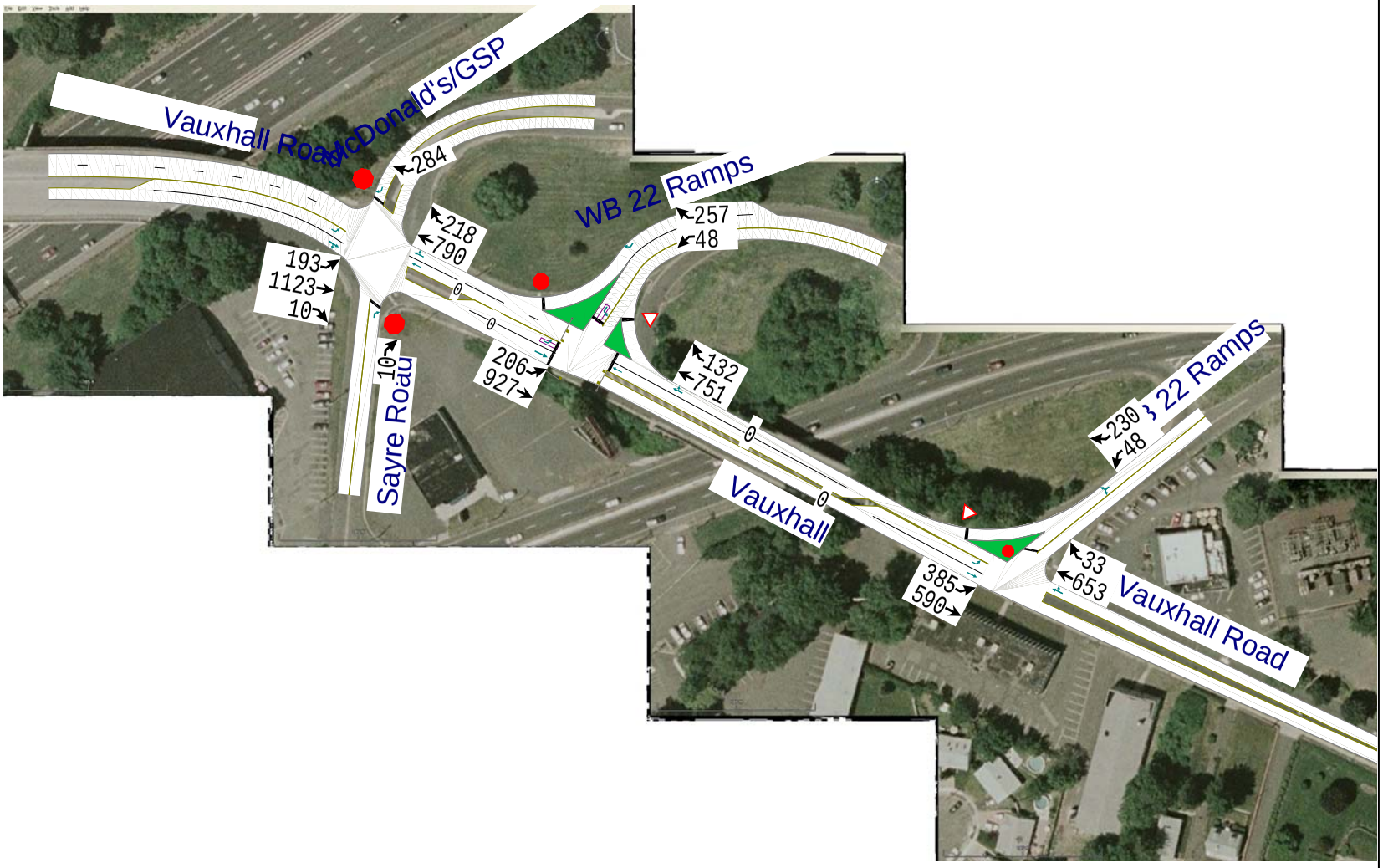
(#) 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maxiumum after two cycles.

Shading represents movements with poor operational conditions, LOS E & F.

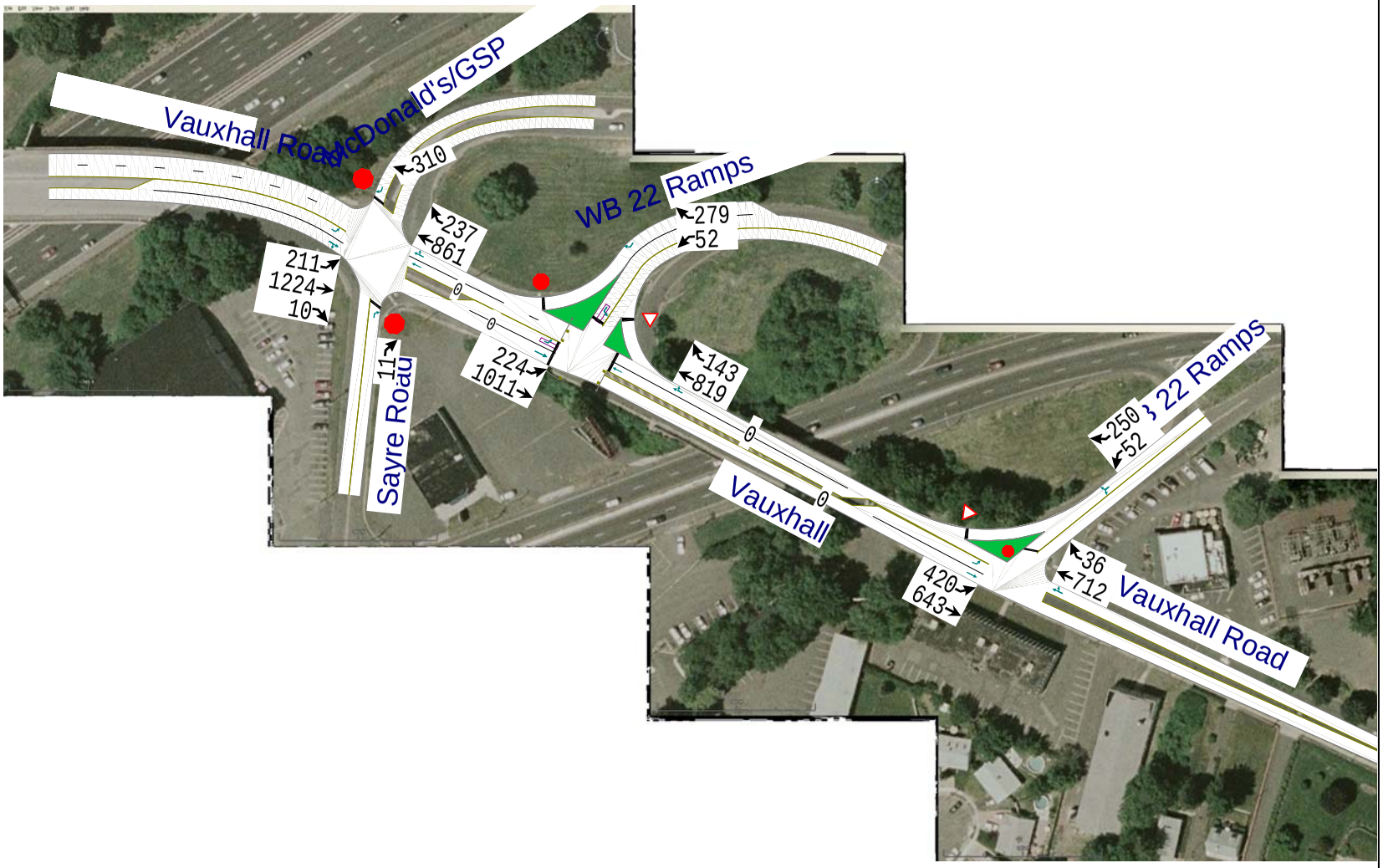
Alternative 3 - AM Volumes - 2010



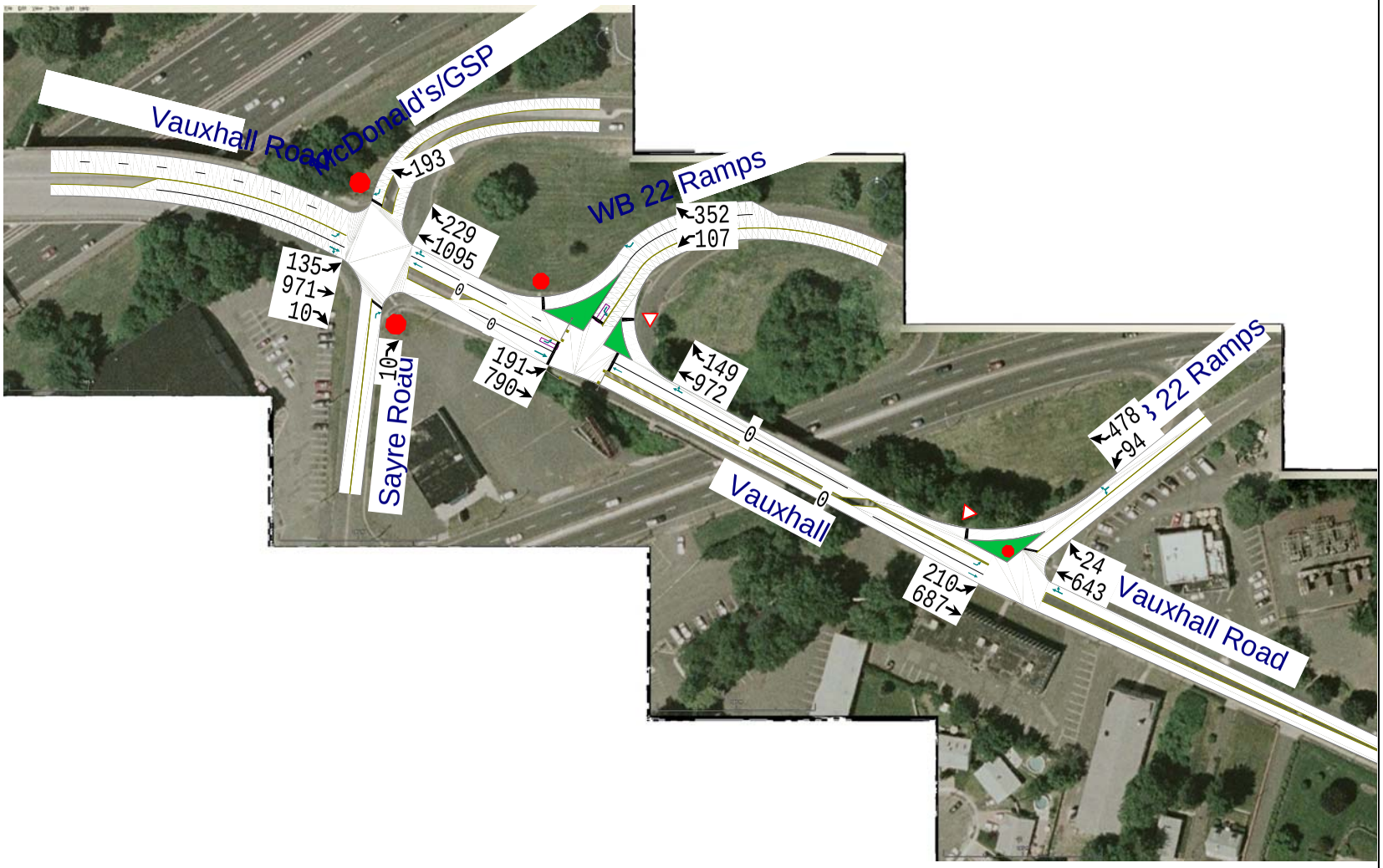
Alternative 3 - AM Volumes - 2013



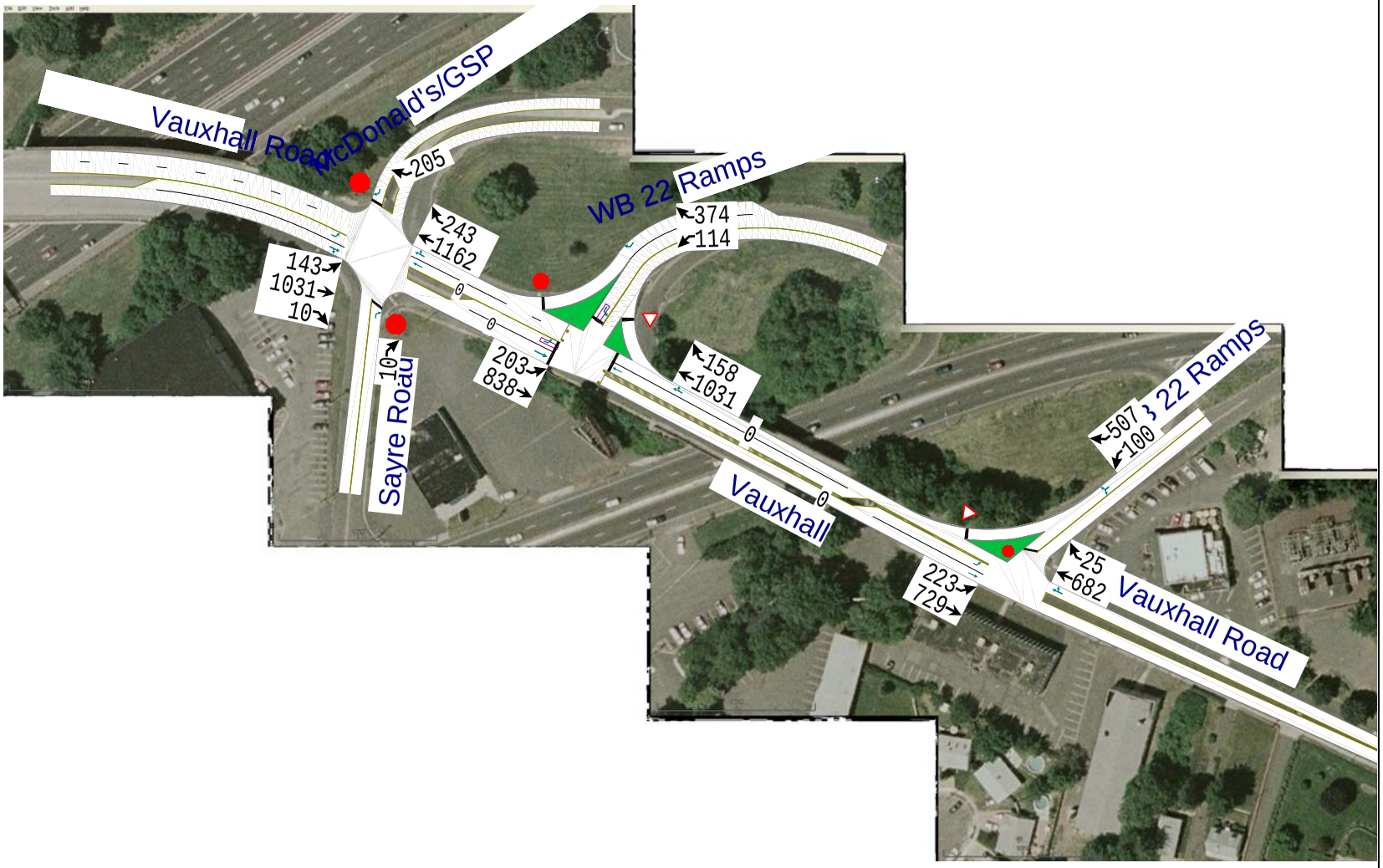
Alternative 3 - AM Volumes - 2033



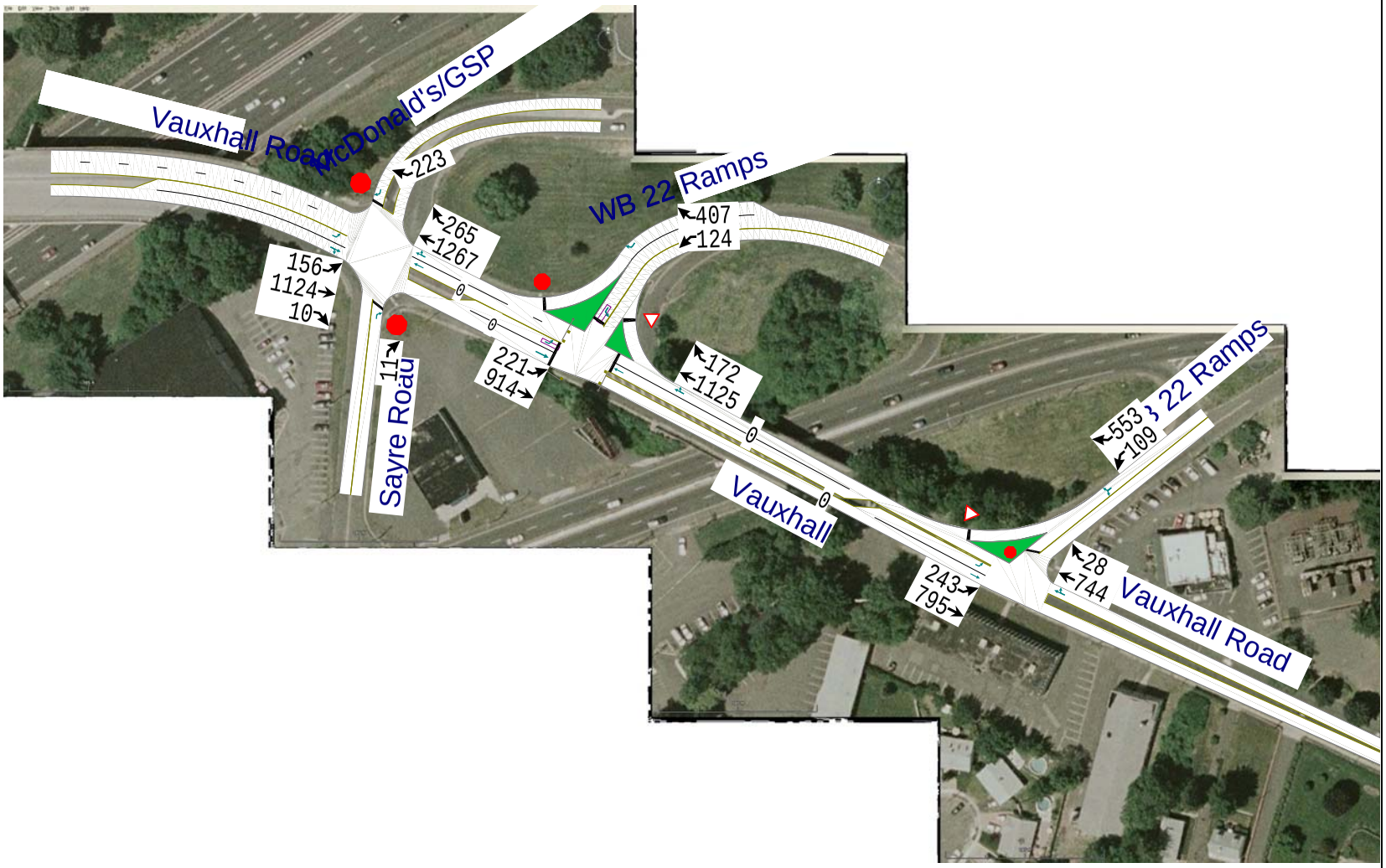
Alternative 3 - PM Volumes - 2010



Alternative 3 - PM Volumes - 2013



Alternative 3 - PM Volumes - 2033



HCM Unsignalized Intersection Capacity Analysis

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	744	205	182	1058	10	0	0	10	0	0	268
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	845	233	207	1202	11	0	0	11	0	0	305
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		233										
pX, platoon unblocked				0.86			0.86	0.86		0.86	0.86	0.86
vC, conflicting volume	1214			1078			2349	2700	1208	2589	2589	539
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1214			770			2244	2652	1208	2523	2523	144
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			71			100	100	94	100	100	60
cM capacity (veh/h)	570			724			9	14	175	9	17	756

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NE 1	SW 1
Volume Total	564	515	207	1214	11	305
Volume Left	0	0	207	0	0	0
Volume Right	0	233	0	11	11	305
cSH	1700	1700	724	1700	175	756
Volume to Capacity	0.33	0.30	0.29	0.71	0.06	0.40
Queue Length 95th (ft)	0	0	29	0	5	49
Control Delay (s)	0.0	0.0	11.9	0.0	27.0	12.9
Lane LOS			B		D	B
Approach Delay (s)	0.0		1.7		27.0	12.9
Approach LOS					D	B

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	66.3%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	45	217	615	31	363	556
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	51	247	699	35	412	632
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						500
pX, platoon unblocked	0.83					
vC, conflicting volume	2173	716			734	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2314	716			734	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	43			53	
cM capacity (veh/h)	18	430			871	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	298	734	412	632
Volume Left	51	0	412	0
Volume Right	247	35	0	0
cSH	88	1700	871	1700
Volume to Capacity	3.39	0.43	0.47	0.37
Queue Length 95th (ft)	Err	0	65	0
Control Delay (s)	Err	0.0	12.8	0.0
Lane LOS	F		B	
Approach Delay (s)	Err	0.0	5.1	
Approach LOS	F			

Intersection Summary			
Average Delay	1436.4		
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

Queues



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	51	274	946	220	993
v/c Ratio	0.23	0.62	0.48	0.49	0.68
Control Delay	27.0	10.9	8.3	6.0	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.0	10.9	8.3	6.0	7.6
Queue Length 50th (ft)	17	0	91	16	148
Queue Length 95th (ft)	44	55	126	28	235
Internal Link Dist (ft)	294		420		153
Turn Bay Length (ft)		200		100	
Base Capacity (vph)	220	439	1952	448	1468
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	0.62	0.48	0.49	0.68

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	45	241	708	124	194	874
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	14	11	14	12	15
Total Lost time (s)	5.0	5.0	5.0		3.0	5.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1888	1689	3345		1770	2049
Flt Permitted	0.95	1.00	1.00		0.24	1.00
Satd. Flow (perm)	1888	1689	3345		451	2049
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	51	274	805	141	220	993
RTOR Reduction (vph)	0	242	0	0	0	0
Lane Group Flow (vph)	51	32	946	0	220	993
Turn Type		Perm			pm+pt	
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Actuated Green, G (s)	7.0	7.0	35.0		43.0	43.0
Effective Green, g (s)	7.0	7.0	35.0		43.0	43.0
Actuated g/C Ratio	0.12	0.12	0.58		0.72	0.72
Clearance Time (s)	5.0	5.0	5.0		3.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	220	197	1951		433	1468
v/s Ratio Prot	c0.03		0.28		0.04	c0.48
v/s Ratio Perm		0.02			0.32	
v/c Ratio	0.23	0.16	0.48		0.51	0.68
Uniform Delay, d1	24.1	23.9	7.3		3.5	4.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.4	0.9		0.9	2.5
Delay (s)	24.6	24.2	8.1		4.5	7.2
Level of Service	C	C	A		A	A
Approach Delay (s)	24.3		8.1			6.7
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	790	218	193	1123	10	0	0	10	0	0	284
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	898	248	219	1276	11	0	0	11	0	0	323
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		233										
pX, platoon unblocked				0.84			0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	1288			1145			2492	2866	1282	2748	2748	573
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1288			781			2392	2840	1282	2698	2698	96
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			68			100	100	93	100	100	59
cM capacity (veh/h)	535			696			7	10	156	6	12	787

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NE 1	SW 1
Volume Total	598	547	219	1288	11	323
Volume Left	0	0	219	0	0	0
Volume Right	0	248	0	11	11	323
cSH	1700	1700	696	1700	156	787
Volume to Capacity	0.35	0.32	0.32	0.76	0.07	0.41
Queue Length 95th (ft)	0	0	34	0	6	50
Control Delay (s)	0.0	0.0	12.5	0.0	29.8	12.7
Lane LOS			B		D	B
Approach Delay (s)	0.0		1.8		29.8	12.7
Approach LOS					D	B

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	48	230	653	33	385	590
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	55	261	742	38	438	670
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						500
pX, platoon unblocked	0.77					
vC, conflicting volume	2306	761			780	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2548	761			780	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	36			48	
cM capacity (veh/h)	11	405			838	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	316	780	438	670
Volume Left	55	0	438	0
Volume Right	261	38	0	0
cSH	56	1700	838	1700
Volume to Capacity	5.67	0.46	0.52	0.39
Queue Length 95th (ft)	Err	0	77	0
Control Delay (s)	Err	0.0	13.9	0.0
Lane LOS	F		B	
Approach Delay (s)	Err	0.0	5.5	
Approach LOS	F			

Intersection Summary			
Average Delay	1436.3		
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		

Queues



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	55	292	1003	234	1053
v/c Ratio	0.22	0.65	0.54	0.57	0.74
Control Delay	24.4	12.5	9.8	8.4	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	12.5	9.8	8.4	10.1
Queue Length 50th (ft)	17	9	100	17	166
Queue Length 95th (ft)	43	64	158	40	340
Internal Link Dist (ft)	294		420		153
Turn Bay Length (ft)		200		100	
Base Capacity (vph)	328	510	1860	411	1424
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.57	0.54	0.57	0.74

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	48	257	751	132	206	927
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	14	11	14	12	15
Total Lost time (s)	5.0	5.0	5.0		3.0	5.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1888	1689	3344		1770	2049
Flt Permitted	0.95	1.00	1.00		0.22	1.00
Satd. Flow (perm)	1888	1689	3344		401	2049
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	55	292	853	150	234	1053
RTOR Reduction (vph)	0	227	0	0	0	0
Lane Group Flow (vph)	55	65	1003	0	234	1053
Turn Type		Perm			pm+pt	
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Actuated Green, G (s)	7.6	7.6	32.0		40.0	40.0
Effective Green, g (s)	7.6	7.6	32.0		40.0	40.0
Actuated g/C Ratio	0.13	0.13	0.56		0.69	0.69
Clearance Time (s)	5.0	5.0	5.0		3.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	249	223	1858		397	1423
v/s Ratio Prot	0.03		0.30		0.05	c0.51
v/s Ratio Perm		c0.04			0.36	
v/c Ratio	0.22	0.29	0.54		0.59	0.74
Uniform Delay, d1	22.4	22.6	8.1		4.3	5.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.7	1.1		2.2	3.5
Delay (s)	22.8	23.3	9.3		6.5	9.0
Level of Service	C	C	A		A	A
Approach Delay (s)	23.2		9.3			8.6
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	57.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	861	237	211	1224	10	0	0	11	0	0	310
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	978	269	240	1391	11	0	0	12	0	0	352
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		233										
pX, platoon unblocked				0.81			0.81	0.81		0.81	0.81	0.81
vC, conflicting volume	1402			1248			2718	3124	1397	2996	2995	624
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1402			828			2650	3154	1397	2995	2994	55
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			63			100	100	90	100	100	56
cM capacity (veh/h)	483			645			4	5	131	3	7	807

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NE 1	SW 1
Volume Total	652	595	240	1402	12	352
Volume Left	0	0	240	0	0	0
Volume Right	0	269	0	11	12	352
cSH	1700	1700	645	1700	131	807
Volume to Capacity	0.38	0.35	0.37	0.82	0.10	0.44
Queue Length 95th (ft)	0	0	43	0	8	56
Control Delay (s)	0.0	0.0	13.9	0.0	35.5	12.9
Lane LOS			B		E	B
Approach Delay (s)	0.0		2.0		35.5	12.9
Approach LOS					E	B

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	75.0%	ICU Level of Service	D	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	52	250	712	36	420	643
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	59	284	809	41	477	731
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						500
pX, platoon unblocked	0.69					
vC, conflicting volume	2515	830			850	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2975	830			850	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	23			39	
cM capacity (veh/h)	4	370			788	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	343	850	477	731
Volume Left	59	0	477	0
Volume Right	284	41	0	0
cSH	23	1700	788	1700
Volume to Capacity	14.72	0.50	0.61	0.43
Queue Length 95th (ft)	Err	0	104	0
Control Delay (s)	Err	0.0	16.3	0.0
Lane LOS	F		C	
Approach Delay (s)	Err	0.0	6.4	
Approach LOS	F			

Intersection Summary			
Average Delay	1432.3		
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		

Queues



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	59	317	1093	255	1149
v/c Ratio	0.23	0.72	0.59	0.68	0.81
Control Delay	24.2	17.3	10.6	15.4	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	17.3	10.6	15.4	13.5
Queue Length 50th (ft)	19	24	121	22	228
Queue Length 95th (ft)	45	88	178	#59	#447
Internal Link Dist (ft)	294		420		153
Turn Bay Length (ft)		200		100	
Base Capacity (vph)	326	491	1846	373	1413
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.65	0.59	0.68	0.81

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	52	279	819	143	224	1011
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	14	11	14	12	15
Total Lost time (s)	5.0	5.0	5.0		3.0	5.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1888	1689	3345		1770	2049
Flt Permitted	0.95	1.00	1.00		0.19	1.00
Satd. Flow (perm)	1888	1689	3345		345	2049
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	59	317	931	162	255	1149
RTOR Reduction (vph)	0	208	0	0	0	0
Lane Group Flow (vph)	59	109	1093	0	255	1149
Turn Type		Perm			pm+pt	
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Actuated Green, G (s)	8.0	8.0	32.0		40.0	40.0
Effective Green, g (s)	8.0	8.0	32.0		40.0	40.0
Actuated g/C Ratio	0.14	0.14	0.55		0.69	0.69
Clearance Time (s)	5.0	5.0	5.0		3.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	260	233	1846		361	1413
v/s Ratio Prot	0.03		0.33		0.06	c0.56
v/s Ratio Perm		c0.06			0.43	
v/c Ratio	0.23	0.47	0.59		0.71	0.81
Uniform Delay, d1	22.2	23.0	8.7		5.2	6.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	1.5	1.4		6.2	5.2
Delay (s)	22.7	24.5	10.1		11.3	11.6
Level of Service	C	C	B		B	B
Approach Delay (s)	24.2		10.1			11.5
Approach LOS	C		B			B

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	1095	229	135	971	10	0	0	10	0	0	193
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1190	249	147	1055	11	0	0	11	0	0	210
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		232										
pX, platoon unblocked				0.72			0.72	0.72		0.72	0.72	0.72
vC, conflicting volume	1066			1439			2159	2793	1061	2674	2674	720
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1066			847			1840	2715	1061	2551	2551	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			74			100	100	95	100	100	73
cM capacity (veh/h)	649			570			20	11	220	7	14	786

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NE 1	SW 1
Volume Total	793	646	147	1066	11	210
Volume Left	0	0	147	0	0	0
Volume Right	0	249	0	11	11	210
cSH	1700	1700	570	1700	220	786
Volume to Capacity	0.47	0.38	0.26	0.63	0.05	0.27
Queue Length 95th (ft)	0	0	26	0	4	27
Control Delay (s)	0.0	0.0	13.5	0.0	22.2	11.2
Lane LOS			B		C	B
Approach Delay (s)	0.0		1.6		22.2	11.2
Approach LOS					C	B

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	61.7%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	94	478	643	24	210	687
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	102	520	699	26	228	747
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						500
pX, platoon unblocked	0.74					
vC, conflicting volume	1915	712			725	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2063	712			725	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			74	
cM capacity (veh/h)	33	432			878	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	622	725	228	747
Volume Left	102	0	228	0
Volume Right	520	26	0	0
cSH	144	1700	878	1700
Volume to Capacity	4.31	0.43	0.26	0.44
Queue Length 95th (ft)	Err	0	26	0
Control Delay (s)	Err	0.0	10.5	0.0
Lane LOS	F		B	
Approach Delay (s)	Err	0.0	2.5	
Approach LOS	F			

Intersection Summary			
Average Delay	2678.7		
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		

Queues



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	116	383	1219	208	859
v/c Ratio	0.31	0.77	0.75	0.70	0.67
Control Delay	21.2	20.6	16.6	22.1	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	21.2	20.6	16.6	22.1	11.0
Queue Length 50th (ft)	34	52	165	22	161
Queue Length 95th (ft)	70	134	267	#81	319
Internal Link Dist (ft)	294		420		152
Turn Bay Length (ft)		200		100	
Base Capacity (vph)	506	607	1618	299	1281
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	0.63	0.75	0.70	0.67

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	107	352	972	149	191	790
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	14	11	14	12	15
Total Lost time (s)	5.0	5.0	5.0		3.0	5.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1888	1689	3353		1770	2049
Flt Permitted	0.95	1.00	1.00		0.13	1.00
Satd. Flow (perm)	1888	1689	3353		247	2049
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	116	383	1057	162	208	859
RTOR Reduction (vph)	0	169	0	0	0	0
Lane Group Flow (vph)	116	214	1219	0	208	859
Turn Type		Perm			pm+pt	
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Actuated Green, G (s)	11.0	11.0	27.2		35.2	35.2
Effective Green, g (s)	11.0	11.0	27.2		35.2	35.2
Actuated g/C Ratio	0.20	0.20	0.48		0.63	0.63
Clearance Time (s)	5.0	5.0	5.0		3.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	370	331	1623		290	1283
v/s Ratio Prot	0.06		0.36		0.06	c0.42
v/s Ratio Perm		c0.13			c0.39	
v/c Ratio	0.31	0.65	0.75		0.72	0.67
Uniform Delay, d1	19.4	20.8	11.8		7.6	6.8
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	4.3	3.3		8.2	2.8
Delay (s)	19.9	25.1	15.0		15.8	9.5
Level of Service	B	C	B		B	A
Approach Delay (s)	23.9		15.0			10.8
Approach LOS	C		B			B

Intersection Summary			
HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	56.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	1162	243	143	1031	10	0	0	10	0	0	205
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1263	264	155	1121	11	0	0	11	0	0	223
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		232										
pX, platoon unblocked				0.67			0.67	0.67		0.67	0.67	0.67
vC, conflicting volume	1132			1527			2291	2964	1126	2838	2838	764
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1132			807			1945	2947	1126	2758	2758	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			72			100	100	95	100	100	69
cM capacity (veh/h)	613			547			14	7	199	5	9	728

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NE 1	SW 1
Volume Total	842	685	155	1132	11	223
Volume Left	0	0	155	0	0	0
Volume Right	0	264	0	11	11	223
cSH	1700	1700	547	1700	199	728
Volume to Capacity	0.50	0.40	0.28	0.67	0.05	0.31
Queue Length 95th (ft)	0	0	29	0	4	32
Control Delay (s)	0.0	0.0	14.2	0.0	24.1	12.1
Lane LOS			B		C	B
Approach Delay (s)	0.0		1.7		24.1	12.1
Approach LOS					C	B

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	64.9%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	100	507	682	25	223	729
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	109	551	741	27	242	792
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						500
pX, platoon unblocked	0.67					
vC, conflicting volume	2032	755			768	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2288	755			768	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			71	
cM capacity (veh/h)	21	409			846	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	660	768	242	792
Volume Left	109	0	242	0
Volume Right	551	27	0	0
cSH	100	1700	846	1700
Volume to Capacity	6.57	0.45	0.29	0.47
Queue Length 95th (ft)	Err	0	30	0
Control Delay (s)	Err	0.0	11.0	0.0
Lane LOS	F		B	
Approach Delay (s)	Err	0.0	2.6	
Approach LOS	F			

Intersection Summary			
Average Delay	2679.5		
Intersection Capacity Utilization	96.6%	ICU Level of Service	F
Analysis Period (min)	15		

Queues



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	124	407	1293	221	911
v/c Ratio	0.30	0.76	0.87	0.71	0.75
Control Delay	18.8	19.3	23.7	22.8	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	19.3	23.7	22.8	15.1
Queue Length 50th (ft)	33	56	187	25	187
Queue Length 95th (ft)	68	138	#371	#101	#482
Internal Link Dist (ft)	294		420		152
Turn Bay Length (ft)		200		100	
Base Capacity (vph)	630	702	1493	311	1216
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.58	0.87	0.71	0.75

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	114	374	1031	158	203	838
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	14	11	14	12	15
Total Lost time (s)	5.0	5.0	5.0		3.0	5.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1888	1689	3353		1770	2049
Flt Permitted	0.95	1.00	1.00		0.15	1.00
Satd. Flow (perm)	1888	1689	3353		274	2049
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	124	407	1121	172	221	911
RTOR Reduction (vph)	0	162	0	0	0	0
Lane Group Flow (vph)	124	245	1293	0	221	911
Turn Type		Perm			pm+pt	
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Actuated Green, G (s)	12.0	12.0	24.2		32.2	32.2
Effective Green, g (s)	12.0	12.0	24.2		32.2	32.2
Actuated g/C Ratio	0.22	0.22	0.45		0.59	0.59
Clearance Time (s)	5.0	5.0	5.0		3.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	418	374	1497		301	1217
v/s Ratio Prot	0.07		c0.39		0.07	c0.44
v/s Ratio Perm		c0.15			0.37	
v/c Ratio	0.30	0.66	0.86		0.73	0.75
Uniform Delay, d1	17.6	19.2	13.5		8.7	8.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	4.1	6.9		8.9	4.2
Delay (s)	18.0	23.3	20.4		17.7	12.3
Level of Service	B	C	C		B	B
Approach Delay (s)	22.1		20.4			13.3
Approach LOS	C		C			B

Intersection Summary			
HCM Average Control Delay	18.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	1267	265	156	1124	10	0	0	11	0	0	223
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1377	288	170	1222	11	0	0	12	0	0	242
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		232										
pX, platoon unblocked				0.61			0.61	0.61		0.61	0.61	0.61
vC, conflicting volume	1233			1665			2497	3232	1227	3094	3093	833
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1233			807			2174	3380	1227	3154	3153	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			66			100	100	93	100	100	63
cM capacity (veh/h)	561			495			7	3	170	2	4	660

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NE 1	SW 1
Volume Total	918	747	170	1233	12	242
Volume Left	0	0	170	0	0	0
Volume Right	0	288	0	11	12	242
cSH	1700	1700	495	1700	170	660
Volume to Capacity	0.54	0.44	0.34	0.73	0.07	0.37
Queue Length 95th (ft)	0	0	38	0	6	42
Control Delay (s)	0.0	0.0	16.0	0.0	27.8	13.6
Lane LOS			C		D	B
Approach Delay (s)	0.0		1.9		27.8	13.6
Approach LOS					D	B

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	69.8%	ICU Level of Service		C
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	109	553	744	28	243	795
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	118	601	809	30	264	864
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						500
pX, platoon unblocked	0.59					
vC, conflicting volume	2216	824			839	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2710	824			839	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			67	
cM capacity (veh/h)	9	373			796	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	720	839	264	864
Volume Left	118	0	264	0
Volume Right	601	30	0	0
cSH	50	1700	796	1700
Volume to Capacity	14.52	0.49	0.33	0.51
Queue Length 95th (ft)	Err	0	36	0
Control Delay (s)	Err	0.0	11.8	0.0
Lane LOS	F		B	
Approach Delay (s)	Err	0.0	2.8	
Approach LOS	F			

Intersection Summary			
Average Delay	2678.9		
Intersection Capacity Utilization	104.5%	ICU Level of Service	G
Analysis Period (min)	15		

Queues

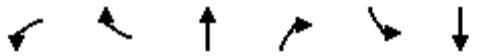


Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	135	442	1410	240	993
v/c Ratio	0.30	0.80	0.96	0.79	0.83
Control Delay	18.6	21.9	35.7	30.3	19.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	21.9	35.7	30.3	19.8
Queue Length 50th (ft)	36	70	232	31	242
Queue Length 95th (ft)	74	162	#421	#117	#552
Internal Link Dist (ft)	294		420		152
Turn Bay Length (ft)		200		100	
Base Capacity (vph)	617	688	1462	305	1191
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.64	0.96	0.79	0.83

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	124	407	1125	172	221	914
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	14	11	14	12	15
Total Lost time (s)	5.0	5.0	5.0		3.0	5.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1888	1689	3353		1770	2049
Flt Permitted	0.95	1.00	1.00		0.15	1.00
Satd. Flow (perm)	1888	1689	3353		274	2049
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	135	442	1223	187	240	993
RTOR Reduction (vph)	0	154	0	0	0	0
Lane Group Flow (vph)	135	288	1410	0	240	993
Turn Type		Perm			pm+pt	
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Actuated Green, G (s)	13.1	13.1	24.2		32.2	32.2
Effective Green, g (s)	13.1	13.1	24.2		32.2	32.2
Actuated g/C Ratio	0.24	0.24	0.44		0.58	0.58
Clearance Time (s)	5.0	5.0	5.0		3.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	447	400	1467		295	1193
v/s Ratio Prot	0.07		c0.42		0.07	c0.48
v/s Ratio Perm		c0.17			0.40	
v/c Ratio	0.30	0.72	0.96		0.81	0.83
Uniform Delay, d1	17.3	19.4	15.1		10.2	9.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	6.1	15.9		15.6	6.9
Delay (s)	17.7	25.5	31.0		25.9	16.2
Level of Service	B	C	C		C	B
Approach Delay (s)	23.7		31.0			18.1
Approach LOS	C		C			B

Intersection Summary			
HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	55.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

ALTERNATIVE 3

Intersection and Approach	Lane Group	2010 Volumes w/ Alt. 3 Lane Geometry								2013 Volumes w/ Alt. 3 Lane Geometry								2033 Volumes w/ Alt. 3 Lane Geometry							
		AM Peak Hour				PM Peak Hour					AM Peak Hour				PM Peak Hour				AM Peak Hour				PM Peak Hour			
		Delay (sec.)	LOS	V/C Ratio	Queue (ft.)	Delay (sec.)	LOS	V/C Ratio	Queue (ft.)		Delay (sec.)	LOS	V/C Ratio	Queue (ft.)	Delay (sec.)	LOS	V/C Ratio	Queue (ft.)		Delay (sec.)	LOS	V/C Ratio	Queue (ft.)	Delay (sec.)	LOS	V/C Ratio	Queue (ft.)
Vauxhall Road & Sayre Road/GSP McDonald's (Unsignalized)																									
Northbound Vauxhall Road	T	0.0		0.33		0.0		0.47		T	0.0		0.35		0.0		0.50		T	0.0		0.38		0.0		0.54	
	TR	0.0		0.30		0.0		0.38		TR	0.0		0.32		0.0		0.40		TR	0.0		0.35		0.0		0.44	
Southbound Vauxhall Road	L	11.9	B	0.29	29	13.5	B	0.26	26	L	12.5	B	0.32	34	14.2	B	0.28	29	L	13.9	B	0.37	43	16.0	C	0.34	38
	TR	0.0		0.71		0.0		0.63		TR	0.0		0.76		0.0		0.67		TR	0.0		0.82		0.0		0.73	
Eastbound Sayre Road	R	27.0	D	0.06	5	22.2	C	0.05	4	R	29.8	D	0.07	6	24.1	C	0.05	4	R	35.5	E	0.10	8	27.8	D	0.07	6
Westbound GSP/McDonald's	R	12.9	B	0.40	49	11.2	B	0.27	27	R	12.7	B	0.41	50	12.1	B	0.31	32	R	12.9	B	0.44	56	13.6	B	0.37	42
Overall Intersection		2.4				1.6					2.4				1.7					2.6				1.9			
Vauxhall Road & WB US Route 22 Ramps (Signalized)																									
Westbound WB US Route 22 Ramps	L	24.6	C	0.23	44	19.9	B	0.31	70	L	22.8	C	0.22	43	18.0	B	0.30	68	L	22.7	C	0.23	45	17.7	B	0.30	74
	R	24.2	C	0.16	55	25.1	C	0.65	134	R	23.3	C	0.29	64	23.3	C	0.66	138	R	24.5	C	0.47	88	25.5	C	0.72	162
Northbound Vauxhall Road	T-TR	8.1	A	0.48	126	15.0	B	0.75	267	T-TR	9.3	A	0.54	158	20.4	C	0.86	#371	T-TR	10.1	B	0.59	178	31.0	C	0.96	#421
Southbound Vauxhall Road	L	4.5	A	0.51	28	15.8	B	0.72	#81	L	6.5	A	0.59	40	17.7	B	0.73	#101	L	11.3	B	0.71	#59	25.9	C	0.81	#117
	T	7.2	A	0.68	235	9.5	A	0.67	319	T	9.0	A	0.74	340	12.3	B	0.75	#482	T	11.6	B	0.81	#447	16.2	B	0.83	#552
Overall Intersection		9.5	A	0.61		15.0	B	0.69			10.8	B	0.67		18.0	B	0.84			12.6	B	0.76		24.7	C	0.92	
Vauxhall Road & EB US Route 22 Ramps (Unsignalized)																									
Westbound EB US Route 22 Ramps	LR	*	F	3.39	-	*	F	4.31	-	LR	*	F	5.67	-	*	F	6.57	-	LR	*	F	14.72	-	*	F	14.52	-
Northbound Vauxhall Road	TR	0.0		0.43		0.0		0.43		TR	0.0		0.46		0.0		0.45		TR	0.0		0.50		0.0		0.49	
Southbound Vauxhall Road	L	12.8	B	0.47	65	10.5	B	0.26	26	L	13.9	B	0.52	77	11.0	B	0.29	30	L	16.3	C	0.61	104	11.8	B	0.33	36
	T	0.0		0.37		0.0		0.44		T	0.0		0.39		0.0		0.47		T	0.0		0.43		0.0		0.51	
Overall Intersection		1436.4				2678.7					1436.3				2679.5					1432.3				2678.9			

Notes:

(*) Intersection or Approach exceeds capacity and delay.

(#) 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maxiumum after two cycles.

Shading represents movements with poor operational conditions, LOS E & F.

NEW JERSEY DEPARTMENT OF TRANSPORTATION
MEMORANDUM

TO: Kamlesh R. Shah, Supervising Engineer 2
Division of Project Planning and Development - North

FROM: Kevin M. Conover KMC
Bureau of Safety Programs

DATE: July 1, 2010

PHONE: 530 – 2471

RE: Crash Data for Route 22 WB MP 55.90 - 56.40 @ Vauxhall Road Interchange
Union Township, Union County

This is in reference to your request dated June 8, 2010, requesting this office to furnish the crash data for the above referenced location for the most recent three years.

CRASH DATA RELATIVE TO OVERREPRESENTATIONS:

The crash summary relative to overrepresentations for this section of Route 22 WB for the period January 1, 2006, to December 31, 2008, is herewith attached. The percentages of those crash types and conditions that exceed 2008 statewide average values are indicated.

CRASH RATE:

Route	Mile Post	Cross-Section	Actual Crash Rate (Crashes/mvm.)	Statewide Crash Rate for Year 2008 (Crashes/mvm.)
22 WB	55.90 - 56.40	4 lanes, barrier median without shoulder	3.79	2.93

The crash rate for this section of Route 22 WB is above the statewide average crash rate for roadways with similar cross–section. Hence, a further review of the crash summary and details may be necessary. A review of the crash overrepresentations may provide an insight into any additional crash countermeasures that could be implemented to bring the crash rate more in line with the statewide average.

Also, enclosed are the Details of Motor Vehicle Accident Reports for the years 2006 through 2008 for the subject location.

The following is the safety score:

ROUTE	MILE POST	CROSS SECTION	SAFETY SCORE
22 WB	55.90 – 56.40	4 or more lanes, barrier median, without shoulder	7

If there are any further questions, please contact Geoffrey Gayanilo of this office at 530-4288.

KC:TZ:GG

Mail Log No. 122-10

CRASH SUMMARY

Route 22 WB MP 55.90 - 56.40
Union Township, Union County
01/01/2006 THRU 12/31/2008

TOTAL CRASHES: 81

SEVERITY	COUNT	% OF TOTAL	2008 Average
Fatal	0	0.00%	
Injury	25	30.86%	28.39%
Property Damage	56	69.14%	
Total	**81**		

INTERSECTION	COUNT	% OF TOTAL	2008 Average	**
At Signalized Intersection	0	0.00%		
At Unsignalized Intersection	24	29.63%	15.48%	
Between Intersections	57	70.37%		
Railroad Crossing	0	0.00%		
Total	**81**			

COLLISION TYPE	COUNT	% OF TOTAL	2008 Average	**
Same Dir.-Rear End	57	70.37%	46.71%	
Same Dir.-Sideswipe	12	14.81%		
Angle	1	1.23%		
Head On	0	0.00%		
Parked Vehicle	0	0.00%		
Left Turn / U Turn	0	0.00%		
Backing	2	2.47%	0.83%	
Encroachment	0	0.00%		
Overturned	1	1.23%	0.83%	
Fixed Object	7	8.64%		
Animal	0	0.00%		
Pedestrian	0	0.00%		
Pedalcycle	0	0.00%		
Non-Fixed Object	1	1.23%	0.64%	
Unknown	0	0.00%		
Other	0	0.00%		
Total	**81**			

SURFACE CONDITION	COUNT	% OF TOTAL	2008 Average	**
Dry	64	79.01%	74.44%	
Wet Surface	16	19.75%		
Snow	0	0.00%		
Ice	0	0.00%		
Unknown	0	0.00%		
Other	1	1.23%	0.39%	
Total	**81**			

LIGHT	COUNT	% OF TOTAL	2008 Average	**
Day	55	67.90%		
Dusk	0	0.00%		
Night	25	30.86%	26.78%	
Dawn	1	1.23%		
Unknown	0	0.00%		
Total	**81**			

Note:
** These columns indicate the number of fatal crashes in each accident category.

Length of Segment	0.5
Number of Years	3
AADT	39054

Crash Rate/MVM 3.79

2008 Statewide Crash Rate/MVM 2.93

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF SAFETY PROGRAMS
DETAIL OF MOTOR VEHICLE ACCIDENTS
ON ROUTE 22
MILEPOST 55.900 TO 56.400
01/01/2006 TO 12/31/2008

ROAD SYS / D L N	COLLISION TYPE	VEHICLE 1 DIR TRAV / VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV / VEH TYPE, VEH ACTN	WEA	SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB CIRCUMSTANCES	VEH 2 CONTRIB CIRCUMSTANCES	NO. KIL	NO. MAJ	INJURED MOD	INJURED MIN	NO. ACC
STATE HWY	*RT 22*	*MP 055.90*	*NOT AT INTERSECTION*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*0*	*4*
06008121	FIXED OBJECT	N- PASS-MERGING	- -	RN/WT	DAY		01/14/06	SAT	08:40	DRI INATTENTION		0	0	0	0	
07228843	FIXED OBJECT	N- PASS-LEFT TURN	- -	RN/WT	DARK		10/10/07	WED	06:34	UNSAFE SPEED		0	0	0	0	
08020434	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-GOING STRT	RN/WT	DAY		01/29/08	TUE	14:00	OTH VEHICLE FAC	DRI INATTENTION	0	0	0	0	
08057734	SAME DIR-REAR	W- PASS-SLOW-STOP	W- PASS-SLOW-STOP	OC/DR	DAY		04/04/08	FRI	16:40	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
STATE HWY	*RT 22*	*MP 055.90*	*AT UNKNOWN INTERSECTION*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*1*	*4*
06021888	SAME DIR-REAR	E- PASS-SLOW-STOP	E- PKUP-GOING STRT	CL/DR	DAWN		01/06/06	FRI	06:45	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
06021887	SAME DIR-REAR	E- SUV-SLOW-STOP	E- SUV-SLOW-STOP	CL/DR	DAY		01/06/06	FRI	08:53	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06174216	SAME DIR-SIDE	E- PASS-MERGING	E-SEMIT-GOING STRT	CL/DR	DAY		08/14/06	MON	10:55	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
07180225	SAME DIR-REAR	E- PASS-MERGING	E-CV10K-	CL/DR	DAY		08/11/07	SAT	12:23	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
STATE HWY	*RT 22*	*MP 055.91*	*NEAR FAIRWAY DR (NORTH)*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*0*	*1*
08139144	SAME DIR-REAR	W- SUV-SLOW-STOP	W- PASS-GOING STRT	CL/DR	DAY		07/11/08	FRI	12:56	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
STATE HWY	*RT 22*	*MP 055.92*	*NEAR GARDEN STATE PARKWAY*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*0*	*2*
07062146	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-SLOW-STOP	CL/DR	DAY		04/20/07	FRI	08:18	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
08055052	RIGHT ANGLE	W-PVLT9-GOING STRT	N- PASS-NEG CURVE	CL/WT	DAY		03/15/08	SAT	08:17	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
STATE HWY	*RT 22*	*MP 055.93*	*NEAR SAYRE RD S.*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*1*	*2*
07176981	SAME DIR-REAR	E- SUV-STOP-TRAF	E- PKUP-STOP-TRAF	CL/DR	DAY		09/04/07	TUE	17:32	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	0	
08234304	SAME DIR-REAR	W- PASS-GOING STRT	W- PASS-GOING STRT	CL/DR	DAY		10/27/08	MON	10:36	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
STATE HWY	*RT 22*	*MP 055.94*	*NOT AT INTERSECTION*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*0*	*4*
06102094	SAME DIR-REAR	W- SUV-GOING STRT	W- SUV-GOING STRT	CL/DR	DAY		06/01/06	THR	14:05	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
07175714	SAME DIR-REAR	E- PASS-GOING STRT	E- PASS-CHNG LANES	RN/WT	DUSK		07/05/07	THR	19:38	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	0	
07176983	SAME DIR-REAR	E- PASS-CHNG LANES	E- SUV-GOING STRT	CL/DR	DAY		09/04/07	TUE	17:26	IMP LANE CHANGE	NONE-DRIVER/CYC	0	0	0	0	
08106489	SAME DIR-REAR	E- SUV-MERGING	E- PASS-MERGING	CL/DR	DAY		06/06/08	FRI	16:29	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
STATE HWY	*RT 22*	*MP 055.95*	*NEAR GARDEN STATE PARKWAY*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*0*	*1*
08171819	SAME DIR-REAR	W- PASS-SLOW-STOP	W- PASS-GOING STRT	CL/DR	DAY		08/23/08	SAT	13:29	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
STATE HWY	*RT 22*	*MP 055.96*	*NEAR UNION COUNTY 630*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*0*	*1*
07249681	SAME DIR-REAR	E- PASS-SLOW-STOP	E- PASS-SLOW-STOP	CL/DR	DAY		11/12/07	MON	16:13	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
STATE HWY	*RT 22*	*MP 055.97*	*NEAR SAYRE RD*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*1*	*3*
07052522	SAME DIR-REAR	W- SUV-SLOW-STOP	W- SUV-SLOW-STOP	CL/DR	DAY		04/09/07	MON	18:25	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07264906	SAME DIR-REAR	E-S2AXL-GOING STRT	E- PASS-GOING STRT	RN/WT	DAY		10/27/07	SAT	11:31	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	1	
08084486	SAME DIR-REAR	E- PASS-GOING STRT	E- SUV-GOING STRT	OC/DR	DAY		05/08/08	THR	10:28	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.00*	*NOT AT INTERSECTION*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*2*	*7*
06095731	SAME DIR-REAR	E- SUV-SLOW-STOP	E- PASS-SLOW-STOP	CL/DR	DAY		05/23/06	TUE	07:11	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	

County-Municipality Restrictions: 1: Union County, Union Twp 2:

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF SAFETY PROGRAMS
DETAIL OF MOTOR VEHICLE ACCIDENTS
ON ROUTE 22
MILEPOST 55.900 TO 56.400
01/01/2006 TO 12/31/2008

ROAD SYS / D L N	COLLISION TYPE	VEHICLE 1 DIR TRAV / VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV / VEH TYPE, VEH ACTN	WEA / SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB CIRCUMSTANCES	VEH 2 CONTRIB CIRCUMSTANCES	NO. KIL	NO. INJURED MAJ	MOD	MIN	NO. ACC
STATE HWY	*RT 22*	*MP 056.00*	*NOT AT INTERSECTION*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*2*	*7*
06157730	SAME DIR-REAR	E- PASS-SLOW-STOP	E-OTHTK-GOING STRT	RN/WT	DARK	07/18/06	TUE	20:30	RD SURF CNDTION	UNSAFE SPEED	0	0	0	0	
07113880	BACKING	W- SUV-BACKING	W- PASS-STOP-TRAF	CL/DR	DAY	06/13/07	WED	14:23	BACKING UNSAFE	NONE-DRIVER/CYC	0	0	0	0	
07172670	SAME DIR-REAR	W- SUV-STOP-TRAF	W- PASS-GOING STRT	CL/DR	DAY	08/27/07	MON	16:54	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07195684	FIXED OBJECT	W- PASS-GOING STRT	- -	CL/DR	DAY	09/17/07	MON	15:00	OTH DR/PED ACT		0	0	0	1	
08152700	SAME DIR-REAR	E-PVLT9-SLOW-STOP	E- SUV-GOING STRT	CL/DR	DAY	05/27/08	TUE	17:20	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	1	
08226419	SAME DIR-SIDE	W-PVLT9-GOING STRT	W- PASS-CHNG LANES	CL/DR	DAY	10/17/08	FRI	13:29	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.00*	*AT UNKNOWN INTERSECTION*				*UNION TWP*			*UNION*	*0*	*0*	*3*	*0*	*2*
06012458	SAME DIR-REAR	W- PASS-U TURN	W- PASS-U TURN	CL/DR	DAY	01/20/06	FRI	15:35	NONE-DRIVER/CYC	DRI INATTENTION	0	0	2	0	
08046368	PEDESTRIAN	- -	- -	CL/DR	DARK	03/20/08	THR	22:28	NONE-DRIVER/CYC		0	0	1	0	
STATE HWY	*RT 22*	*MP 056.01*	*NEAR SAYRE RD*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*1*	*3*
06087748	SAME DIR-SIDE	W- PASS-GOING STRT	W- PASS-CHNG LANES	CL/DR	DAY	05/09/06	TUE	17:38	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	1	
07008671	FIXED OBJECT	W- PASS-GOING STRT	- -	CL/DR	DARK	02/04/07	SUN	05:39	DRI INATTENTION		0	0	0	0	
07125776	FIXED OBJECT	W- PASS-GOING STRT	- -	CL/DR	DARK	04/28/07	SAT	02:21	UNSAFE SPEED		0	0	0	0	
STATE HWY	*RT 22*	*MP 056.02*	*NEAR SAYRE RD*				*UNION TWP*			*UNION*	*0*	*0*	*1*	*2*	*1*
06287974	SAME DIR-REAR	W- PASS-GOING STRT	W- PASS-GOING STRT	CL/DR	DARK	12/21/06	THR	23:09	NONE-DRIVER/CYC	DRI INATTENTION	0	0	1	2	
STATE HWY	*RT 22*	*MP 056.03*	*NEAR SAYRE RD*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*0*	*3*
06141848	NON-FIXED OBJ	W- PASS-GOING STRT	- -	CL/DR	DAY	07/19/06	WED	15:02	DEBRIS ON ROAD		0	0	0	0	
06188700	SAME DIR-SIDE	W- PASS-GOING STRT	W- SUV-GOING STRT	CL/DR	DAY	09/12/06	TUE	18:00	OTH DR/PED ACT	OTH DR/PED ACT	0	0	0	0	
08288288	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-SLOW-STOP	CL/DR	DARK	12/18/08	THR	16:59	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.05*	*NEAR SAYRE RD*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*1*	*1*
07008684	SAME DIR-REAR	W- SUV-SLOW-STOP	W- PASS-GOING STRT	CL/WT	DARK	02/02/07	FRI	22:18	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	1	
STATE HWY	*RT 22*	*MP 056.06*	*NEAR SAYRE RD*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*0*	*4*
06010848	SAME DIR-REAR	W- SUV-SLOW-STOP	W- PASS-SLOW-STOP	RN/WT	DARK	01/31/06	TUE	06:18	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
06279574	SAME DIR-REAR	E- PASS-GOING STRT	E- PASS-GOING STRT	RN/WT	DARK	11/13/06	MON	21:19	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	0	
08209436	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-GOING STRT	RN/WT	DAY	10/01/08	WED	17:34	NONE-DRIVER/CYC	RD SURF CNDTION	0	0	0	0	
08251808	SAME DIR-REAR	W- PASS-RT TRN-NRD	W- SUV-GOING STRT	CL/DR	DAY	11/19/08	WED	12:49	FAIL TO YLD ROW	NONE-DRIVER/CYC	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.07*	*NOT AT INTERSECTION*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*1*	*4*
07108553	SAME DIR-REAR	E- SUV-STOP-TRAF	E- PASS-SLOW-STOP	CL/DR	DAY	06/08/07	FRI	07:10	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	1	
07245653	SAME DIR-REAR	W- PASS-SLOW-STOP	W- PASS-SLOW-STOP	CL/DR	DARK	10/30/07	TUE	:	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
08009857	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-GOING STRT	CL/DR	DAY	01/25/08	FRI	07:28	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08159864	SAME DIR-SIDE	W- PASS-GOING STRT	W- SUV-MERGING	CL/DR	DAY	08/16/08	SAT	13:07	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.07*	*AT SAYRE RD*				*UNION TWP*			*UNION*	*0*	*0*	*1*	*1*	*16*

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ROAD SYS D L N	COLLISION TYPE	VEHICLE 1 DIR TRAV VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV VEH TYPE, VEH ACTN	WEA SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB CIRCUMSTANCES	VEH 2 CONTRIB CIRCUMSTANCES	NO. KIL	NO. MAJ	INJURED MOD	INJURED MIN	NO. ACC
STATE HWY	*RT 22*	*MP 056.07*	*AT SAYRE RD*				*UNION TWP*			*UNION*	*0*	*0*	*1*	*1*	*16*
06010847	SAME DIR-REAR	W- PASS-RT TRN-NRD	W- PASS-GOING STRT	RN/WT	DARK	01/31/06	TUE	06:30	IMPROPER TURN	NONE-DRIVER/CYC	0	0	0	1	
06016230	SAME DIR-SIDE	W- PASS-GOING STRT	W- PASS-CHNG LANES	CL/DR	DAY	02/10/06	FRI	13:57	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	0	
06051056	FIXED OBJECT	E- PASS-GOING STRT	- -	CL/DR	DARK	03/25/06	SAT	04:30	OTH DR/PED ACT		0	0	1	0	
06165119	FIXED OBJECT	W- PASS-GOING STRT	- -	CL/DR	DARK	07/02/06	SUN	00:02	NONE-DRIVER/CYC		0	0	0	0	
06132906	SAME DIR-SIDE	W-PVLT9-GOING STRT	W- PASS-CHNG LANES	CL/DR	DAY	07/08/06	SAT	14:49	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	0	
06139627	FIXED OBJECT	E- PASS-GOING STRT	- -	CL/DR	DARK	07/13/06	THR	21:38	OTH DR/PED ACT		0	0	0	0	
06150491	SAME DIR-REAR	W- PASS-GOING STRT	W- SUV-GOING STRT	CL/DR	DARK	07/20/06	THR	21:44	FOLLOW TO CLOSE	NONE-DRIVER/CYC	0	0	0	0	
06263882	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-STOP-TRAF	CL/DR	DARK	12/04/06	MON	17:40	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	0	
07040341	SAME DIR-REAR	S-BV9PL-RT TRN-NRD	S- PASS-RT TRN-NRD	CL/DR	DAY	03/21/07	WED	08:43	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07131095	SAME DIR-REAR	W- SUV-GOING STRT	W-S2AXL-CHNG LANES	FG/DR	DAWN	07/19/07	THR	06:31	NONE-DRIVER/CYC	FAIL TO YLD ROW	0	0	0	0	
07162366	SAME DIR-SIDE	W-BV9PL-GOING STRT	W-SEMIT-STOP-TRAF	CL/DR	DAY	08/20/07	MON	09:48	DRI INATTENTION	DRI INATTENTION	0	0	0	0	
07257718	SAME DIR-REAR	W- PKUP-STOP-TRAF	W-S2AXL-GOING STRT	CL/DR	DARK	11/16/07	FRI	17:14	NONE-DRIVER/CYC	UNKNOWN	0	0	0	0	
08145855	SAME DIR-REAR	S- PASS-RT TRN-NRD	S- PASS-RT TRN-NRD	OC/WT	DAWN	07/14/08	MON	07:02	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08159865	SAME DIR-REAR	S- SUV-MERGING	S- PASS-MERGING	CL/DR	DAY	08/16/08	SAT	13:19	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08226435	SAME DIR-REAR	S- PASS-STOP-TRAF	S- SUV-GOING STRT	CL/DR	DARK	10/18/08	SAT	22:35	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08257863	SAME DIR-SIDE	W- PASS-RT TRN-NRD	W- PASS-GOING STRT	RN/WT	DAY	11/25/08	TUE	09:02	FAIL TO YLD ROW	NONE-DRIVER/CYC	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.08*	*NEAR SAYRE RD*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*1*	*5*
06075878	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-GOING STRT	CL/DR	DAY	04/26/06	WED	17:21	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
06223208	SAME DIR-REAR	W- PASS-SLOW-STOP	W- PASS-SLOW-STOP	CL/DR	DARK	10/20/06	FRI	21:09	NONE-DRIVER/CYC	OTH DR/PED ACT	0	0	0	0	
06237288	SAME DIR-REAR	E-CV10K-CHNG LANES	E- PASS-GOING STRT	CL/DR	DAY	11/06/06	MON	08:24	OTH DR/PED ACT	NONE-DRIVER/CYC	0	0	0	0	
07195852	SAME DIR-SIDE	E- PASS-STOP-TRAF	E- PASS-START TRAF	CL/DR	DAY	09/23/07	SUN	13:11	NONE-DRIVER/CYC	FAIL TO YLD ROW	0	0	0	0	
08254708	SAME DIR-REAR	E-PVLT9-GOING STRT	E- PKUP-GOING STRT	CL/DR	DARK	11/21/08	FRI	20:18	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.09*	*NEAR SAYRE RD*				*UNION TWP*			*UNION*	*0*	*0*	*1*	*3*	*5*
06165105	SAME DIR-REAR	W- SUV-MERGING	W- PASS-GOING STRT	CL/DR	DAY	07/03/06	MON	17:24	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
07102072	SAME DIR-REAR	W- PASS-GOING STRT	W- PASS-SLOW-STOP	RN/WT	DAY	04/12/07	THR	13:50	FOLLOW TO CLOSE	UNSAFE SPEED	0	0	0	1	
08003551	SAME DIR-REAR	W- PASS-SLOW-STOP	W- PASS-SLOW-STOP	CL/DR	DARK	01/07/08	MON	18:06	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	1	0	
08090190	SAME DIR-REAR	W- SUV-SLOW-STOP	W- PASS-GOING STRT	RN/WT	DAY	05/20/08	TUE	18:06	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08106492	SAME DIR-REAR	E- SUV-SLOW-STOP	E- PASS-SLOW-STOP	CL/DR	DAY	06/06/08	FRI	13:46	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	1	
STATE HWY	*RT 22*	*MP 056.10*	*NEAR UNION COUNTY 630*				*UNION TWP*			*UNION*	*0*	*0*	*1*	*2*	*14*
06075898	SAME DIR-REAR	E- PASS-SLOW-STOP	E- PASS-GOING STRT	CL/WT	DAY	04/24/06	MON	09:26	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06139647	SAME DIR-REAR	W- SUV-U TURN	W- PASS-U TURN	CL/DR	DAY	07/15/06	SAT	19:13	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06223244	SAME DIR-REAR	E- SUV-SLOW-STOP	E- PASS-GOING STRT	CL/DR	DAY	10/17/06	TUE	07:26	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
06272811	SAME DIR-REAR	E- PASS-MERGING	E- PASS-MERGING	CL/WT	DAY	12/13/06	WED	16:24	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
06290679	FIXED OBJECT	W- PASS-U TURN	- -	RN/WT	DAY	12/26/06	TUE	09:56	UNSAFE SPEED		0	0	0	0	
07009088	SAME DIR-SIDE	E- PASS-GOING STRT	E- PKUP-CHNG LANES	CL/DR	DAY	02/19/07	MON	14:16	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	0	
07012433	STR PK VEH	U- SUV-PARKED	U- PASS-PARKED	CL/DR	DAY	02/20/07	TUE	11:35	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	0	

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ROAD SYS / D L N	COLLISION TYPE	VEHICLE 1 DIR TRAV / VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV / VEH TYPE, VEH ACTN	WEA / SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB CIRCUMSTANCES	VEH 2 CONTRIB CIRCUMSTANCES	NO. KIL	NO. INJURED MAJ	MOD	MIN	NO. ACC
STATE HWY	*RT 22*	*MP 056.10*	*NEAR UNION COUNTY 630*					*UNION TWP*		*UNION*	*0*	*0*	*1*	*2*	*14*
07108424	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-STOP-TRAF	OC/DR	DAY	04/12/07	THR	17:20	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	0	
07165465	SAME DIR-SIDE	E- PASS-GOING STRT	E-PVLT9-GOING STRT	CL/DR	DAY	07/11/07	WED	12:27	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07181927	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-GOING STRT	CL/DR	DAY	09/06/07	THR	08:15	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07195850	SAME DIR-SIDE	E- PASS-GOING STRT	E- SUV-PASSING	CL/DR	DARK	09/22/07	SAT	22:32	NONE-DRIVER/CYC		0	0	0	1	
07202396	FIXED OBJECT	E- PASS-GOING STRT	- -	CL/DR	DARK	10/02/07	TUE	00:53	DRI INATTENTION		0	0	1	0	
08031569	STR PK VEH	U- PASS-PARKED	E- -GOING STRT	CL/DR	DAY	02/19/08	TUE	12:31	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08189398	SAME DIR-REAR	E-CV10K-STOP-TRAF	E- PASS-GOING STRT	CL/DR	DAY	08/05/08	TUE	17:37	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.10*	*AT UNKNOWN INTERSECTION*					*UNION TWP*		*UNION*	*0*	*0*	*0*	*1*	*3*
06006002	SAME DIR-REAR	E- PASS-MERGING	E- SUV-GOING STRT	CL/DR	DARK	01/10/06	TUE	18:38	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07147995	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PKUP-START TRAF	CL/DR	DAY	07/16/07	MON	14:34	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
07180243	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-MERGING	CL/DR	DAY	08/02/07	THR	19:12	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.11*	*NEAR UNION COUNTY 630*					*UNION TWP*		*UNION*	*0*	*0*	*0*	*2*	*2*
07088517	SAME DIR-REAR	E- SUV-STOP-TRAF	E- PASS-SLOW-STOP	CL/DR	DAY	05/15/07	TUE	16:28	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08194754	SAME DIR-REAR	E- PKUP-GOING STRT	E- PASS-GOING STRT	CL/DR	DAY	09/18/08	THR	07:01	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	2	
STATE HWY	*RT 22*	*MP 056.12*	*NEAR UNION COUNTY 630*					*UNION TWP*		*UNION*	*0*	*0*	*0*	*4*	*6*
06022883	SAME DIR-REAR	E- PASS-SLOW-STOP	E-S2AXL-GOING STRT	CL/DR	DAY	01/19/06	THR	08:37	NONE-DRIVER/CYC	BRAKES	0	0	0	0	
06081911	FIXED OBJECT	E- SUV-GOING STRT	- -	CL/DR	DAY	05/02/06	TUE	08:02	OTH DR/PED ACT		0	0	0	1	
06098334	SAME DIR-REAR	E- PASS-GOING STRT	E-CV10K-GOING STRT	CL/DR	DAY	05/30/06	TUE	18:40	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	2	
06163435	SAME DIR-REAR	E- SUV-SLOW-STOP	E- PASS-GOING STRT	CL/DR	DAY	08/01/06	TUE	07:42	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
06199098	FIXED OBJECT	E- PASS-U TURN	- -	CL/WT	DAY	09/24/06	SUN	13:37	OTH DR/PED ACT		0	0	0	1	
06270074	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-STOP-TRAF	CL/DR	DARK	12/15/06	FRI	18:35	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.13*	*NEAR VAUXHALL RD EXIT*					*UNION TWP*		*UNION*	*0*	*0*	*0*	*0*	*2*
07169542	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-	CL/DR	DAY	07/10/07	TUE	07:31	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	0	
07228844	SAME DIR-REAR	E- PASS-GOING STRT	E- PASS-GOING STRT	RN/WT	DAY	10/10/07	WED	07:20	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.14*	*NEAR SAYRE RD*					*UNION TWP*		*UNION*	*0*	*0*	*0*	*3*	*5*
06092734	SAME DIR-REAR	W- PASS-RT TRN-NRD	W-SEMIT-SLOW-STOP	RN/WT	DAY	05/19/06	FRI	15:21	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06141841	FIXED OBJECT	W- PASS-GOING STRT	- -	CL/DR	DARK	07/19/06	WED	22:30	NONE-DRIVER/CYC		0	0	0	0	
06158533	SAME DIR-REAR	E- PASS-SLOW-STOP	E- SUV-SLOW-STOP	CL/DR	DAY	07/25/06	TUE	16:04	NONE-DRIVER/CYC	OTH DR/PED ACT	0	0	0	0	
07155589	SAME DIR-REAR	E-S3AXL-STOP-TRAF	E- -GOING STRT	CL/WT	DAY	08/08/07	WED	07:36	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
08009846	SAME DIR-REAR	W- SUV-SLOW-STOP	W- PASS-GOING STRT	CL/DR	DAY	01/26/08	SAT	13:21	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	3	
STATE HWY	*RT 22*	*MP 056.15*	*NEAR UNION COUNTY 630*					*UNION TWP*		*UNION*	*0*	*0*	*0*	*0*	*1*
06172860	SAME DIR-REAR	W- PASS-CHNG LANES	W- SUV-GOING STRT	RN/WT	DARK	08/27/06	SUN	21:45	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.15*	*AT UNKNOWN INTERSECTION*					*UNION TWP*		*UNION*	*0*	*0*	*0*	*1*	*1*

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF SAFETY PROGRAMS
DETAIL OF MOTOR VEHICLE ACCIDENTS
ON ROUTE 22
MILEPOST 55.900 TO 56.400
01/01/2006 TO 12/31/2008

ROAD SYS / D L N	COLLISION TYPE	VEHICLE 1 DIR TRAV / VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV / VEH TYPE, VEH ACTN	WEA / SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB CIRCUMSTANCES	VEH 2 CONTRIB CIRCUMSTANCES	NO. KIL	NO. MAJ	INJURED MOD	INJURED MIN	NO. ACC
STATE HWY	*RT 22*	*MP 056.15*	*AT UNKNOWN INTERSECTION*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*1*	*1*
06095723	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-GOING STRT	CL/DR	DAY	05/22/06	MON	14:03	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
STATE HWY	*RT 22*	*MP 056.16*	*NEAR UNION COUNTY 630*				*UNION TWP*			*UNION*	*0*	*0*	*4*	*5*	*25*
06046707	FIXED OBJECT	W- PKUP-GOING STRT	- -	CL/DR	DARK	02/04/06	SAT	01:56	DRI INATTENTION		0	0	1	0	
06015609	SAME DIR-REAR	W- SUV-GOING STRT	W- PASS-CHNG LANES	CL/SL	DAY	02/13/06	MON	08:30	NONE-DRIVER/CYC	FAIL TO YLD ROW	0	0	0	0	
06051048	SAME DIR-REAR	E- PASS-SLOW-STOP	E- PASS-SLOW-STOP	CL/DR	DAY	03/24/06	FRI	:	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	1	
06104968	FIXED OBJECT	E- PASS-GOING STRT	- -	RN/WT	DARK	06/03/06	SAT	00:54	UNSAFE SPEED		0	0	0	0	
06117000	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-GOING STRT	CL/DR	DAY	06/14/06	WED	17:52	NONE-DRIVER/CYC	DRI INATTENTION	0	0	1	0	
06161716	SAME DIR-REAR	E- PASS-MERGING	E- PASS-MERGING	CL/DR	DAY	08/08/06	TUE	17:05	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06179655	SAME DIR-REAR	E- PASS-MERGING	E- PASS-MERGING	RN/WT	DAY	08/28/06	MON	08:40	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
06194655	SAME DIR-SIDE	W- PASS-GOING STRT	W- PASS-GOING STRT	CL/DR	DAY	09/16/06	SAT	17:58	ANIMALS IN RDWY	IMP PASSING	0	0	0	0	
06210207	SAME DIR-REAR	E- PASS-MERGING	E- PASS-STOP-TRAF	CL/DR	DAY	10/07/06	SAT	11:33	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
06223945	SAME DIR-REAR	E- PASS-MERGING	E- PASS-STOP-TRAF	CL/DR	DAY	10/07/06	SAT	11:33	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
06255566	FIXED OBJECT	E- PASS-GOING STRT	- -	RN/WT	DARK	11/23/06	THR	01:43	UNSAFE SPEED		0	0	1	0	
06290677	SAME DIR-REAR	E- PASS-GOING STRT	E- PASS-GOING STRT	CL/WT	DAY	12/26/06	TUE	10:53	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07004934	SAME DIR-REAR	E- PASS-GOING STRT	E- PASS-MERGING	CL/DR	DAY	01/03/07	WED	11:47	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07004344	SAME DIR-REAR	E- SUV-STOP-TRAF	E-CV10K-SLOW-STOP	RN/WT	DAY	01/08/07	MON	07:43	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
07017144	SAME DIR-REAR	E- SUV-STOP-TRAF	E- PASS-GOING STRT	RN/WT	DARK	01/13/07	SAT	18:38	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07008110	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PKUP-START TRAF	RN/WT	DAY	01/15/07	MON	07:25	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07086519	SAME DIR-REAR	E- PASS-MERGING	E- PKUP-MERGING	CL/DR	DAY	05/18/07	FRI	16:57	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07144876	SAME DIR-REAR	W- PASS-MERGING	W- SUV-MERGING	CL/DR	DAY	06/25/07	MON	18:31	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07175725	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-START TRAF	CL/DR	DAY	07/03/07	TUE	14:01	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08011980	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-MERGING	CL/DR	DAY	01/24/08	THR	13:50	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08029853	SAME DIR-SIDE	W- PASS-GOING STRT	W- PASS-MERGING	RN/WT	DAY	02/23/08	SAT	10:14	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
08145856	SAME DIR-REAR	E- PASS-SLOW-STOP	E- SUV-GOING STRT	CL/DR	DAY	07/13/08	SUN	16:42	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	1	0	
08201079	SAME DIR-REAR	W- PASS-SLOW-STOP	W- PASS-SLOW-STOP	CL/DR	DAY	09/13/08	SAT	14:56	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
08214006	SAME DIR-REAR	E- PASS-MERGING	E- PASS-MERGING	CL/DR	DAY	10/06/08	MON	16:06	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
08217834	SAME DIR-REAR	E- SUV-STOP-TRAF	E- PASS-START TRAF	CL/DR	DAY	10/08/08	WED	17:59	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.16*	*AT UNION COUNTY 630*				*UNION TWP*			*UNION*	*0*	*0*	*4*	*32*	*67*
06008107	SAME DIR-REAR	W- PASS-	W- PASS-	CL/DR	DARK	01/13/06	FRI	18:05	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06001368	SAME DIR-REAR	E-CV10K-MERGING	E- PASS-MERGING	CL/DR	DAY	01/26/06	THR	15:49	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06042174	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-START TRAF	CL/DR	DAY	03/14/06	TUE	11:17	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06042192	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-START TRAF	CL/DR	DAY	03/16/06	THR	16:09	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
06075897	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-GOING STRT	CL/DR	DAY	04/24/06	MON	18:25	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06075866	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-MERGING	CL/DR	DAY	04/27/06	THR	13:40	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	2	
06125210	SAME DIR-SIDE	E- PASS-STOP-TRAF	E- SUV-START TRAF	CL/DR	DAY	06/16/06	FRI	12:57	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
06135295	SAME DIR-REAR	E- SUV-STOP-TRAF	E- PASS-MERGING	CL/DR	DAY	07/06/06	THR	18:20	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06158513	SAME DIR-REAR	E- PASS-MERGING	E-PVLT9-MERGING	CL/DR	DAY	07/27/06	THR	12:21	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	

County-Municipality Restrictions: 1: Union County, Union Twp 2:

NEW JERSEY DEPARTMENT OF TRANSPORTATION
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MILEPOST 55.900 TO 56.400
01/01/2006 TO 12/31/2008

ROAD SYS D L N	COLLISION TYPE	VEHICLE 1 DIR TRAV VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV VEH TYPE, VEH ACTN	WEA SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB CIRCUMSTANCES	VEH 2 CONTRIB CIRCUMSTANCES	NO. KIL	NO. MAJ	INJURED MOD	INJURED MIN	NO. ACC
STATE HWY	*RT 22*	*MP 056.16*	*AT UNION COUNTY 630*				*UNION TWP*			*UNION*	*0*	*0*	*4*	*32*	*67*
06174816	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-GOING STRT	CL/DR	DAY	08/12/06	SAT	19:21	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06174168	SAME DIR-REAR	E- SUV-STOP-TRAF	E- PASS-MERGING	CL/DR	DAY	08/16/06	WED	12:45	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06173770	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-START TRAF	CL/DR	DAY	08/22/06	TUE	09:19	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
06172872	FIXED OBJECT	E- SUV-GOING STRT	- -	RN/WT	DAY	08/26/06	SAT	08:57	RD SURF CNDTION		0	0	1	0	
06172859	SAME DIR-REAR	W- PASS-GOING STRT	W- PASS-GOING STRT	RN/WT	DARK	08/27/06	SUN	22:07	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	2	
06180852	SAME DIR-REAR	E- PASS-MERGING	E- PASS-MERGING	CL/DR	DAY	08/31/06	THR	15:37	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06186543	SAME DIR-REAR	E- PASS-MERGING	E- PASS-MERGING	CL/DR	DAY	09/07/06	THR	10:42	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06188695	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-START TRAF	CL/DR	DAY	09/12/06	TUE	09:27	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
06194653	OVERTURNED	W- PASS-GOING STRT	- -	CL/DR	DAY	09/17/06	SUN	06:29	DRI INATTENTION		0	0	0	0	
06205044	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-START TRAF	CL/DR	DAY	10/01/06	SUN	17:22	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
06205054	SAME DIR-REAR	E- PASS-GOING STRT	E- PASS-GOING STRT	CL/DR	DARK	10/02/06	MON	21:33	NONE-DRIVER/CYC	UNSAFE SPEED	0	0	2	0	
06211210	SAME DIR-REAR	E- SUV-SLOW-STOP	E- PASS-SLOW-STOP	CL/DR	DAY	10/03/06	TUE	06:37	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
06210194	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-GOING STRT	CL/DR	DARK	10/08/06	SUN	20:53	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06223227	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-GOING STRT	CL/DR	DARK	10/21/06	SAT	17:51	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06244930	SAME DIR-REAR	E- PASS-MERGING	E- PASS-GOING STRT	CL/DR	DARK	11/10/06	FRI	19:07	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06255577	FIXED OBJECT	E- PASS-GOING STRT	- -	RN/WT	DAY	11/23/06	THR	09:51	DRI INATTENTION		0	0	0	0	
06270058	SAME DIR-REAR	E- PASS-RT TRN-NRD	E- PASS-MERGING	CL/DR	DAY	12/17/06	SUN	12:31	NONE-DRIVER/CYC	UNKNOWN	0	0	0	0	
07004142	SAME DIR-REAR	E- PASS-GOING STRT	E- SUV-START TRAF	CL/DR	DARK	01/06/07	SAT	:	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07009236	SAME DIR-REAR	W- PASS-STOP-TRAF	W- SUV-MERGING	CL/DR	DAY	01/26/07	FRI	08:44	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
07077163	SAME DIR-REAR	E- PASS-MERGING	E-SEMIT-MERGING	CL/DR	DAY	02/07/07	WED	10:51	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
07050115	SAME DIR-REAR	E- PASS-MERGING	E- UNKN-START TRAF	CL/WT	DUSK	04/01/07	SUN	18:12	NONE-DRIVER/CYC	UNKNOWN	0	0	0	0	
07075238	SAME DIR-REAR	E- PASS-MERGING	E- PASS-GOING STRT	CL/DR	DAY	05/07/07	MON	16:48	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07105798	SAME DIR-REAR	E- SUV-STOP-TRAF	E- PASS-SLOW-STOP	RN/WT	DAY	06/12/07	TUE	13:49	NONE-DRIVER/CYC	RUTS/HOLES/BMPS	0	0	0	0	
07139939	SAME DIR-REAR	E- PASS-GOING STRT	E- PASS-GOING STRT	CL/DR	DARK	06/20/07	WED	22:16	NONE-DRIVER/CYC	UNKNOWN	0	0	0	0	
07175698	SAME DIR-REAR	N- PASS-MERGING	N- PASS-GOING STRT	CL/DR	DARK	07/07/07	SAT	00:09	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
07190777	SAME DIR-REAR	E- PASS-MERGING	E- PKUP-MERGING	CL/DR	DAY	08/15/07	WED	07:35	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
07176974	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-GOING STRT	CL/DR		09/05/07	WED	13:15	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07193364	RIGHT ANGLE	E- PASS-GOING STRT	N-S2AXL-MERGING	CL/DR	DAY	09/14/07	FRI	07:30	NONE-DRIVER/CYC	FAIL TO YLD ROW	0	0	0	1	
07193359	BACKING	W- PASS-GOING STRT	E- PASS-BACKING	CL/DR	DAY	09/15/07	SAT	13:04	NONE-DRIVER/CYC	BACKING UNSAFE	0	0	0	0	
07216740	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-GOING STRT	CL/DR	DAY	10/03/07	WED	15:12	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07216734	SAME DIR-REAR	W- PASS-STOP-TRAF	W-CV10K-GOING STRT	CL/DR	DAY	10/04/07	THR	12:29	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07264913	SAME DIR-REAR	W- PASS-STOP-TRAF	W- SUV-SLOW-STOP	RN/WT	DAY	10/26/07	FRI	17:22	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07272596	SAME DIR-REAR	E- PASS-MERGING	E- SUV-MERGING	CL/DR	DAY	10/29/07	MON	11:19	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07243743	SAME DIR-REAR	W- SUV-MERGING	W- PASS-MERGING	RN/WT	DARK	11/10/07	SAT	00:34	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07254515	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-MERGING	CL/DR	DAY	11/24/07	SAT	11:34	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08003354	SAME DIR-REAR	E- PASS-MERGING	E- PASS-MERGING	CL/DR	DARK	01/02/08	WED	21:34	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
08024191	SAME DIR-REAR	E- PKUP-GOING STRT	E- PASS-MERGING	SN/WT	DAY	02/04/08	MON	07:47	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08028903	FIXED OBJECT	E-CV10K-GOING STRT	- -	SN/SN	DAY	02/22/08	FRI	06:55	RD SURF CNDTION		0	0	0	0	
08040238	SAME DIR-REAR	E- SUV-SLOW-STOP	E- SUV-GOING STRT	CL/DR	DAY	03/05/08	WED	17:12	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	

County-Municipality Restrictions: 1: Union County, Union Twp 2:

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF SAFETY PROGRAMS
DETAIL OF MOTOR VEHICLE ACCIDENTS
ON ROUTE 22
MILEPOST 55.900 TO 56.400
01/01/2006 TO 12/31/2008

ROAD SYS D L N	COLLISION TYPE	VEHICLE 1 DIR TRAV VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV VEH TYPE, VEH ACTN	WEA SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB CIRCUMSTANCES	VEH 2 CONTRIB CIRCUMSTANCES	NO. KIL	NO. MAJ	INJURED MOD	INJURED MIN	NO. ACC
STATE HWY	*RT 22*	*MP 056.16*	*AT UNKNOWN INTERSECTION*				*UNION TWP*			*UNION*	*0*	*0*	*4*	*32*	*67*
08082000	SAME DIR-REAR	E- PASS-START TRAF	E- PASS-START TRAF	CL/DR	DAY	04/24/08	THR	07:12	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08070449	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-GOING STRT	CL/DR	DAY	04/25/08	FRI	09:46	NONE-DRIVER/CYC	UNKNOWN	0	0	0	0	
08152698	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-START TRAF	CL/DR	DAY	05/28/08	WED	09:14	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08118671	SAME DIR-REAR	W- PASS-MERGING	W- SUV-MERGING	CL/DR	DAY	06/11/08	WED	09:04	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08190743	SAME DIR-REAR	W-CV10K-MERGING	W- SUV-GOING STRT	CL/DR	DARK	07/09/08	WED	21:18	NONE-DRIVER/CYC	DRI INATTENTION	0	0	1	0	
08141126	SAME DIR-REAR	E- PASS-MERGING	E- PASS-MERGING	CL/DR	DAY	07/21/08	MON	15:52	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
08194361	SAME DIR-REAR	E- PASS-MERGING	E- PASS-MERGING	CL/DR	DAY	08/28/08	THR	17:36	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08177498	SAME DIR-REAR	E- PASS-MERGING	E- PASS-MERGING	CL/DR	DAY	09/01/08	MON	12:13	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	7	
08195549	SAME DIR-REAR	E- PASS-MERGING	E- PASS-MERGING	CL/DR	DAY	09/15/08	MON	13:54	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08209434	SAME DIR-REAR	E- PASS-MERGING	E- PKUP-MERGING	CL/DR	DAY	10/02/08	THR	10:15	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
08213359	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-STOP-TRAF	CL/DR	DAY	10/05/08	SUN	17:40	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	5	
08213734	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-START TRAF	CL/DR	DAY	10/06/08	MON	07:41	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
08213726	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-MERGING	CL/DR	DAWN	10/07/08	TUE	06:17	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08222357	SAME DIR-REAR	W- PASS-STOP-TRAF	W- SUV-GOING STRT	CL/DR	DAY	10/15/08	WED	07:50	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08226423	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-GOING STRT	CL/DR	DARK	10/17/08	FRI	20:56		UNKNOWN	0	0	0	1	
08230372	SAME DIR-REAR	E- SUV-MERGING	E- PASS-MERGING	RN/WT	DAY	10/25/08	SAT	12:37	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08240460	SAME DIR-REAR	E- PASS-SLOW-STOP	E- SUV-SLOW-STOP	CL/DR	DAY	11/02/08	SUN	11:21	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
08270924	SAME DIR-REAR	S- SUV-STOP-TRAF	S- SUV-START TRAF	CL/DR	DARK	12/05/08	FRI	17:44	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08288266	SAME DIR-REAR	E- SUV-STOP-TRAF	E- PASS-SLOW-STOP	CL/WT	DARK	12/21/08	SUN	17:09	NONE-DRIVER/CYC		0	0	0	1	
STATE HWY	*RT 22*	*MP 056.17*	*NEAR UNION COUNTY 630*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*1*	*3*
07161990	SAME DIR-SIDE	E- PASS-START TRAF	E- PASS-GOING STRT	CL/DR	DARK	08/21/07	TUE	22:15	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
08003574	SAME DIR-REAR	W- SUV-STOP-TRAF	W- PASS-SLOW-STOP	CL/DR	DAY	01/09/08	WED	15:02	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	1	
08201086	FIXED OBJECT	E- PASS-GOING STRT	- -	RN/WT	DARK	09/17/08	WED	22:06	UNSAFE SPEED		0	0	0	0	
STATE HWY	*RT 22*	*MP 056.17*	*AT VAUXHALL ROAD*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*1*	*1*
07152194	SAME DIR-REAR	E- PASS-GOING STRT	E- PASS-PASSING	CL/DR	DARK	08/09/07	THR	21:03	NONE-DRIVER/CYC	IMP PASSING	0	0	0	1	
STATE HWY	*RT 22*	*MP 056.18*	*NEAR UNIONNCOUNTY 630*				*UNION TWP*			*UNION*	*0*	*0*	*1*	*1*	*11*
06040868	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-START TRAF	CL/DR	DAY	03/11/06	SAT	17:08	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06067837	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-START TRAF	CL/DR	DAY	04/14/06	FRI	11:47	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06085810	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-START TRAF	CL/DR	DAY	05/05/06	FRI	17:40	NONE-DRIVER/CYC	DRI INATTENTION	0	0	1	1	
06188701	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-STOP-TRAF	CL/DR	DAY	09/11/06	MON	16:43	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	0	
06243324	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-START TRAF	CL/DR	DAY	09/30/06	SAT	14:10	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07075244	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-START TRAF	CL/DR	DAY	05/07/07	MON	08:07	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07105780	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PKUP-GOING STRT	CL/DR	DAY	06/08/07	FRI	15:44	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
07114312	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-START TRAF	CL/DR	DAY	06/23/07	SAT	13:49	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07181916	SAME DIR-SIDE	E- PASS-GOING STRT	E- PASS-GOING STRT	CL/DR	DARK	09/08/07	SAT	05:00	DRI INATTENTION	DRI INATTENTION	0	0	0	0	
08098093	SAME DIR-REAR	N- PKUP-MERGING	N- PASS-MERGING	CL/DR	DAY	05/14/08	WED	19:01	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	

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BUREAU OF SAFETY PROGRAMS
DETAIL OF MOTOR VEHICLE ACCIDENTS
ON ROUTE 22
MILEPOST 55.900 TO 56.400
01/01/2006 TO 12/31/2008

ROAD SYS / D L N	COLLISION TYPE	VEHICLE 1 DIR TRAV / VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV / VEH TYPE, VEH ACTN	WEA / SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB / CIRCUMSTANCES	VEH 2 CONTRIB / CIRCUMSTANCES	NO. KIL	NO. MAJ	INJURED MOD	INJURED MIN	NO. ACC
STATE HWY	*RT 22*	*MP 056.18*	*NEAR CR 630 / VAUX HALL RD*				*UNION TWP*			*UNION*	*0*	*0*	*1*	*1*	*11*
08267838	SAME DIR-REAR	E- SUV-START TRAF	E- SUV-SLOW-STOP	CL/DR	DAY	12/08/08	MON	14:54	DRI INATTENTION	OTH DR/PED ACT	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.19*	*NEAR UNION COUNTY 630*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*1*	*4*
07062154	SAME DIR-REAR	W- PASS-GOING STRT	W- PASS-GOING STRT	CL/DR	DARK	04/18/07	WED	19:45	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07090442	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-START TRAF	CL/DR	DAY	05/23/07	WED	14:32	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
07228866	SAME DIR-REAR	E- PASS-GOING STRT	E- SUV-START TRAF	CL/DR	DAY	10/13/07	SAT	10:12	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07257728	SAME DIR-REAR	E- SUV-STOP-TRAF	E- PASS-START TRAF	RN/WT	DAY	11/15/07	THR	14:53	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.20*	*NOT AT INTERSECTION*				*UNION TWP*			*UNION*	*0*	*0*	*1*	*2*	*11*
06002512	SAME DIR-REAR	E- PASS-GOING STRT	E- PASS-GOING STRT	CL/DR	DAY	01/28/06	SAT	14:58	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06174164	SAME DIR-REAR	E- PKUP-STOP-TRAF	E- SUV-GOING STRT	CL/DR	DAY	08/16/06	WED	17:54	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06231637	SAME DIR-REAR	W- SUV-STOP-TRAF	W- PASS-SLOW-STOP	CL/DR	DAY	10/27/06	FRI	16:18	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
07093174	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-SLOW-STOP	CL/DR	DAY	05/24/07	THR	08:50	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	0	
07147994	SAME DIR-REAR	E- PASS-START TRAF	E- PKUP-STOP-TRAF	CL/DR	DAY	07/16/07	MON	15:05	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
07171507	SAME DIR-REAR	E- SUV-START TRAF	E- PASS-START TRAF	CL/DR	DARK	08/23/07	THR	19:57	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08008423	SAME DIR-SIDE	E- PASS-CHNG LANES	E- PASS-GOING STRT	CL/DR	DAY	01/05/08	SAT	09:29	DRI INATTENTION	NONE-DRIVER/CYC	0	0	0	0	
08047171	SAME DIR-REAR	E- PASS-GOING STRT	E- PASS-MERGING	CL/DR	DAY	03/25/08	TUE	10:00	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08057723	SAME DIR-REAR	E- PASS-GOING STRT	E- PKUP-GOING STRT	CL/DR	DAY	04/03/08	THR	07:58	NONE-DRIVER/CYC	SUNGLARE	0	0	0	0	
08085327	FIXED OBJECT	E- PKUP-GOING STRT	- -	CL/DR	DARK	05/09/08	FRI	00:55	DRI INATTENTION		0	0	1	0	
08226424	FIXED OBJECT	E- PASS-GOING STRT	- -	CL/DR	DARK	10/18/08	SAT	00:10	NONE-DRIVER/CYC		0	0	0	2	
STATE HWY	*RT 22*	*MP 056.21*	*NEAR NJ 82*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*0*	*1*
08003357	SAME DIR-REAR	W- PASS-GOING STRT	W- SUV-GOING STRT	CL/DR	DARK	01/03/08	THR	18:39	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.22*	*NOT AT INTERSECTION*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*1*	*2*
06016986	SAME DIR-REAR	E-CV10K-STOP-TRAF	E- PASS-START TRAF	CL/DR	DARK	02/07/06	TUE	17:37	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
07195848	SAME DIR-SIDE	W- SUV-GOING STRT	W-S2AXL-MERGING	CL/DR	DARK	09/21/07	FRI	18:57	NONE-DRIVER/CYC	FAIL TO YLD ROW	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.23*	*NEAR UNION COUNTY 630*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*0*	*1*
07257714	SAME DIR-SIDE	E- PASS-GOING STRT	E- PASS-GOING STRT	CL/DR	DARK	11/16/07	FRI	21:21	NONE-DRIVER/CYC	UNSAFE SPEED	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.26*	*NEAR UNION COUNTY 630*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*2*	*4*
06132908	SAME DIR-REAR	E- PASS-MERGING	E- SUV-MERGING	CL/DR	DAY	07/08/06	SAT	18:06	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06161691	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PASS-START TRAF	CL/DR	DARK	08/04/06	FRI	23:19	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06223237	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-STOP-TRAF	CL/DR	DAY	10/16/06	MON	08:40	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	2	
07109207	SAME DIR-REAR	E- PASS-SLOW-STOP	E- PASS-GOING STRT	CL/DR	DAY	06/06/07	WED	18:39	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.26*	*AT UNKNOWN INTERSECTION*				*UNION TWP*			*UNION*	*0*	*0*	*0*	*0*	*1*
07243713	SAME DIR-REAR	E- PASS-STOP-TRAF	E-S2AXL-MERGING	CL/DR	DAY	11/01/07	THR	08:39	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	

County-Municipality Restrictions: 1: Union County, Union Twp 2:

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ON ROUTE 22
MILEPOST 55.900 TO 56.400
01/01/2006 TO 12/31/2008

ROAD SYS / D L N	COLLISION TYPE	VEHICLE 1 DIR TRAV / VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV / VEH TYPE, VEH ACTN	WEA	SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB CIRCUMSTANCES	VEH 2 CONTRIB CIRCUMSTANCES	NO. KIL	NO. MAJ	INJURED MOD	INJURED MIN	NO. ACC
STATE HWY	*RT 22*	*MP 056.29*	*NEAR UNION COUNTY 630*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*1*	*3*
06244932	SAME DIR-REAR	W- PASS-GOING STRT	W- PASS-GOING STRT	CL	DR	DAY	11/10/06	FRI	16:40	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	1	
07077158	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-STOP-TRAF	CL	DR	DAY	02/08/07	THR	07:35	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08288248	SAME DIR-REAR	E- PASS-GOING STRT	E- PASS-CHNG LANES	RN	WT	DAY	12/24/08	WED	09:45	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.30*	*NOT AT INTERSECTION*					*UNION TWP*			*UNION*	*0*	*0*	*1*	*6*	*9*
06053806	SAME DIR-REAR	W-S2AXL-RT TRN-NRD	W- PASS-GOING STRT	CL	DR	DAY	03/28/06	TUE	12:11	NONE-DRIVER/CYC	UNSAFE SPEED	0	0	0	0	
06205057	SAME DIR-REAR	E- PASS-MERGING	E- PKUP-MERGING	CL	DR	DAY	10/02/06	MON	15:41	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07144879	SAME DIR-REAR	E- PASS-SLOW-STOP	E- PASS-GOING STRT	CL	DR	DAY	06/25/07	MON	07:22	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
07141177	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-START TRAF	CL	DR	DAY	07/24/07	TUE	09:21	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07141179	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-START TRAF	CL	DR	DAY	07/24/07	TUE	11:41	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
07180236	SAME DIR-REAR	E- PASS-STOP-TRAF	E- PKUP-START TRAF	CL	DR	DAY	08/03/07	FRI	11:01	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	1	
07162474	SAME DIR-REAR	E- SUV-STOP-TRAF	E- SUV-START TRAF	CL	DR	DAWN	08/16/07	THR	06:31	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
07171759	SAME DIR-SIDE	W-CV10K-MERGING	W- PASS-GOING STRT	CL	DR	DAY	08/23/07	THR	09:13	FAIL TO YLD ROW		0	0	0	1	
07195830	SAME DIR-REAR	E- PASS-GOING STRT	E- SUV-GOING STRT	CL	DR	DAY	09/19/07	WED	14:15	OTHER	NONE-DRIVER/CYC	0	0	1	3	
STATE HWY	*RT 22*	*MP 056.30*	*AT U TURN A*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*2*	*1*
07184423	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-STOP-TRAF	OC	DR	DAY	08/23/07	THR	18:11	NONE-DRIVER/CYC	OTH DR/PED ACT	0	0	0	2	
STATE HWY	*RT 22*	*MP 056.32*	*NEAR ERHARDT ST*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*0*	*2*
06008116	UNKNOWN	E- SUV-GOING STRT	- -	SN	SN	DARK	01/15/06	SUN	05:07	UNSAFE SPEED		0	0	0	0	
06125218	SAME DIR-SIDE	E- PASS-GOING STRT	E- PKUP-CHNG LANES	CL	DR	DAY	06/15/06	THR	11:04	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.34*	*NEAR GARY AVE*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*2*	*2*
06237292	SAME DIR-REAR	W- PASS-STOP-TRAF	W- PASS-SLOW-STOP	CL	DR	DARK	11/06/06	MON	17:57	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	2	
08191475	SAME DIR-REAR	E- PASS-SLOW-STOP	E- PASS-GOING STRT	CL	DR	DAY	07/31/08	THR	07:41	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.37*	*NEAR HIGHLAND AVE / N SUNSET AVE*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*1*	*1*
08201650	SAME DIR-REAR	E- SUV-STOP-TRAF	E-CV10K-GOING STRT	CL	DR	DAY	09/08/08	MON	16:58	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	1	
STATE HWY	*RT 22*	*MP 056.38*	*NEAR HIGHLAND AVE*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*0*	*3*
07082063	SAME DIR-REAR	E- SUV-GOING STRT	E- PASS-GOING STRT	CL	DR	DAY	05/04/07	FRI	18:29	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
08021383	FIXED OBJECT	E- PASS-GOING STRT	- -	SN	SN	DARK	02/12/08	TUE	19:39	OTH RDWAY FACTS		0	0	0	0	
08130779	SAME DIR-REAR	E- PKUP-GOING STRT	E- PASS-GOING STRT	RN	WT	DAWN	06/22/08	SUN	17:29	NONE-DRIVER/CYC	RD SURF CNDTION	0	0	0	0	
STATE HWY	*RT 22*	*MP 056.40*	*NEAR GARY RD*					*UNION TWP*			*UNION*	*0*	*0*	*0*	*2*	*2*
06199094	SAME DIR-REAR	W- PASS-SLOW-STOP	W- PASS-SLOW-STOP	CL	DR	DAY	09/21/06	THR	08:18	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	1	
08140938	SAME DIR-REAR	E- SUV-GOING STRT	E- PASS-CHNG LANES	CL	WT	DAY	07/23/08	WED	10:09	NONE-DRIVER/CYC	IMP LANE CHANGE	0	0	0	1	
STATE HWY	*RT 22*	*MP 056.40*	*AT HIGHLAND AVE*					*UNION TWP*			*UNION*	*0*	*0*	*1*	*0*	*5*
06129817	RIGHT ANGLE	N- SUV-STOP-TRAF	E- PKUP-GOING STRT	CL	DR	DARK	06/20/06	TUE	22:30	NONE-DRIVER/CYC	OTH DR/PED ACT	0	0	1	0	

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ROAD SYS D L N	COLLISION TYPE	VEHICLE 1 DIR TRAV VEH TYPE, VEH ACTN	VEHICLE 2 DIR TRAV VEH TYPE, VEH ACTN	WEA SUR	LITE	DATE	DOW	TIME	VEH 1 CONTRIB CIRCUMSTANCES	VEH 2 CONTRIB CIRCUMSTANCES	NO. KIL	NO. MAJ	INJURED MOD	INJURED MIN	NO. ACC
STATE HWY	*RT 22*	*MP 056.40*	*AT HIGHLAND AVE*				*UNION TWP*			*UNION*	*0*	*0*	*1*	*0*	*5*
06132911	SAME DIR-REAR	E- PASS-SLOW-STOP	E- PASS-SLOW-STOP	CL/DR	DAY	07/10/06	MON	08:06	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
06199080	SAME DIR-REAR	E- SUV-STOP-TRAF	E- SUV-SLOW-STOP	CL/DR	DAY	09/25/06	MON	09:18	NONE-DRIVER/CYC	FOLLOW TO CLOSE	0	0	0	0	
07195847	SAME DIR-REAR	E- PASS-STOP-TRAF	E- SUV-SLOW-STOP	CL/DR	DUSK	09/21/07	FRI	17:59	NONE-DRIVER/CYC	DRI INATTENTION	0	0	0	0	
08297675	SAME DIR-REAR	E- PASS-GOING STRT	E- PASS-GOING STRT	CL/DR	DAY	12/08/08	MON	01:00	NONE-DRIVER/CYC	NONE-DRIVER/CYC	0	0	0	0	

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M E M O R A N D U M

TO: Bhavesh Shah (NJDOT)

FROM: Mike Monteleone/Denise Huang (LBG)

DATE: November 25, 2009

SUBJECT: Route 22 (westbound direction) Crash Analysis (Vauxhall Road), MP 55.90 to 56.40

New Jersey Police Accident Reports were obtained for the 3-year period from January 1, 2006 to December 31, 2008 from the NJDOT Bureau of Safety Programs. Crash history forms (Table 1), Crash summary (Table 2), and collision diagrams (Figures 1a and 1b) were reviewed for an approximately ½ mile section of Route 22 (MP 55.90 to MP 56.40) between the Toys R Us Shopping Center Driveway located to the west of Vauxhall Road and Highland Avenue/Gary Road located to the east of Vauxhall Road.

Details of crash history derived from the crash reports are summarized in Table 1 for westbound Route 22. As shown on Table 2, a total of 58 crashes were reported in Route 22 westbound direction within the project limits over the 3-year period. The distributions of crashes were identified by severity as: 0 Fatal, 19 with Injuries, and 39 Property Damage Only.

The collision diagrams graphically depict crash patterns including crash type, location, frequency, type of collision, and severity. The information shown on these diagrams, in conjunction with the physical and operational characteristics of particular analysis locations are used to provide an insight of existing crash patterns and to determine the appropriate type of remedial measures required to reduce or eliminate certain types of crash occurrences. The collision diagrams are presented in Figures 1a and 1b.

As shown on Table 2 and Figures 1a and 1b, the most frequent crash types identified by the data were Rear-End (63.8% with 37 crashes), Side Swipe (17.2% with 10 crashes), Fixed Object (10.3% with 6 crashes), Right Angle (5.5% with 3 crashes), Overturn (1.7% with 1 crash), and Other (1.7% with 1 crash). The major causes cited for these collisions included driver inattention, following too closely and improper lane change. The majority of these crashes are Rear-End crashes that occurred on westbound Route 22 in the vicinity of merge and diverge areas at Vauxhall Road, and Sayre Road (high crash locations). The highest number of crash occurrences was identified in the vicinity of Sayre Road (entrance and exit ramps from Vauxhall Road southbound from Reference Marker 56.06 to 56.10) with approximately 24 crashes (15 Rear-End, 6 Side Swipe, 2 Fixed Object and 1 Right Angle), which accounts for 41% of the crashes on westbound Route 22 within the project limit.

Table 1
WESTBOUND ROUTE 22 (MP 55.90 to 56.40)
Union Township - Union County

DETAILS OF CRASH HISTORY (AS SHOWN ON COLLISION DIAGRAM)

COUNTY **Union County**
TOWN **Union Township**
CITY
INTERSECTION: **Westbound Route 22 (Near Vauxhall Road)**

ROADWAY NAME: **WESTBOUND ROUTE 22**
REF. MARKERS: **55.90 TO 56.40**

ENTER BY: WA
CHECK BY:
DATE: 10/4/2009

3-Year Period
FROM 01/01/06 TO 12/31/08

SEVERITY
NR-Non-Reportable
PDO- Property Damage Only
INJ- Injury
FAT-Fatality

LIGHT CONDITIONS
1. Daylight
2. Dawn
3. Dusk
4. Dark (Street Lights Off)
5. Dark (No Street Lights)
6. Dark (Street Lights on, continous lighting)
7. Dark (Street Lights on, spot lighting)

ROADWAY CHARACTER
1. Straight and Level
2. Straight and Grade
3. Straight at Hillcrest
4. Curve and Level
5. Curve and Grade
6. Curve at Hillcrest

ROADWAY SURFACE CONDITI
1. Dry
2. Wet
3. Snowy
4. Icy
5. Slush
6. Water (Standing/moving)
7. Sand
8. Oil

WEATHER
1. Clear
2. Rain
3. Snow
4. Fog/Smog/Smoke
5. Overcast
6. Sleet/Hail/Freezing Rain
7. Blowing Snow/Sand/Dirt
8. Severe Crosswinds

VEHICLE TYPE
C-Cars/Station Wagon/Minivan
V-Van/SUV/Pickup
T-Truck
B-Bus/Large Van
M-Motorcycle
BI-Bike
P-Ped.

ACCIDENT TYPE
RE-Same Direction (Rear End)
SS-Same Direction (Side Swipe
RA-Right Angle
SSO-Opposite Direction (SS
SPV-Strucked Parked Vehicle
LT-Left Turn/U-turn
BA-Backing
EN-Encroachment
OV-Overturn
FO-Fixed Object
A-Animal
PED-Pedestrian
BI-Bike
NFO_Non Fixed Object
RVEH-Rail Car/vehicle

*** Use Codes from NJTR-1 (Updated Jan 1, 2006) Police Report

NO	DATE	DAY	TIME	NO. OF VEH.	SEVERITY	LIGHT CONDITIONS	ROADWAY CHARACTER	ROADWAY SURFACE CONDITION	WEATHER	APPARENT CONTRIBUTING FACTOR	VEHICLE TYPE	ACCIDENT TYPE	MILE POST	DESCRIPTION
W01	01/29/08	MON	2:00 PM	2	PDO	1	6	2	2	49, 02	C	RE	55.90	Driver Inattention: W1 was stopped, causing W2 rear end W1.
WR02	07/03/06	MON	5:24 PM	2	INJ	1	1	1	1	25, 2	V&C	RE	56.09	Driver Inattention: W1 was rear ended by W2 (on ramp from Vauxhall Rd EB).
WR03	02/04/06	SAT	1:56 AM	1	INJ	4	4	1	1	2	V	FO	56.09	Driver Inattention: W1 lost control and struck curb and a pole (off ramp to Vauxhall Rd EB).
W04	04/09/07	MON	6:29 PM	2	PDO	1	1	1	1	25, 02	V	RE	55.97	Driver Inattention: W1 rear ended W2 in slow traffic.
W05	06/13/07	MON	2:23 PM	2	PDO	1	1	1	1	10, 25	V&C	BA	56.02	Backing Unsafely: W1 hit W2 when he decided to go EB instead of WB and started backing to the parking lot to change direction.
W06	08/27/07	MON	4:54 PM	2	PDO	1	1	1	1	25, 02, 09	V&C	RE	56.00	Driver Inattention: W1 rear ended W2 in slow traffic.
W07	09/17/07	MON	3:00 PM	1	INJ	1	1	1	1	29	C	FO	56.00	W1 lost control and hit utility pole because of a non contact vehicle.
W08	10/17/08	FRI	1:29 PM	2	PDO	1	1	1	1	5	C	SS	56.00	Improper Lane Change: W2 side swiped W1.
WR09	06/11/08	MON	9:04 AM	2	PDO	1	1	1	1	25, 2	C&V	RE	56.18	Driver Inattention: W1 was rear ended by W2 (on ramp from Vauxhall Rd WB).
WR10	06/25/07	MON	6:31 PM	2	PDO	1	1	1	1	25, 2	C&V	RE	56.18	Driver Inattention: W1 was rear ended by W2 (on ramp from Vauxhall Rd WB).
W11	02/04/07	MON	5:39 AM	1	INJ	6	4	1	1	2, 29	C	FO	56.00	Driver Inattention: W1 lost control of vehicle and hit a light pole.
W12	04/28/07	SUN	2:21 AM	1	PDO	6	4	1	1	1	C	FO	56.01	Unsafe Speed: W1 lost control and hit right and left lane inside curbs.
W13	12/21/06	SAT	11:09 PM	2	INJ	6	1	1	1	25, 02	C	RE	56.02	Driver Inattention: W1 was rear ended by W2 when changing lanes.
WR14	07/15/06	THU	7:13 PM	2	PDO	1	1	1	1	25, 2	V&C	RE	56.10	Driver Inattention: W1 was rear ended by W2.
W15	09/12/06	SAT	6:00 PM	2	PDO	1	1	1	1	29	C&V	SS	56.03	W2 side swiped W1 when changing lanes.
W16	12/18/08	MON	4:59 PM	2	PDO	7	1	1	1	25, 09	C	RE	56.04	Following Too Closely: W1 rear ended by W2 in slow traffic.
W17	02/02/07	THU	10:18 PM	2	INJ	6	1	2	1	25, 09	V&C	RE	56.05	Following Too Closely: W1 rear ended by W2 when suddenly stopped to avoid a non contact vehicle changing lanes.
W18	01/31/06	FRI	6:18 AM	2	PDO	6	1	2	2	25, 09	V&C	RE	56.06	Following Too Closely: W1 rear ended by W2 in slow traffic.
W19	10/01/08	MON	5:34 PM	2	PDO	1	1	2	2	25, 51	C	RE	56.06	Wet Road Condition: W1 rear ended by W2 when suddenly stopped in slow traffic.
W20	11/19/08	MON	12:49 PM	2	PDO	1	1	1	1	04, 25	C&V	RE	56.06	Failed to Yield ROW to vehicle: W2 hit W1 after W1 made a right turn from Sayre Rd.
W21	10/30/07	MON	-	2	PDO	6	1	1	1	25, 09	C	RE	56.07	Following Too Closely: W1 rear ended by W2 in slow traffic.
W22	01/25/08	MON	7:28 AM	2	PDO	1	1	1	1	25, 02	C	RE	56.07	Driver Inattention: W1 was rear ended by W2 in slow traffic.
W23	08/16/08	FRI	1:07 PM	2	PDO	1	1	1	1	25, 02	C&V	SS	56.07	Driver Inattention: W1 was rear ended by W2 when changing lanes.
W24	01/31/06	SAT	6:30 AM	2	INJ	6	1	2	2	08, 25	C	SS	56.07	Improper Lane Change: : W1 was hit on the rear by W2 when W1 made an improper turning from Sayre Rd.

Table 1
WESTBOUND ROUTE 22 (MP 55.90 to 56.40)
Union Township - Union County

DETAILS OF CRASH HISTORY (AS SHOWN ON COLLISION DIAGRAM)

COUNTY **Union County**
TOWN **Union Township**
CITY
INTERSECTION: **Westbound Route 22 (Near Vauxhall Road)**

ROADWAY NAME: **WESTBOUND ROUTE 22**
REF. MARKERS: **55.90 TO 56.40**

ENTER BY: WA
CHECK BY:
DATE: 10/4/2009

3-Year Period
FROM 01/01/06 TO 12/31/08

SEVERITY
NR-Non-Reportable
PDO- Property Damage Only
INJ- Injury
FAT-Fatality

LIGHT CONDITIONS
1. Daylight
2. Dawn
3. Dusk
4. Dark (Street Lights Off)
5. Dark (No Street Lights)
6. Dark (Street Lights on, continous lighting)
7. Dark (Street Lights on, spot lighting)

ROADWAY CHARACTER
1. Straight and Level
2. Straight and Grade
3. Straight at Hillcrest
4. Curve and Level
5. Curve and Grade
6. Curve at Hillcrest

ROADWAY SURFACE CONDITI
1. Dry
2. Wet
3. Snowy
4. Icy
5. Slush
6. Water (Standing/moving)
7. Sand
8. Oil

WEATHER
1. Clear
2. Rain
3. Snow
4. Fog/Smog/Smoke
5. Overcast
6. Sleet/Hail/Freezing Rain
7. Blowing Snow/Sand/Dirt
8. Severe Crosswinds

VEHICLE TYPE
C-Cars/Station Wagon/Minivan
V-Van/SUV/Pickup
T-Truck
B-Bus/Large Van
M-Motorcycle
BI-Bike
P-Ped.

ACCIDENT TYPE
RE-Same Direction (Rear End)
SS-Same Direction (Side Swipe
RA-Right Angle
SSO-Opposite Direction (SS
SPV-Strucked Parked Vehicle
LT-Left Turn/U-turn
BA-Backing
EN-Encroachment
OV-Overturn
FO-Fixed Object
A-Animal
PED-Pedestrian
BI-Bike
NFO_Non Fixed Object
RVEH-Rail Car/vehicle

*** Use Codes from NJTR-1 (Updated Jan 1, 2006) Police Report

NO	DATE	DAY	TIME	NO. OF VEH.	SEVERITY	LIGHT CONDITIONS	ROADWAY CHARACTER	ROADWAY SURFACE CONDITION	WEATHER	APPARENT CONTRIBUTING FACTOR	VEHICLE TYPE	ACCIDENT TYPE	MILE POST	DESCRIPTION
W25	02/10/06	MON	1:57 PM	2	PDO	1	1	1	1	25, 05	C	SS	56.07	Improper Lane Change: W2 side swiped W1 when merging from Sayre Rd and changing lanes.
W26	07/02/06	FRI	12:02 AM	1	PDO	6	1	1	1	25	C	FO	56.07	W1 lost control and hit center median while trying to avoid a non contact vehicle merging from Sayre Rd.
W27	07/08/06	SUN	2:49 PM	2	PDO	1	2	1	1	25, 05	C	SS	56.07	Improper Lane Change: W2 side swiped W1 when changed lanes to make a right turn to Sayre Rd.
W28	07/20/06	SAT	9:44 PM	2	PDO	6	1	1	1	9	C&V	RE	56.07	Following Too Closely: W2 rear ended by W1 in slow traffic.
W29	12/04/06	THU	5:40 PM	3	PDO	2	1	1	1	9	C	RE	56.07	Following Too Closely: W3 rear ended W2 which rear ended W1 in slow traffic.
W30	07/19/07	MON	6:31 AM	2	PDO	2	1	1	4	25, 4	V&T	SS	56.07	Improper Lane Change: W1 struck W2 when W2 suddenly changed lanes to avoid hitting a non contact vehicle.
W31	08/20/07	THU	9:48 AM	2	PDO	1	1	2	1	2	B&T	SS	56.07	Improper Lane Change: W2 side swiped W1 when changed to fast lane.
W32	11/16/07	MON	5:14 PM	2	PDO	5	1	1	1	25, 2	V&T	RE	56.07	Following Too Closely: W2 rear ended by W1 in slow traffic.
W33	11/25/08	FRI	9:02 AM	2	PDO	1	1	2	2	4, 25	C	RA	56.07	Failed to Yield ROW: W1 while making a right turn on Rte 22 hit W2.
W34	10/20/06	MON	9:09 PM	2	PDO	6	1	1	1	25, 29	C	RE	56.08	W1 was hit by W2 when slowed down due to a non contact vehicle.
W35	04/12/07	FRI	1:50 PM	2	INJ	1	2	2	2	9, 1	C	RE	56.09	Following Too Closely: W1 rear ended W2.
W36	01/07/08	THU	6:06 PM	3	INJ	2	1	1	1	25	C	RE	56.08	W3 rear ended W2, W2 rear ended W1 on slow traffic.
W37	05/20/08	MON	6:06 PM	2	PDO	1	1	2	2	25, 2	V&C	RE	56.09	Driver Inattention: W1 was rear ended by W2 in slow traffic.
W38	05/19/06	FRI	3:21 PM	2	PDO	1	1	2	2	25, 2	C&T	RE	55.97	Driver Inattention: W1 was rear ended by W2 when attempted to make a right turn.
W39	07/19/06	MON	10:30 PM	1	PDO	4	2	1	1	25	C	FO	56.28	W1 hit concrete median when trying to avoid a non contact vehicle coming from the shoe store.
W40	01/26/08	SAT	1:21 PM	2	INJ	1	1	1	1	25, 9	V&C	RE	56.14	Following Too Closely: W2 rear ended W1.
W41	08/27/06	SUN	9:45 PM	3	PDO	5	4	2	2	9	C&V	SS	56.16	W1 was struck by W2 when passing lanes to avoid a non contact vehicle, as a result W2 spun around facing EB and was hit by W3.
W42	02/13/06	MON	8:30 AM	2	PDO	1	1	5	1	25, 4	V&C	RE	56.20	Improper Lane Change: W2 was rear ended by W1 when changed to left lane due to slow traffic.
W43	02/23/08	SAT	10:14 AM	2	INJ	1	2	2	2	85, 2	C	RA	56.31	Driver Inattention: W2 was hit by W1 when turning right on to RT22 from the gas station.
W44	08/27/06	SUN	10:07 PM	2	INJ	6	6	2	2	25, 2	C	RE	56.22	Driver Inattention: W1 was rear ended by W2.

Table 1
WESTBOUND ROUTE 22 (MP 55.90 to 56.40)
Union Township - Union County

DETAILS OF CRASH HISTORY (AS SHOWN ON COLLISION DIAGRAM)

COUNTY **Union County**
TOWN **Union Township**
CITY
INTERSECTION: **Westbound Route 22 (Near Vauxhall Road)**

ROADWAY NAME: **WESTBOUND ROUTE 22**
REF. MARKERS: **55.90 TO 56.40**

ENTER BY: WA
CHECK BY:
DATE: 10/4/2009

3-Year Period
FROM 01/01/06 TO 12/31/08

SEVERITY
NR-Non-Reportable
PDO- Property Damage Only
INJ- Injury
FAT-Fatality

LIGHT CONDITIONS
1. Daylight
2. Dawn
3. Dusk
4. Dark (Street Lights Off)
5. Dark (No Street Lights)
6. Dark (Street Lights on, continous lighting)
7. Dark (Street Lights on, spot lighting)

ROADWAY CHARACTER
1. Straight and Level
2. Straight and Grade
3. Straight at Hillcrest
4. Curve and Level
5. Curve and Grade
6. Curve at Hillcrest

ROADWAY SURFACE CONDITI
1. Dry
2. Wet
3. Snowy
4. Icy
5. Slush
6. Water (Standing/moving)
7. Sand
8. Oil

WEATHER
1. Clear
2. Rain
3. Snow
4. Fog/Smog/Smoke
5. Overcast
6. Sleet/Hail/Freezing Rain
7. Blowing Snow/Sand/Dirt
8. Severe Crosswinds

VEHICLE TYPE
C-Cars/Station Wagon/Minivan
V-Van/SUV/Pickup
T-Truck
B-Bus/Large Van
M-Motorcycle
BI-Bike
P-Ped.

ACCIDENT TYPE
RE-Same Direction (Rear End)
SS-Same Direction (Side Swipe
RA-Right Angle
SSO-Opposite Direction (SS
SPV-Strucked Parked Vehicle
LT-Left Turn/U-turn
BA-Backing
EN-Encroachment
OV-Overturn
FO-Fixed Object
A-Animal
PED-Pedestrian
BI-Bike
NFO_Non Fixed Object
RVEH-Rail Car/vehicle

*** Use Codes from NJTR-1 (Updated Jan 1, 2006) Police Report

NO	DATE	DAY	TIME	NO. OF VEH.	SEVERITY	LIGHT CONDITIONS	ROADWAY CHARACTER	ROADWAY SURFACE CONDITION	WEATHER	APPARENT CONTRIBUTING FACTOR	VEHICLE TYPE	ACCIDENT TYPE	MILE POST	DESCRIPTION
W45	09/17/06	SUN	6:20 AM	1	PDO	1	1	1	1	2	C	OV	56.25	Driver Inattention: W1 lost control in a curb, struck the concrete median and overturned on the left lane.
W46	01/09/08	MON	3:02 PM	2	INJ	1	2	1	1	25, 9	V&C	RE	56.10	Following Too Closely: W1 rear ended by W2 in slow traffic.
W47	09/11/06	MON	4:43 PM	3	PDO	1	1	1	1	25	C	RE	56.27	W3 rear ended W2 which rear ended W1 in slow traffic. W3 fled the scene.
W48	06/08/07	FRI	3:44 PM	3	PDO	1	4	1	1	25, 9	C&V	RE	56.27	Following Too Closely: W1 rear ended by W2 in slow traffic.
W49	04/18/07	MON	7:45 PM	4	PDO	6	1	1	1	25, 2	C	RE	56.28	Driver Inattention: W3 rear ended W2, W2 rear ended W1 in slow traffic.
W50	10/27/06	FRI	4:18 PM	2	PDO	1	1	1	1	25, 9	V&C	RE	56.20	Following Too Closely: W1 rear ended by W2 in slow traffic.
W51	09/21/06	THU	8:18 AM	2	INJ	1	2	1	1	25, 9	C	RE	56.40	Following Too Closely: W1 rear ended by W2 in slow traffic.
W52	09/21/07	FRI	6:57 PM	2	PDO	6	1	1	1	25, 4	V&T	RA	56.28	Failed to Yield ROW: W2 while making a right turn from driveway on Rte 22 hit W1.
W53	10/16/06	MON	8:40 AM	4	INJ	1	2	1	1	25	C	RE	56.30	Driver Inattention: W4 rear ended W3, W3 rear ended W2, W2 rear ended W1 in slow traffic.
W54	11/10/06	FRI	4:40 PM	2	INJ	1	1	1	1	25, 9	C	RE	56.29	Following Too Closely and Improper Lane Change: W2 rear ended W1 when changed lanes.
W55	03/28/06	MON	12:11 PM	2	PDO	1	2	1	1	25, 1	T&C	RE	56.30	Driver Inattention and Unsafe Speed: W1 was rear ended by W2 when making a right turn.
W56	08/23/07	THU	9:13 AM	2	INJ	1	3	1	1	4	V&C	SS	56.30	Failed to Yield ROW: W1 while making a right turn on Rte 22 hit W2.
W57	10/27/08	MON	10:36 AM	2	INJ	1	1	1	1	25, 2	C	RE	55.92	Driver Inattention: W1 was rear ended by W2 in slow traffic.
W58	11/06/06	MON	5:57 PM	2	INJ	6	1	1	1	25, 2	C	RE	56.30	Driver Inattention and Following Too Closely: W1 was rear ended by W2 in slow traffic.

Table 2
Westbound Route 22 (Near Vauxhall Road)
Union Township - Union County

CRASH SUMMARY

3-Year Period from January 1, 2006 to December 31, 2008

Ref. Marker: 55.90 TO 56.40

TIME OF DAY	CRASHES	%
12 AM - 06 AM	4	6.9
06 AM - 10 AM	12	20.7
10 AM - 04 PM	16	27.6
04 PM - 07 PM	16	27.6
07 PM - 12 AM	9	15.5
Not Reported	1	1.7
Total	**58**	

ROADWAY SURFACE	CRASHES	%
Dry	44	75.9
Wet	13	22.4
Snowy	0	0.0
Icy	0	0.0
Other	1	1.7
Total	**58**	

CRASH TYPE	CRASHES	%
Rear End	37	63.8
Overturn	1	1.7
Fixed Object	6	10.3
Side Swipe	10	17.2
Left Turn/U Turn	0	0.0
Right Angle	3	5.2
Pedestrian	0	0.0
Bicyclist	0	0.0
Others	1	1.7
Total	**58**	

WEATHER	CRASHES	%
Clear	46	79.3
Rain	11	19.0
Snow	0	0.0
Fog/Smog/Smoke	1	1.7
Other	0	0.0
Total	**58**	

SEVERITY	CRASHES	%
Fatality	0	0.0
Injury	19	32.8
Property Damage	39	67.2
Non-Reportable	0	0.0
Total	**58**	

SEASON	CRASHES	%
Winter (Dec.-Feb.)	16	27.6
Spring (Mar.-May)	7	12.1
Summer (Jun.-Aug.)	17	29.3
Fall (Sep.-Nov.)	18	31.0
Total	**58**	

VEHICLE TYPE	VEHICLES	%
Auto	111	94.1
Truck	6	5.1
Bus	1	0.8
Total	**118**	

LIGHTING	CRASHES	%
Daylight	36	62.1
Dawn	3	5.2
Dusk	0	0.0
Dark (Street Lights Off)	2	3.4
Dark (No Street Lights)	2	3.4
Dark (Street Lights on, continous lighting)	14	24.1
Dark (Street Lights on, spot lighting)	1	1.7
Total	**58**	

DAY OF WEEK	CRASHES	%
Sunday	13	22.4
Monday	8	13.8
Tuesday	7	12.1
Wednesday	7	12.1
Thursday	11	19.0
Friday	7	12.1
Saturday	5	8.6
Total	**58**	

YEARLY SUMMARY	CRASHES	%
Jan. 06 - Dec. 06	26	44.8
Jan. 07 - Dec. 07	17	29.3
Jan. 08 - Dec. 08	15	25.9
Total	**58**	

SUMMARY OF CRASH SEVERITY BY YEAR	2006	2007	2008
Fatality Crashes	0	0	0
Injury Crashes	9	5	5
Property Damage Only (PDO) Crashes	17	12	10
Non-Reportable Crashes	0	0	0
Total **58**	**26**	**17**	**15**

Figure 1a
COLLISION DIAGRAM

(DETAILS OF CRASH HISTORY FOR EACH LOCATION ARE SHOWN ON TABLE 1)

COUNTY: **Union County** TOWN: **Union Township**

LOCATION: **Weastbound Route 22 (West of Vauxhall Road)**

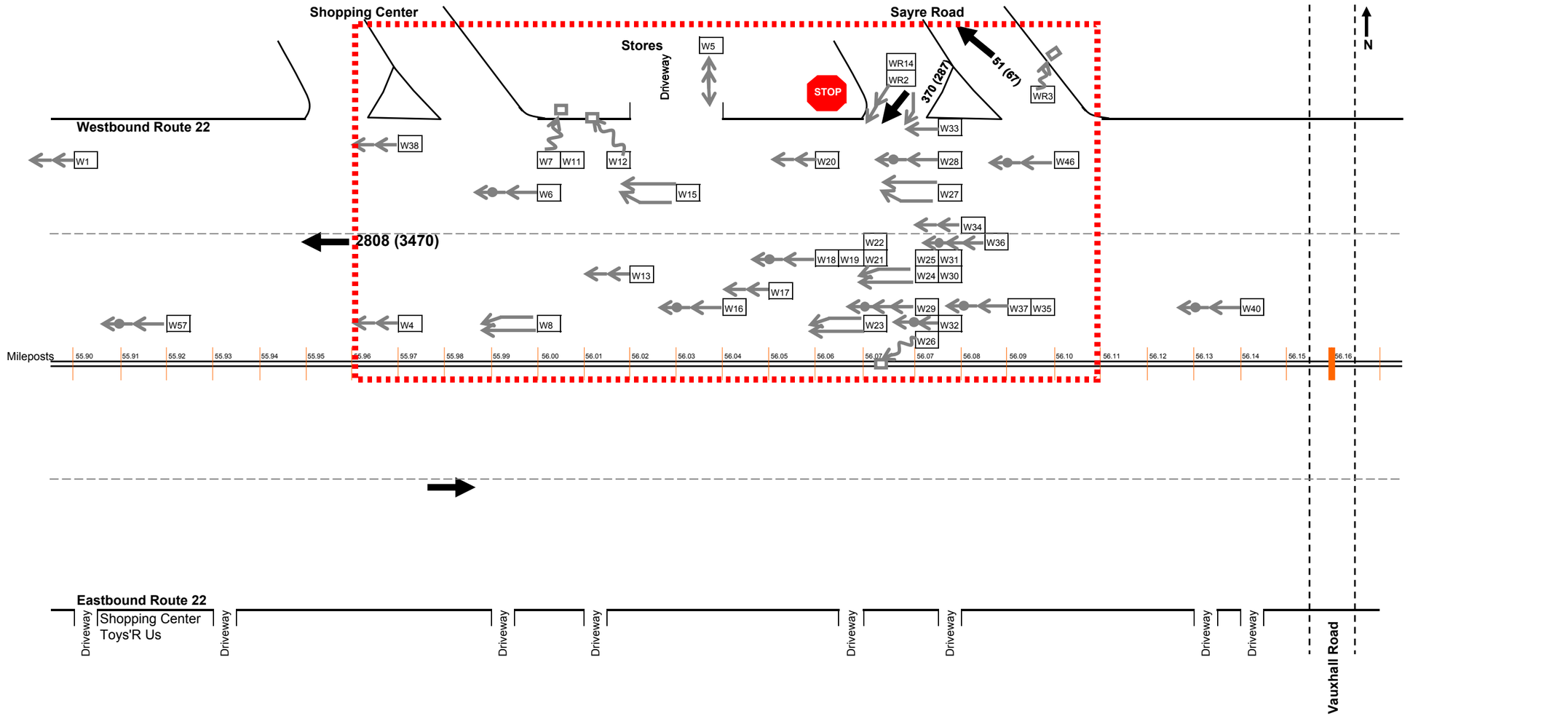
PERIOD: 3 YEARS 0 MONTHS FROM: 01/01/06 TO: 12/31/08

MILE POST: **55.90 TO 56.40**

NODE #:

BY: LBG DATE: 10/04/09

Not to Scale



SYMBOLS

- MOVING VEHICLE
- BACKING VEHICLE
- STOPPED VEHICLE
- FIXED OBJECT
- **M** MOTORCYCLE
- **P** PEDESTRIAN
- **B** BICYCLE
- FATAL
- PARKED VEHICLE
- NON FIXED OBJECT
- TRAFFIC SIGNAL

MANNER OF COLLISION

- REAR END
- SIDE SWIPE (SAME D)
- OUT OF CONTROL
- SIDE SWIPE (OPP D)
- LEFT TURN
- RIGHT ANGLE
- RIGHT ANGLE
- OVERTURNED
- HEAD ON/ANGULAR
- SKIDDING

NOTES

(1) Location of Route 22 Crashes Are Not Lane Specific

(2) See Tables 1 and 2 for Crash # and Detailed Crash History.

(3) 2005 Existing Traffic Volumes: **AM (PM)**

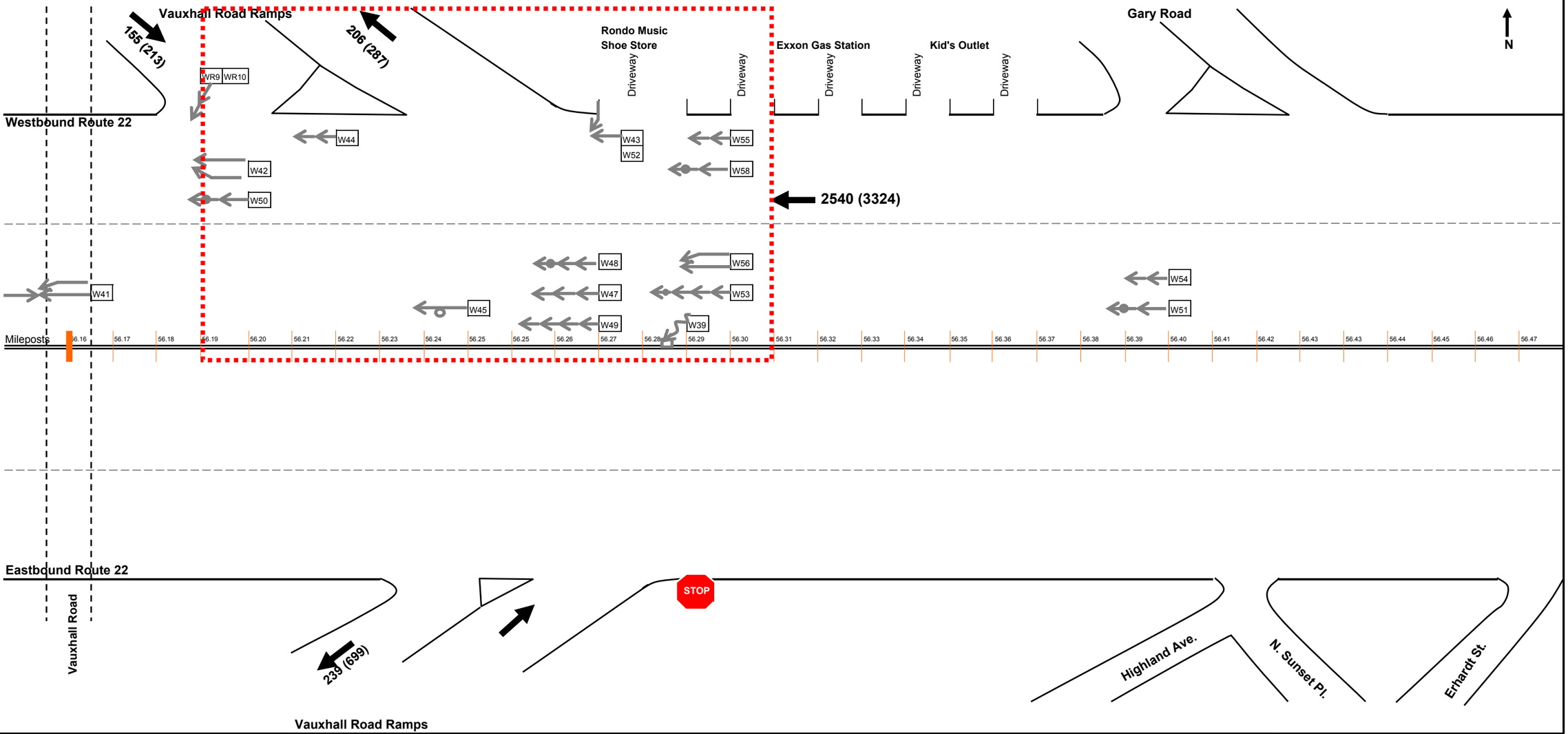
Figure 1b
COLLISION DIAGRAM

(DETAILS OF CRASH HISTORY FOR EACH LOCATION ARE SHOWN ON TABLE 1)

COUNTY: **Union County** TOWN: **Union Township**
LOCATION: **Weastbound Route 22 (East of Vauxhall Road)**
PERIOD: 3 YEARS 0 MONTHS FROM: 01/01/06 TO: 12/31/08

MILE POST: **55.90 TO 56.40**
NODE #:
BY: LBG DATE: 10/04/09

Not to Scale



SYMBOLS

MOVING VEHICLE	M	MOTORCYCLE	PARKED VEHICLE		
BACKING VEHICLE	P	PEDESTRIAN	NON FIXED OBJECT		
STOPPED VEHICLE	B	BICYCLE			
FIXED OBJECT		FATAL	STOP	TRAFFIC SIGNAL	

MANNER OF COLLISION

REAR END	LEFT TURN		OVERTURNED		
SIDE SWIPE (SAME D)	RIGHT ANGLE		HEAD ON/ANGULAR		
OUT OF CONTROL			SKIDDING		
SIDE SWIPE (OPP D)	RIGHT ANGLE				

NOTES

(1) Location of Route 22 Crashes Are Not Lane Specific
(2) See Tables 1 and 2 for Crash # and Detailed Crash History.
(3) 2005 Existing Traffic Volumes: **AM (PM)**

APPENDIX T

PRELIMINARY PHASE SCOPE DOCUMENT

NJDOT Scope Statement

Preliminary Engineering

Route 22 Westbound - Union, New Jersey

Purpose: The Preliminary Engineering Scope Statement lists the proposed project's deliverables and the activities required to create those deliverables. The scope statement also provides a common understanding of the proposed project's scope to stakeholders, subject matter experts, and the designer and lists the proposed project's major objectives. It enables the Project Manager to perform more detailed planning, it helps guide the design team's work during execution, and provides the baseline for evaluating whether change requests or additional work are contained within or outside the proposed project's boundaries.

Notes: The intent of the Preliminary Engineering (PE) Scope Statement is to provide useful project information to designers who are interested in becoming the designer of record for PE and possibly Final Design and Construction for this project. In addition, it will be used to solicit a man-hour estimate and cost proposal. The PE Scope Statement identifies the key elements of PE that are necessary to advance the proposed project to the Final Design (FD) Phase.

The PE Scope Statement is developed by the Division of Project Management (DPM) Project Manager and the Concept Development (CD) Designer near the conclusion of CD, prior to requesting the services of a designer to perform PE. The Scope of Work section is approved by the appropriate Subject Matter Experts (SME).

Section 1 of the document focuses on Proposed Project Identification Information and CD data including the location and description. Section 2 of the document specifies the Scope of Work for PE.

PROPOSED PROJECT IDENTIFICATION INFORMATION

PROPOSED PROJECT SPECIFICS

Proposed Project Name	Limits
Route 22 Vicinity of Vauxhall Road to West of Bloy Street	MP 55.9 to MP 56.4
NJDOT Project Manager	**NJDOT Program Manager**
Hardev Davé	Atul Shah
Counties	**Municipalities**
Union Select County 2 Select County 3	Union Township
UPC Number	058003
DB Number	6588
Legislative District(s)	20
Congressional District (s)	10
Route	22
Start Milepost	55.9
End Milepost	56.4
Alternate Route	
Alternate Start Milepost	
Alternate End Milepost	
STIP Information	
Structure Numbers	2004150
Project Classification:	4 - Widening and Resurfacing
MPO	

NJDOT Scope Statement

Preliminary Engineering

PROPOSED PROJECT ESTIMATE

List the Proposed Project estimates for each category from Concept Development.

Project Item:	CD Phase Estimated Amount
ROW	$289,000
Utility Relocation	$ 1,331,000
Construction	$1,023,424
Construction Engineering	$20,755
Contingencies	$6,000
Total	$2,670,179

CONCEPT DEVELOPMENT INFORMATION

Date of Concept Development Report:	_____	**Date of Federal Approval of CD Report:**	_____
Date of CPC decision to advance project to PE:	_____		
CD Designer:	_____		
PE to be Completed by (check one):	☐ In-House ☒ Consultant		

Purpose and Need: The purpose for the project is to address the safety concerns regarding the substandard layout geometry of the intersection and interchange ramps of Route 22 WB vicinity of Vauxhall Road to West of Bloy Street from MP 55.9 to MP 56.4. In particular, the absence of acceleration and deceleration lanes along Route 22 significantly contributes to the higher than statewide accident rate along this segment of Route 22.

Description of Preliminary Preferred Alternative: The project provides an auxiliary lane along Route 22 WB from Gary Road to Vauxhall Road exit ramp. Provides a short deceleration lane and short acceleration lane along Route 22 WB at the Sayre Road intersection for right in and right out traffic movements.

Project Goals and Objectives: • Maintain all traffic lanes during construction

- Develop an expedited construction schedule that minimizes delays to the public
- Avoid or minimize property acquisitions & Avoid or minimize utility facility relocations
- Avoid, minimize, or mitigate environmental impacts
- Maintain Access to Businesses at all times & Accommodate the NJ Transit Route 114/65 as practicable

PRELIMINARY ENGINEERING INFORMATION (to be filled in upon selection of a designer)

PE Designer:	_____		
FMIS Contract ID Number (e.g., 89 00766):	_____	**Funding Source:**	_____
Agreement Number (e.g., 2001PM03):	_____		

PRELIMINARY ENGINEERING DELIVERABLES

3.1 Preliminary Engineering Initiation	☐ Utility Agreement	☐ Environmental Assessment
☐ Kickoff Meeting Minutes	☐ Subsurface Utility Engineering Test Pit Report	☐ Finding of No Significant Impact (FONSI)
3.2 Roadway Engineering	☒ Updated Base Plans (With Identified Conflicts)	☐ Environmental Commitments/Plan Sheets
☒ Control Survey Report	☐ Railroad Diagnostic Team Meeting Memo of Record	☐ Historic Sites Council Concurrence
☒ Topographic Survey	**3.6 Quality Management**	**3.9 Preliminary Engineering Report**
☐ Base Maps	☒ PE Quality Management Certification	☐ Approved Project Plan
☐ Preliminary Drainage Design Report	**3.7 Communications**	☒ Construction Cost Estimate
☐ Traffic Engineering Facility Location	☒ Design Communications Report	☒ Design Exception Report
☐ Constructability and Maintenance Review Comments	**3.8 Environmental Documents**	☒ Final Design Scope Statement
☐ Preliminary ITS Facility Design Plans	*Technical Environmental Studies*	☒ Updated Project Management Plan
☐ Updated Preliminary Detour and Construction Staging Plans	☐ Air Study	☐ Project Management Plan (Major Projects
☒ Preliminary Roadway Plans	☐ Noise Study	☐ Alternatives Analysis Report
☐ Pavement Design Data	☐ Ecology Study	☒ Core Group Meeting Minutes
☒ Pavement Recommendation	☐ Hazardous Waste Study	☒ Final Design Public Involvement Action Plan
☐ Lighting Warrant Analysis Report	☐ Socio-Economic Study	**3.10 Contracts**
☐ Initial Deforestation/ Reforestation Plan	☐ Cultural Resources Study	*Final Design Addendum*
☐ Preliminary Construction Schedule	*Section 4(f)*	☐ Final Design Designer Fee Proposal
3.3 Structural Engineering	☐ Individual Section 4(f) Evaluation	
☐ Structural Design Recommendation Summary	☐ Programmatic Section 4(f) Evaluation	☐ Final Invoice
☐ Preliminary Geotechnical Engineering Report	☐ De Minimis Section 4(f) Evaluation	*Final Design Independent Cost Estimate*
3.4 Right of Way and Access	☐ Net Benefit Section 4(f) Evaluation	☐ Summary Independent Cost Estimate Report
☐ Project Access Plan		
☐ Access Impact Summary	☐ Executive Order 215 (E.O. 215) Document	☐ Final Design Schedule
☒ Right of Way Report		☐ Final Design Budget
☒ Right of Way Impact Plan	☐ Environmental Impact Statement	☐ Notice of Authorization
☒ Initial Right of Way Estimate	☐ Record of Decision (ROD)	**3.11 Preliminary Engineering Approvals**
3.5 Utility Engineering		☐ Capital Program Screening Committee Recommendation
☒ Utility Base Plans	☒ Categorical Exclusion Document	☐ Capital Program Committee Approval
☒ Utility Letter No. 2	☐ Certified Categorical Exclusion Document	☐ FHWA Approval
☒ Utility Engineering Funding Authorization		

SUMMARY OF COMMITMENTS

List any commitments made to the public, local officials or other government agencies:

Project Commitment	Unit Requesting the Commitment	Unit Fulfilling Commitment	Special Needs

List any anticipated commitments that may be made:

APPROVAL		
Name	**Title**	**Date Approved**
	Project Manager Division of Project Management	
	Program Manager Division of Project Management	
	Director Division of Project Management	
	Manager Bureau of Landscape Architecture and Environmental Solutions	

PRELIMINARY ENGINEERING SCOPE OF WORK

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NOTE: The PE Designer will perform the tasks associated with PE as so marked, in preparation for Final Design. The Project Manager will review and negotiate the proposal, execute the Agreement and instruct the designer to begin work. The Project Manager will direct the proposed project through PE.

Right of Way

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3110	Prepare ROW Report	☒ Yes ☐ No	☒ Designer	
3115	Initiate ROW Impact Plan	☒ Yes ☐ No	☒ Designer	
3120	Hold ROW Kickoff Meeting	☒ Yes ☐ No	☐ ROW ☒ DPM ☐ Designer	
3125	Prepare Initial ROW Estimate	☒ Yes ☐ No	☒ ROW ☐ DPM	

Total Number of Parcels: 8

1. Fee Parcel /Easements

Number of fee parcels (partial):	2	**Number of fee parcels (entire):**	0	**Number of residential relocations:**	0
Number of permanent easements (E parcels):	7	**Number of temporary easements:**	0	**Number of commercial relocations:**	0

2. List any known or potential environmental problems or issues that may impact Right of Way processes or decisions (cross reference with the Environmental section of the Scope Statement document: None

3. List any environmentally sensitive parcels (ESPs), underground storage tanks, freshwater wetlands: Block 1806 Lots 3.02 and 4.

4. Identify Riparian Parcels (currently flowed), Easements and/or Green Acres Diversions by contacting NJDEP for any Right of Way to be acquired: None

5. Identify parcels that can be eliminated by design change modifications and attempts to mitigate damages suffered by the remaining properties. None

6. Decision to expand parcel for further use or contingency. None

7. List the number of Non Real Estate Engineering (NRE) parcels. None

8. List any commitments and conditions made to the public or to private property owners that may impact Right of Way processes or decisions: None

9. Green Acres mitigation method: ☐ **Dollar Reimbursement** ☐ **Property Replacement**

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include number and type of parcels, known environmental problems, riparian parcels, public commitments, etc.

Access

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3105	Prepare Project Access Plan and Access Impact Summary	☒ Yes ☐ No	☐ DPM ☒ Designer ☐ OAD	

Number of Adjustments:	Nine	Number of Modifications:	Two	Number of Revocations:	Three

1. Note any pending agreements or access applications within the proposed project limits: _____

2. Are proposed left turn lanes in compliance with the Access Level? ☐ Yes ☒ No

3. Is the proposed Typical Section of the roadway in compliance with the Highway Access Code? ☒ Yes ☐ No

4. Total No. of Driveways impacted: Sixteen

5. Any commercial properties with access modifications and/or Revocations that have potential impacts to site parking slots, circulations and operation of business? ☐ Yes ☒ No
If yes, provide details of impact with Block and Lot Nos. _____

6. Any commercial properties that will require necessary assistance in the establishment of the alternative access (as per NJAC 16:47-4.33)? ☐ Yes ☒ No
If yes, provide details of assistance with Block and Lot Nos. _____

7. Any commercial properties that will require the preparation of an Access Impact Assistance (AIA) report? ☐ Yes ☒ No
If yes, provide Block and Lot Nos. _____

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include number of driveways impacted, pending agreements or major access permit applications, driveway modifications causing circulation issues, alternative access issues, Access Impact Assistance issues, etc.

Drainage

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3085	Prepare Preliminary Drainage Design	☒ Yes ☐ No	☐ DPM ☒ Designer	

1. Identify all existing drainage deficiencies (undersized system, excessive spread into travel lanes, insufficient inlets, flooding at low points, etc.): Yes
2. List proposed improvements including outfalls (especially tidal): Yes
3. Is compliance with Stormwater Management rules triggered (> 1/4 acre new impervious surface, or 1 acre disturbance)? ☐ Yes ☒ No
4. Identify all NJDEP permits required: No
5. List proposed structural Best Management Practices (BMP) (e.g., Bioretention System, Constructed Wetlands, extended detention basins, infiltration system, wet ponds, porous pavement): N/A
6. List proposed nonstructural BMP (e.g., Vegetation and Landscaping, Minimize Site Disturbance, Impervious Area Management, and Time of Concentration Modifications): N/A
7. Identify drainage outflow owner: _____ Will property rights need to be acquired? ☐ Yes ☐ No

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include drainage deficiencies, new/improved outfalls, storm water management rules, permits, Best Management Practices (structural and non-structural), easements/right-of-way, etc.

Landscape

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3010	Determine and Calculate Deforested Areas	☐ Yes ☒ No	☐ BLAES ☐ Designer	

1. List any landscape architecture related commitments such as:

a. Wetland or Riparian Mitigation Planting:	
b. Historic Site commitments	
c. Vegetative Screens or Buffers	
d. Noise Barrier Aesthetics:	
e. Architectural Treatments on Bridge Retaining Walls:	
f. Tree Removal Mitigation:	
g. Urban Design Work (paving, streetscapes, etc.):	
h. Aesthetic plantings:	
i. Existing tree preservation and protection:	
j. Reforestation Application:	

2. Anticipated visualization work for in-house and public information meetings:

a. Rendered Plans:	
b. 2D computer generated before & after photographs:	
c. 3D computer generated mode:	

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include screens or buffers, aesthetic plantings, mitigation plantings, reforestation, etc.

Environmental

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3300	Initiate Cultural Resources (Section 106) Process	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3305	Conduct CR Survey	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3310	Prepare CR Survey Report	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3315	Review CR Survey Report	☐ Yes ☒ No	☐ BLAES	
3320	Address Comments on CR Survey Report	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3325	Approve CR Survey Report	☐ Yes ☒ No	☐ BLAES	
3330	Obtain SHPO Concurrence (No Resources, No Effect, No Adverse Effect)	☐ Yes ☒ No	☐ BLAES ☐ SHPO	
3335	Prepare Draft MOA (Adverse Effect Only)	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3340	Obtain SHPO Concurrence (No Adverse Effect with Conditions or Adverse Effect)	☐ Yes ☒ No	☐ BLAES ☐ SHPO	
3345	Obtain FHWA Approval of CR Survey Report	☐ Yes ☒ No	☐ FHWA ☐ BLAES	
3350	Prepare Adverse Effect Documentation & Submit to FHWA (Adverse Effect Only)	☐ Yes ☒ No	☐ BLAES	
3355	FHWA Sends Adverse Effect Documentation to ACHP	☐ Yes ☒ No	☐ FHWA	
3360	ACHP Reviews and Accepts or Declines Participation	☐ Yes ☒ No	☐ ACHP	
3365	Resolve Adverse Effects	☐ Yes ☒ No	☐ BLAES ☐ FHWA	
3370	Circulate MOA for Comment	☐ Yes ☒ No	☐ BLAES	

3375	Prepare Final MOA	☐ Yes ☒ No	☐ BLAES	
3380	Execute the MOA	☐ Yes ☒ No	☐ BLAES ☐ DPM ☐ FHWA ☐ ACHP ☐ SHPO	
3390	Submit Historic Sites Council Application	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ SHPO	
3395	Present to Historic Sites Council	☐ Yes ☒ No	☐ BLAES ☐ Historic Sites Council	
3400	Inform Jurisdictional Agency Regarding Programmatic Section 4(f) Impacts	☐ Yes ☒ No	☐ BLAES	
3405	Receive Concurrence Regarding Programmatic Section 4(f) Impacts	☐ Yes ☒ No	☐ Jurisdictional Agencies	
3410	Prepare Programmatic Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3420	Prepare De Minimis Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3425	Prepare Programmatic Net Benefit Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3430	NJDOT Reviews Programmatic Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES	
3435	Revise Programmatic Section 4(f) Evaluation (NJDOT Comments)	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3440	FHWA Reviews Programmatic Section 4(f) Evaluation	☐ Yes ☒ No	☐ FHWA	
3445	Revise Programmatic Section 4(f) Evaluation (FHWA Comments)	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ FHWA	
3450	FHWA Approves Programmatic Section 4(f) Evaluation	☐ Yes ☒ No	☐ FHWA	
3460	Inform Jurisdictional Agency Regarding Draft Individual Section 4(f) Impacts	☐ Yes ☒ No	☐ BLAES	
3465	Receive Concurrence Regarding Draft Individual Section 4(f) Impacts	☐ Yes ☒ No	☐ Jurisdictional Agencies	

3470	Prepare Draft Individual Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3475	NJDOT Reviews Draft Individual Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES	
3480	Revise Draft Individual Section 4(f) Evaluation (NJDOT Comments)	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3485	FHWA Reviews and Comments on Draft Individual Section 4(f) Evaluation	☐ Yes ☒ No	☐ FHWA	
3490	Revise Draft Individual Section 4(f) Evaluation (FHWA Comments)	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ FHWA	
3495	Conduct Draft Individual Section 4(f) Legal Sufficiency Review	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ FHWA	
3500	Circulate Draft Individual Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3505	Prepare Final Individual Section 4(f) Evaluation	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3510	FHWA Approves Final Individual Section 4(f) Evaluation	☐ Yes ☒ No	☐ FHWA	
3520	Inform Green Acres Program and Local Officials	☐ Yes ☒ No	☐ BLAES	
3525	Receive Concurrence on Green Acres Impacts	☐ Yes ☒ No	☐ Green Acres Prog. ☐ Local Officials	
3530	Hold Green Acres Pre-Application Meeting	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3535	Negotiate Green Acres Compensation	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ Green Acres Prog. ☐ Local Officials ☐ ROW Tech. Support	
3540	Identify Alternatives (EA Only)	☐ Yes ☒ No	☐ BLAES ☐ DPM ☐ Designer	
3545	Prepare EA or EA/4(f)	☐ Yes ☒ No	☐ Designer	
3550	NJDOT Reviews EA	☐ Yes ☒ No	☐ BLAES	

3555	Revise EA (NJDOT Comments)	☐ Yes ☒ No	☐ Designer	
3560	FHWA Reviews EA	☐ Yes ☒ No	☐ FHWA	
3565	Revise EA (FHWA Comments)	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3570	FHWA Approves EA	☐ Yes ☒ No	☐ FHWA	
3575	Conduct Draft Individual Section 4(f) Legal Sufficiency Review (EA)	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ FHWA	
3580	Circulate EA	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3585	Hold EA Public Hearing and Comment Period	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ CCR	
3590	Address EA Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ FHWA	
3595	Submit FONSI Request Package	☐ Yes ☒ No	☐ BLAES	
3600	FHWA Approves Final Individual Section 4(f) (EA)	☐ Yes ☒ No	☐ FHWA	
3605	FHWA Reviews and Issues FONSI	☐ Yes ☒ No	☐ FHWA	
3610	Publish Notice of FONSI Availability	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ CCR	
3620	Publish Notice of Intent in Federal Register (EIS Only)	☐ Yes ☒ No	☐ BLAES ☐ FHWA	
3625	Invite Cooperating Agencies (EIS Only)	☐ Yes ☒ No	☐ FHWA	
3630	Hold NEPA Scope Meeting (EIS Only)	☐ Yes ☒ No	☐ BLAES ☐ DPM ☐ Designer ☐ FHWA	
3635	Prepare Alternatives Analysis Report	☐ Yes ☒ No	☐ BLAES ☐ DPM ☐ Designer	
3640	Prepare DEIS or DEIS/4(f)	☐ Yes ☒ No	☐ Designer	

3645	NJDOT Reviews DEIS	☐ Yes ☒ No	☐ BLAES	
3650	Revise DEIS (NJDOT Comments)	☐ Yes ☒ No	☐ Designer	
3655	FHWA Reviews DEIS	☐ Yes ☒ No	☐ FHWA	
3660	Revise DEIS (FHWA Comments)	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3665	FHWA Approves DEIS to Circulate	☐ Yes ☒ No	☐ FHWA	
3670	Publish Notice of Availability in Federal Register (DEIS)	☐ Yes ☒ No	☐ BLAES ☐ EPA	
3675	Circulate DEIS	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3680	Hold EIS Public Hearing and Comment Period	☐ Yes ☒ No	☐ BLAES ☐ CCR ☐ Designer	
3685	Address Public and Agency Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3690	Select Final Alternative	☐ Yes ☒ No	☐ DPM ☐ FHWA ☐ SME's	
3700	Prepare and Submit FEIS	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3705	FHWA Reviews and Comments on FEIS	☐ Yes ☒ No	☐ FHWA	
3710	Address FEIS Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3715	FHWA Reviews FEIS for Legal Sufficiency and Approval	☐ Yes ☒ No	☐ BLAES ☐ Designer ☐ FHWA	
3720	Publish EIS Notice of Availability in Newspaper	☐ Yes ☒ No	☐ BLAES ☐ CCR	
3725	Publish FEIS Notice in Federal Register	☐ Yes ☒ No	☐ BLAES ☐ EPA	
3730	FHWA Publishes ROD in Federal Register	☐ Yes ☒ No	☐ FHWA	
3735	Circulate FEIS	☐ Yes ☒ No	☐ BLAES ☐ Designer	

3740	Conduct Air Quality Study	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3745	Prepare Air Quality TES	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3750	NJDOT Reviews Air Quality TES	☐ Yes ☒ No	☐ BLAES	
3755	Address Air Quality TES Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3760	Approve Air Quality TES	☐ Yes ☒ No	☐ FHWA ☐ BLAES	
3765	Conduct Ecology Study	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3770	Prepare Ecology TES	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3775	NJDOT Reviews Ecology TES	☐ Yes ☒ No	☐ BLAES	
3780	Address Ecology TES Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3785	Approve Ecology TES	☐ Yes ☒ No	☐ BLAES	
3790	Conduct Socio-Economic Study	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3795	Prepare Socio-Economic TES	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3800	NJDOT Reviews Socio-Economic TES	☐ Yes ☒ No	☐ BLAES	
3805	Address Socio-Economic TES Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3810	Approve Socio-Economic TES	☐ Yes ☒ No	☐ BLAES	
3815	Conduct Noise Study	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3820	Prepare Noise TES	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3825	NJDOT Reviews Noise TES	☐ Yes ☒ No	☐ BLAES	
3830	Address Noise TES Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer	

3835	Approve Noise TES	☐ Yes ☒ No	☐ BLAES ☐ FHWA	
3840	Conduct Hazardous Waste Study	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3845	Prepare Hazardous Waste TES	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3850	NJDOT Reviews Hazardous Waste TES	☐ Yes ☒ No	☐ BLAES	
3855	Address Hazardous Waste TES Comments	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3860	Approve Hazardous Waste TES	☐ Yes ☒ No	☐ BLAES	
3865	Hold Public Information Center	☒ Yes ☐ No	☐ BLAES ☒ CCR ☒ Designer ☒ DPM	
3870	Prepare CED	☒ Yes ☐ No	☐ BLAES ☐ Designer	
3875	NJDOT Reviews and Approves CED	☒ Yes ☐ No	☒ BLAES	
3880	Initiate Environmental Technical Studies	☐ Yes ☒ No	☐ BLAES	
3890	Prepare Certified Categorical Exclusion (CCED) Document	☐ Yes ☒ No	☐ BLAES	
3900	Review and Approve Certified Categorical Exclusion Document (CCED)	☐ Yes ☒ No	☐ BLAES	
3910	Prepare Draft EO 215 Document	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3920	NJDOT Reviews Draft EO 215 Document	☐ Yes ☒ No	☐ BLAES	
3925	Revise Draft EO 215 Document (NJDOT Comments)	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3930	NJDEP Reviews EO 215 Document	☐ Yes ☒ No	☐ NJDEP	
3940	Address NJDEP Comments and Prepare Final EO 215 Document	☐ Yes ☒ No	☐ BLAES ☐ Designer	
3945	NJDEP Approves EO 215 Document	☐ Yes ☒ No	☐ NJDEP	

NJDOT Scope Statement

Preliminary Engineering

Anticipated Environmental Document: ☐ CCED ☒ CED ☐ EA ☐ EIS ☐ EO 215

Total Number of Permits**:** _____

1. List any environmental impacts and/or issues: _____
2. List any environmental commitments (made in approved environmental documents, through Memoranda of Agreement with environmental agencies, other commitments made to the public, local officials or other government agencies such as 4f, Section 106 (historic architecture, archaeology), air, noise, hazardous waste and ecology: _____
3. Check the environmental clearances or permits required on the project:

Federal

- ☐ U.S. Coast Guard (Bridge)
- ☐ USACOE Section 404 (Individual/Nationwide) discharge of fill
- ☐ USACOE Section 10 (Navigable Waters)
- ☐ USACOE Section 9 (Dam or Dike)
- ☐ National (or State) Wild & Scenic Rivers
- ☐ USDOA Forms AS-1006
- ☐ Section 7 Endangered Species Consultation
- ☐ NMFS Essential Fish Habitat Study

State

- ☐ CAFRA
- ☐ NJDEP Water Lowering
- ☐ NJDEP Riparian
- ☐ Hazardous Waste Site Investigation (SI/RI)
- ☐ HazWaste Remedial Action Work plan
- ☐ NJDEP Sanitary Facilities
- ☐ NJDEP Tidal Wetlands
- ☐ NJDEP Waterfront Development
- ☐ NJDEP Freshwater Wetlands
- ☐ NJDEP NJPDES Stormwater Construction GP (RFA)
- ☐ NJDEP Pollutant Discharge
- ☐ NJDEP Flood Hazard Area
- ☐ NJDEP Water Quality Certificate

Other

- ☐ Delaware River Basin Commission
- ☐ Delaware & Raritan Canal Commission
- ☐ Hackensack Meadowlands Commission
- ☐ Pinelands Commission
- ☐ Highlands Commission
- ☐ State Agriculture Development Commission

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include a list of the anticipated NEPA document, type of permits anticipated, anticipated environmental impacts and environmental commitments made in CD if any, etc.

Quality Management Services

Activity No.	Activity Name	Execute	Responsible Unit	Comments
		☐ Yes ☐ No		

Quality Management Services Reviewed? ☐ Yes ☐ No

Value Analysis to be Performed? ☐ Yes (if total cost of project >$20 million) ☐ No

Combined Estimated Cost of Construction, ROW, and Utilities: ☐ <$3 million ☒ $3-5 million ☐ $5-$15 million ☐ >$15 million

Lane Occupancy Charges and Road User Costs to be completed? ☒ Yes ☐ No

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include QMS review, lane occupancy charges/road user cost information, etc.

Utilities

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3035	Prepare Utility Base Plans	☒ Yes ☐ No	☐ Designer	
3040	Establish Utility Engineering Funding	☒ Yes ☐ No	☒ DPM ☐ Designer ☐ Program Coord.	
3045	Send Letter No. 2 and Plans to Utility Company	☒ Yes ☐ No	☒ DPM ☒ Designer ☐ Utility Co.	
3050	Prepare Utility Agreement	☐ Yes ☐ No	☐ DPM ☐ Designer	
3055	Update Base Plans and Identify Conflicts	☒ Yes ☐ No	☐ DPM ☒ Designer ☐ Utility Co.	
3060	Execute Utility Agreement	☐ Yes ☐ No	☐ DPM ☐ Utility Co. ☐ DAG	
3080	Conduct Subsurface Utility Engineering (SUE)	☒ Yes ☐ No	☐ DPM ☒ Designer ☒ SUE Contractor ☐ Utility Co.	

Total Number of Utility Companies: _____

Utility Type	Utility Company	Size (Units of Measure)	Location (aerial/underground)
Gas		Pipe	
Electric		Volts	
Cable		Pairs/ Strands	
Telephone		Pairs/ Strands	
Water		Pipe	
Sewer		Pipe	
Fiber-Optic (non-Department)			
Other:			
Other:			
Other:			
Other:			

1. Identify if the Utility Discover and Verification requires sub-surface utility exploration: _____
2. Is a SUE (Subsurface Utility Engineering) Consultant required? ☒ Yes ☐ No

3. Identify Potential Conflicts: No
4. Identify Temporary Relocations that are needed during construction: _____
5. Number of poles? 10
6. Number of guy wires on existing poles? 3
7. Are there cell towers or substations? No
8. Can utility relocations be avoided or performed in advance of the project? No
9. Can utility design/construction be performed by designer/contractor? No
10. Can ROW needed for utilities be identified? Yes

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include location of cell towers, location/presence of fiber optic lines, etc.

Jurisdiction

Activity No.	Activity Name	Execute	Responsible Unit	Comments
		☐ Yes ☐ No		

Total Number of Maps: _____ Total Number of Agreements: _____

Are there streetscape or esthetic items intended for this project? ☐ Yes ☐ No

If yes, has a resolution of support been acquired for jurisdictional assignment? ☐ Yes ☐ No ☐ NA

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include the anticipated number of maps and agreements, presence of streetscape or aesthetic treatments, local approval of such, etc.

Geometrics & Roadway

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3030	Prepare Horizontal & Vertical Geometry	☒ Yes ☐ No	☐ DPM ☒ Designer	
3070	Prepare Preliminary Roadway Plans	☒ Yes ☐ No	☐ DPM ☒ Designer ☐ SME's	
3135	Prepare Construction Cost Estimate	☒ Yes ☐ No	☐ DPM ☒ Designer	
3150	Prepare Design Exception Report	☒ Yes ☐ No	☐ DPM ☒ Designer ☐ QMS ☐ State Trans. Engr. ☐ FHWA	
3165	Finalize Project Plan	☒ Yes ☐ No	☒ DPM ☐ Designer	

Construction Plans/Estimated Number of Sheets

Roadway and Bridges

1	Key Map	____	Grades	____	Method of Cross Sections
____	Estimate-Distribution of Quantities	2	Traffic Control and Staging Plans	____	Cross Sections
1	Typical Sections	____	Traffic Control Plans	____	Alternate Retaining Wall System
____	Plan Sheet Index	____	ITS Plans	____	Estimate of Quantities – Bridge
3	Construction Plans	____	Electrical Details	____	Earthwork Summary
____	Environmental Plans	____	Traffic Signal Plans	____	Earthwork Chart Sheet
____	Profiles	____	Highway Lighting Plans	____	Non-standard Roadway Construction Details
____	Ties	____	Landscape Plans	____	Non-standard Bridge Construction Details
		3	Traffic Signing and Striping Plans	____	Drainage Plans

Right of Way Documents

____	Entire Tract Map	____	Tabulation Sheets	____	Individual Property Maps (IPM)
____	General Property Parcel Maps	____	Parcel Descriptions	____	Alignment Sheets

Other Documents

____	Jurisdictional Maps	____	Utility Agreements Plans	____	Railroad Crossing Element Plans
____	Project Specific Specifications				

Are there any additional documents? ☐ Yes ☒ No

Please identify any additional documents: _____

1. Existing Roadway(s):

	Roadway No. 1	Roadway No. 2	Roadway No. 3	Roadway No. 4
Roadway Name:	NJ Route 22			
Posted Speed(s):	**45**			
Highway Classification:	Urban Principal Arterial			
Significance (local or regional):	Local			
No. of Interchanges:	1			
Traffic Volumes:	35,351 (WB)			
Design Speeds:	50			
Development Class:	2 Widening and Resurfacing			
No. of Traffic Signals:	0			
No. of Intersections:	3			

2. Typical Section(s):

	Typical Section No. 1	Typical Section No. 2	Typical Section No. 3	Typical Section No. 4
Right of Way width:	86' (outside of interchange)			
Number of Lanes:	2-3			
Lane width & cross slope:	11'-15' wide and 1.5-2.5%			
Shoulder width & cross slope:	0			
Median width:	4'			
Sidewalk/border width:	4'/7'			
Median description and the overall roadway width:	Barrier/86'			

3. Intersection/Interchange (describe the existing intersection and/or interchanges including turning and auxiliary lanes.): Vauxhall Road crosses over the eastbound and westbound lanes of Route 22, Access to Vauxhall Road from eastbound Route 22 is by a loop ramp and from westbound Route 22 is by a finger ramp. Access to Route 22 eastbound from Vaux Hall Road is by a finger ramp with a stop condition. Access to Route 22 westbound from Vauxhall Road northbound is by a loop ramp with a yield condition, and from Vaux Hall Road southbound through the Sayre Road intersection with a stop condition. There are no acceleration/deceleration lanes wtihin the intercchange area.

4. Existing Deficiencies (provide an overview of the existing deficiencies. *Geometric*: Substandard horizontal and vertical sight distance, insufficient sight triangle, substandard vertical clearance, substandard or no shoulders, acceleration/deceleration lanes, etc. *Safety Issues*: check crash data for indicators of specific problems. Substandard/nonexistent guiderail, attenuators, pavement condition, skid resistance, median, etc. Note on substandard guiderail: the project limits should be extended to include upgrading any existing substandard guiderail run that extends beyond the proposed work limits as required by the Design Manual.): Substandard stopping sight distance on vertical crest curve, Substandard stopping sight distance on horizontal curve, substandard minimum radius of curve for exit ramp, substandard superelevation, substandarad left shoulder width, sustandard vertical clearance, substandard acceleration lane from Vauxhall Road NB to Route 22 WB

5. Proposed Improvements (provide a brief narrative of the proposed improvements and how they address the identified deficiencies. Note changes to be made to profiles, alignment, guiderail, and typical section): Provide an auxiliary lane along Route 22 WB between Gary Road and Vauxhall Road. Improve the turning radius from Vauxhall Road to Route 22 WB to allow large trucks to make a right turn into the appropriate lane without encroaching on the adjacent lane. Provide a foreshortened deceleration and a foreshortened acceleration lane to and from Sayre Road along Route 22 WB by widening Route 22 WB pavement converting the existing right shoulder to part of the new auxiliary lane. Provide sidewalk along Route 22 WB between Vauxhall Road and Sayre Road. Improve the drainage system by adding inlets along Route 22 WB to address spread at low points and along widened pavement. Existing Route 22 WB travel lanes will be milled 2 inches and overlay with 2 inches asphalt. The existing pavement cross slopes and elevations on the travel lanes will remain the same.

6. Bicycle/Pedestrian Compatible? ☐ Yes ☒ No

If no, please explain: Due to the nature of the Urban Principal Arterial, the roadway width constriction of the existing Vauxhall Road bridge overpass, and the tight right-of-way corridor, bicycle lane and modern pedestrian sidewalk connectivity on this project is impractical within the project limits and budget. The addtion of such facilities would significantly increase the scope and footprint of the intended project.

7. Design Exception(s):

a. Is a Design Exception required? ☒ Yes ☐ No

b. List substandard features that are to remain and require Design Exception: Vertical Sight Distance, Horizontal Sight Distance, minimum radius of curve exit ramp, superelevation, shoulder widths left and right, vertical clearance, acceleration lane length and deceleration lane length

c. Has the Design Exception Crash Analysis been received from the Bureau of Safety Programs? ☒ Yes ☐ No

d. Has the Design Exception Crash Data for each controlling substandard design element been requested from the Bureau of Safety Programs? ☒ Yes ☐ No

e. Has FHWA provided preliminary concurrence on the Design Exceptions decisions (a) and (b) above? ☐ Yes ☐ No

f. Has Quality Management Services provided Reasonable Assurance on the Design Exceptions decisions (a) and (b) above ☐ Yes ☐ No

8. List any commitments made to the public, local officials or other government agencies: _____

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include a discussion of substandard design elements, design exceptions, and perhaps a quick description of the proposed geometry if it is unusual, commitments made to the community, etc.

Pavement

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3960	Obtain Traffic Loading Data	☒ Yes ☐ No	☒ DPM ☒ Designer	
3970	Collect Existing Pavement and Subgrade Soil Information	☒ Yes ☐ No	☒ Pvmt. Design Unit ☒ Designer	
3975	Conduct Pavement Testing Program	☒ Yes ☐ No	☐ Pvmt. Design Unit ☒ Designer	
3980	Prepare Pavement Recommendation	☒ Yes ☐ No	☒ Pvmt. Design Unit ☒ Designer	

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include evidence of subsurface drainage issues, settlement problems, stability problems, etc.

Structures

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3100	Prepare Structural Design Recommendation Summary	☐ Yes ☒ No	☐ Designer ☐ SME's	

Total Number of New Bridges:	0	**Total Number of New Spans:**	
Total Number of Rehab Bridges:	0	**Total Number of Rehab Spans:**	
Total Number of Replacement Bridges:	0	**Total Number of Replacement Spans:**	

1. Condition of existing bridge(s):

	Bridge No. 1	Bridge No. 2	Bridge No. 3	Bridge No. 4
a. NJDOT Structure Number:	2004150			
b. Year Built:	1940			
c. Date/type of any major modifications:				
d. Type & material of superstructure:				
e. Type and material of substructure:				
f. Feature that is spanned:				
g. Type of roadway it carries:				
h. Vertical Clearance of structure if it spans a roadway or railroad:				
i. Number of Spans:				
j. Length of Structure:				
k. Width of Structure:				
l. Horizontal Clearance of the pier/abutment with respect to the riding lane:				
m. Typical Section (number of lanes, width and cross slope and width of each sidewalk):				

	Bridge No. 1	Bridge No. 2	Bridge No. 3	Bridge No. 4
n. Parapet railing Type:				
o. Identify the structural deficiencies:				
p. Bridges over waterways (Identify scouring evaluation, bridge opening capacity, and frequency of storm):				

2. Proposed Bridge(s)/Bridge Improvements:

	Bridge No. 1	Bridge No. 2	Bridge No. 3	Bridge No. 4
a. Number of spans:				
b. Identify the type of maintenance of traffic that will be used (staging or detour):				
c. Identify the changes to the typical section of the existing structure:				
d. Vertical Clearance of structure if it spans a roadway or railroad:				
e. Length of Structure:				
f. Width of Structure:				
g. Horizontal Clearance of the pier/abutment with respect to the riding lane:				
h. Typical Section (number of lanes, width and cross slope and width of each sidewalk):				
i. Parapet railing Type:				
j. Identify the structural deficiencies:				
k. Coast Guard Permit Required:				

3. Are the minimum vertical clearance requirements over waterways, roadways, railroads met? ☐ Yes ☐ No

a. If no, please explain? _____

4. List other substandard features of proposed bridge: _____

5. Other Existing Structure(s):

a. Identify existing minor structures (Noise barriers, Retaining Walls (cast in place or alternate system), Gabions, High Tower Lighting foundations, Pre-cast Culverts, Culvert extensions, Type and number of Overhead Sign Structures): _____

b. Specify type and number of each substandard feature: _____

6. Proposed Other Structure(s):

	Structure No. 1	Structure No. 2	Structure No. 3	Structure No. 4
a. Identify changes in the existing minor structure that are being improved:				
b. List substandard features to be included in the design exception:				
c. Length:				
d. Width:				
e. Number of spans/units:				

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include scour, unusual existing or proposed structural elements, clearances, substandard elements, design exceptions, etc.

Geotechnical

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3095	Prepare Preliminary Geotechnical Engineering Report	☐ Yes ☒ No	☐ Geotechnical Engineering Unit ☐ DPM ☐ Designer	

1. **Is there evidence of subsurface drainage problems?** No
2. **Is there evidence of settlement problems?** No
3. **Is there evidence of stability problems?** No
4. **Is there evidence of scour problems?** No
5. **Are there existing soil-borings within the project limits?** No
6. **Are there rock slopes/cuts located within the project limits?** No
   a. **Are the rock cuts listed in the Rockfall Hazard Rating System?** _____
   b. **Do catchment areas need to be cleaned or modified?** _____
   c. **Are there apparent safety problems with protruding rock, sight lines, rock-fall and substandard existing mitigation measures?** _____
7. **Alternate site exploration (test pits)?** _____

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include rock slope issues, soil borings, scour, unusual existing or proposed structural elements, clearances, etc.

Survey

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3015	Prepare Control Survey Report	☒ Yes ☐ No	☒ DPM ☒ Designer ☒ Geodetic Survey	
3020	Conduct Topographic Survey	☒ Yes ☐ No	☒ Designer ☒ Geodetic Survey	
3025	Prepare Base Maps	☒ Yes ☐ No	☐ DPM ☒ Designer ☒ Geodetic Survey ☐ CADD Support	

1. **Identify available mapping information (aerial/conventional methods):** Conventional
2. **How were the existing and proposed baselines established?** As-Built
3. **How were the existing and proposed ROW lines established?** Tax Maps
4. **How was the horizontal and vertical control established; and which existing monumentation was used?** _____
5. **Is project in Tidal area?** ☐ **Yes** ☒ **No**
   If yes, then current mean high water elevation must be established in tidal water areas under Tidelands Bureau jurisdiction. _____
6. **Has NJDOT Regional Survey office been contacted regarding existing Control, and as-built plans within the project?** Yes
7. **Compliance with MAP filing law required?** ☒ **Yes** ☐ **No**
8. **Has NJDOT Geodetic Survey been contacted regarding existing control within the project?** ☒ Yes ☐ No
9. **Does Primary Control exist within the project limits or immediately adjacent to the project?** ☒ Yes ☐ No
   If yes, what year was control established in? _____
   If no, will primary control be required? _____
10. **Will plans be developed from aerial photogrammetry or as-built plans and conventional survey?** Aerial and Conventional Survey
11. **Geodetic Survey Services will be provided by:** ☐ In-House ☒ Consultant

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include base mapping obtained in CD, tidal issues, compliance with MAP filing laws, geodetic control issues, etc.

Railroads

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3075	Hold Diagnostic Team Meeting	☐ Yes ☒ No	☐ Railroad Eng. & Safety Unit ☐ DPM ☐ Designer	

Railroads Affected Select RR Line Select RR Line 2 Select RR Line 3 _____ _____ _____

1. **Grade Crossings Affected?** ☐ Yes ☐ No
   a. **How many?** _____
2. **Is there sufficient overhead structure clearance?** ☐ Yes ☐ No
3. **Diagnostic Team Meeting Required:** ☐ Yes ☐ No
4. **Diagnostic Team Meeting Held:** _____ (DATE)

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include presence of at-grade crossings, overhead structure clearances, diagnostic team meetings, etc.

Construction

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3130	Update Preliminary Detour and Construction Staging Plans	☒ Yes ☐ No	☒ Designer ☐ TSSE ☐ SME's	
3145	Conduct Constructability and Maintenance Review	☐ Yes ☐ No	☐ DPM ☐ Designer ☐ Const. Mgmt.	

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include commitments made to local officials or other agencies, staging details, detour discussion, schedule constraints, utility conflicts, etc.

Traffic Signal and Safety Engineering

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3090	Determine Traffic Engineering Facility Locations	☒ Yes ☐ No	☐ TSSE ☐ Designer	

Number of New Traffic Signals:		**Number of Revised Traffic Signals:**	
New overhead signs and sign structures	☐ Yes ☒ No	**Revised overhead signs and sign structures**	☐ Yes ☐ No
New Guide Signs	☒ Yes ☐ No	**Revised Guide Signs**	☐ Yes ☐ No
Number of Roundabouts:		**Emergency signal pre-emption**	☐ Yes ☐ No
Revised Highway Lighting	☐ Yes ☐ No	**Temporary Lighting "for staging and diversion roadways"**	☐ Yes ☐ No
Raised Pavement Markers	☒ Yes ☐ No		

1. Maintenance of Traffic: (What type of maintenance of traffic will be used during construction, i.e. staging, detour, permanent lane closures, or diversion road): Staging

2. Identify the number and location of temporary traffic signal(s) required during Staging or Detours: None

3. Is there an adequate corner ROW cutout for signal equipment installation? ☐ Yes ☐ No

4. Identify if a new or revised traffic signal agreement is required: _____

5. Identify overhead utility conflicts for traffic signals to be identified and resolved: _____

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include discussion of need for temporary signals, right-of-way constraints (related to traffic signal equipment), utility conflicts, etc.

Electrical

Activity No.	Activity Name	Execute	Responsible Unit	Comments
		☐ Yes ☐ No		

1. **Do any elements of this project scope require additional planned maintenance activities that would necessitate an increase in personnel or equipment resources?** ☐ Yes ☐ No
   If yes, provide details: _____
2. **Do any elements of this project scope include new roadway/electrical appurtenances that would require specialized training, equipment or materials to properly maintain the item (e.g., Vortech drainage chamber, ornamental lighting, and brick pavers)?** ☐ Yes ☐ No
   If yes, provide details: _____
3. **Does this project scope include or overlap sections of roadway that are simultaneously being planned or scheduled for Operations maintenance/construction activities?** ☐ Yes ☐ No
   If yes, provide details: _____
4. **Should consideration be given to canceling or postponing the Operations activity?** ☐ Yes ☐ No
   If yes, provide details: _____

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include elements of the design that will necessitate an increase in maintenance personnel or equipment, conflicting or overlapping projects with Operations, etc.

Traffic Operations and Intelligent Transportation System (ITS) Engineering

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3065	Prepare Preliminary ITS Facility Design	☐ Yes ☒ No	☐ Designer ☐ ITS ☐ Traffic Ops	

1. Project scope complies with the requirements of the latest ITS Investment Strategy and ITS Architecture? ☐ Yes ☐ No

2. Traffic Operations (North/ South) has been consulted for needs and impacts? ☐ Yes ☐ No

Identify needs and impacts. _____

3. Transportation Data Development has been consulted for needs and impacts? ☐ Yes ☐ No

Identify needs and impacts. _____

4. Project limits have been visually inspected for the existing ITS facilities? ☐ Yes ☐ No

5. Check if the project includes the construction or relocation of any of the following Intelligent Transportation System (ITS) facilities:

☐ Controlled Traffic Signal Systems (CTSS)
☐ Weigh-in-Motion (WIM)
☐ Closed Circuit TV Cameras (CCTV)
☐ Traffic Volume Stations
☐ Dynamic Message Signs (DMS)
☐ Roadway Weather Information Systems (RWIS)
☐ Highway Advisory Radio (HAR)
☐ In-Road Sensors
☐ Traffic Detection systems
☐ Fiber Optic Conduit and/or Cable
☐ Bridge Sensors
☐ Electrical or Communication Installations for the above systems
☐ Other ITS Devices: _____

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include compliance with latest ITS Investment Strategy and Architecture, consultation with Traffic Ops during CD, etc.

Commuter Mobility

Activity No.	Activity Name	Execute	Responsible Unit	Comments
		☐ Yes ☐ No		

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Examples of information for this section include bicycle and pedestrian compatibility, Complete Streets compliance, presence of bus stops, interruption of pedestrian accommodations during construction, ADA issues, etc.

Technical and Administrative Activities

Activity No.	Activity Name	Execute	Responsible Unit	Comments
3005	Initiate Preliminary Engineering	☒ Yes ☐ No	☒ DPM ☒ Designer	
3160	Prepare Draft Preliminary Engineering Report	☒ Yes ☐ No	☐ DPM ☒ Designer	
3170	Prepare Final Design Scope Statement	☒ Yes ☐ No	☒ SME's ☒ DPM ☒ Designer	
3175	Complete Preliminary Engineering Quality Certification	☒ Yes ☐ No	☒ Designer	
3180	Update Project Management Plan	☒ Yes ☐ No	☒ DPM	
3185	Prepare FD Public Involvement Action Plan	☒ Yes ☐ No	☒ DPM ☒ Designer ☒ CCR	
3195	Prepare Project Management Plan (**Major Projects**)	☐ Yes ☐ No	☐ DPM ☐ Designer	
3200	FHWA Approves Draft Project Management Plan (**Major Projects**)	☐ Yes ☐ No	☐ DPM ☐ Designer ☐ FHWA	
3205	NJDOT Reviews Draft Preliminary Engineering Report	☒ Yes ☐ No	☒ DPM ☒ SME's ☒ Designer	
3210	FHWA Reviews and Approves Preliminary Engineering Report	☒ Yes ☐ No	☒ DPM ☒ Designer ☒ FHWA	
3215	Present to Capital Program Screening Committee	☒ Yes ☐ No	☒ DPM	
3220	Capital Program Committee Approves Advancement to Final Design	☒ Yes ☐ No	☒ DPM ☒ CPC	
3225	Assess Designer	☒ Yes ☐ No	☒ DPM	
3230	Develop FD Designer Fee Proposal	☒ Yes ☐ No	☒ Designer	
3235	Develop FD Independent Cost Estimate	☐ Yes ☐ No	☐ DPM ☐ OSBM	

3240	Create FD Schedule	☒ Yes ☐ No	☒ DPM ☐ OSBM	
3245	Negotiate FD Addendum	☐ Yes ☐ No	☐ DPM ☐ Designer ☐ OSBM	
3250	Approve FD Schedule	☐ Yes ☐ No	☐ DPM ☐ OSBM	
3255	Develop FD Budget	☐ Yes ☐ No	☐ DPM ☐ OSBM	
3260	Finalize FD Budget	☐ Yes ☐ No	☐ DPM	
3265	Approve FD Budget	☐ Yes ☐ No	☐ DPM ☐ OSBM	
3270	Authorize Final Design	☐ Yes ☐ No	☐ DPM ☐ CIPD	
3275	Execute FD Addendum	☐ Yes ☐ No	☐ DPM ☐ Designer	
3285	Complete PE Closeout	☐ Yes ☐ No	☐ DPM	

1. Have the objectives of the Public Involvement Action Plan (PIAP) been satisfied? ☒ Yes ☐ No

2. Number of Local Workshop Meetings conducted in CD: _____

3. Public Information Centers conducted in CD (number of meetings, location & dates): One, Union Township Building July 13, 2011

4. Number of Officials Briefings conducted in Concept Development: _____

5. List Issues, Commitments or Concerns: _____

6. Is the mailing list up to date? ☒ Yes ☐ No

7. Are the Displays adequate to reuse in PE: ☒ Yes ☐ No

8. Resolution of Support Number: 2011-253

Resolution of Support Date: September 13, 2011

9. Other Coordination:

a. List additional organizations (Historic Society, Chamber of Commerce, Board of Education, Fire Company's etc.) or authorities (NJ Transit, NJ Turnpike, NJ Highway Authority, Port Authority, etc.) that have interest in the project: NJ Transit bus route no. 65 and 114

b. Proposed Formal Public Involvement Program (estimate number of Official Briefings and Public Info Centers/Meetings/Hearings): _____

c. If additional displays are required, provide the specifics (number, scale, special graphics 3D, simulations, models, etc): _____

d. If a mailing list is required, provide the approximate number of property owners: _____

Who is responsible for putting the mailing list together and providing mail labels? ☒ Consultant? ☐ In-house Design ☐ Other (Specify) _____

e. If handouts are required (provide the specifics, number, size, color or black and white, mapping, etc): _____

f. List special needs (i.e. Community Involvement Sub-Consultant, Facility Needs, Interpreter, Website, etc.): _____

g. Traffic Staging: How many lanes of traffic need to be maintained? _____

What will be the available working hours? _____

Can the project duration be significantly reduced by reducing the number of stages? _____

Can detours be used? _____

h. Schedule - Identify scheduling constraints (environmental, seasonal construction limitations, community). _____

What is the optimum period to start construction? _____

i. Is the scope focused on replacement or rehabilitation of road/bridge? _____

Is condition likely to change/deteriorate between scoping and construction? _____

ADDITIONAL INPUT

This section has been provided for the CD designer and the functional units to state any assumptions, to clarify and customize standard activities, and to add important information. Please be clear and concise. Provide your unit's contact person and number.

Summary of Approvals

SME Unit	Manager	Approval	SME Involved	Remarks
Right of Way				
Access				
Drainage				
Landscape				
Environmental				
Quality Management Services				
Utilities				
Jurisdiction				
Geometrics & Roadway				
Pavement				
Structures				
Geotechnical				
Survey				
Railroads				
Construction				
Traffic Signal Design				
Electrical				

Traffic Operations & ITS				
Commuter Mobility				

APPENDIX U

SUBSURFACE UTILITY ENGINEERING REPORT
&
UTILITY COORDINATION

92 NORTH MAIN STREET, BUILDING 19-E
P.O. BOX 448, WINDSOR, NEW JERSEY 08561
TEL. 609.371.5420 FAX 609.371.5423
800.995.3623

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TEST HOLE INVENTORY LIST

PROJECT : ROUTE 22 WB FROM GARY ROAD TO WEST OF SAYRE ROAD, SAFETY IMPROVEMENTS
TOWNSHIP OF UNION, UNION COUNTY, NEW JERSEY
CLIENT: LOUIS BERGER GROUP
CLIENT PROJECT No. CC-1304A BERGER
INFRAMAP CORP. PROJECT No. 13022
CHECKED BY: JASON EBERT / KENNETH KERR
DATE: 02-18-2013

IMC TH#	TYPE OF UTILITY FOUND	UTILITY COVER (TOP)	UTILITY BOTTOM COVER (CALCULATED)	SURVEY PIN ELEVATION	UTILITY ELEVATION (TOP)	UTILITY BOTTOM ELEVATION (CALCULATED)	REMARKS/ COMMENTS
1	12" (PER TH-5) CAST IRON WATER	4.37	N/A	65.21	60.84	N/A	SEE TEST HOLE FORM FOR MORE DETAILS
2	4" STEEL GAS	2.96	3.34	66.02	63.06	62.68	NONE
3	4" STEEL GAS	3.01	3.39	66.45	63.44	63.06	NONE
4	4" PLASTIC (WHITE PVC) TELEPHONE & FIBER OPTIC CONDUIT	2.35	2.73	68.19	65.84	65.46	SEE TEST HOLE FORM FOR MORE DETAILS
5	12" CAST IRON WATER	3.27	4.40	74.10	70.83	69.70	NONE
6	4" & 2" PLASTIC (PE) GAS "TEE"	2.74 2.46	3.12	92.41	89.67 89.95	89.29	SEE TEST HOLE FORM FOR MORE DETAILS
7	4" PLASTIC (PE) GAS	2.24	2.62	86.92	84.68	84.30	NONE
8	4" PLASTIC (PE) GAS	2.33	2.71	80.39	78.06	77.68	NONE

NOTE:

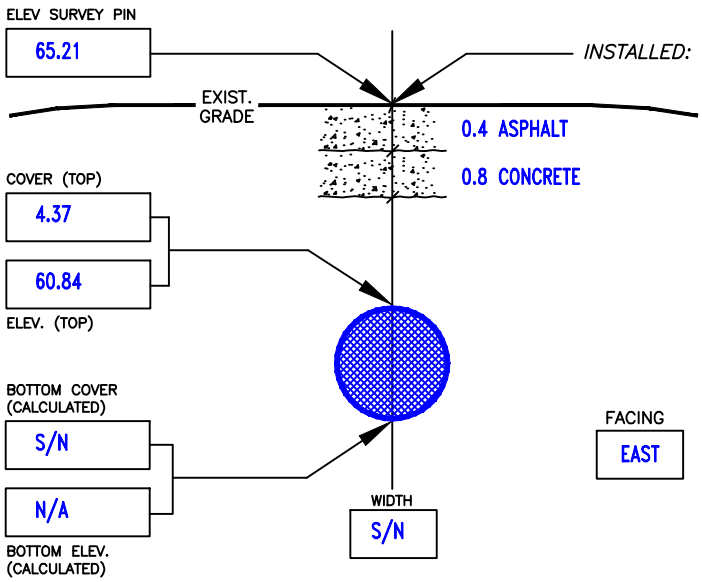
1. ALL MEASUREMENTS ARE IN ENGLISH UNITS (FEET).
2. HORIZONTAL & VERTICAL CONTROL POINTS PROVIDED BY LOUIS BERGER GROUP. HORIZONTAL DATUM = NAD 83 & VERTICAL DATUM = NAVD 1988.

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IMC PROJECT No. 13022 VACUUM TEST HOLE REPORT NO. 1

PROJECT NAME:	ROUTE 22 WB FROM GARY ROAD TO WEST OF SAYRE ROAD	CLIENT PROJECT No.	CC-1304A BERGER
LOCATE REQUESTED BY:	LOUIS BERGER GROUP	PROJECT LOCATION:	TOWNSHIP OF UNION, UNION COUNTY, NEW JERSEY
UTILITY REQUESTED:	WATER	SHEET No. 1 OF 3	PROPOSED: ROAD IMPROVEMENTS
UTILITY FOUND:	WATER	FORM BY: MA ASSISTED BY: LO KH	# OF HOLES: 1
MATERIAL AS FOUND:	CAST IRON	PAVING CONDITION: GOOD	DATE DUG: 02-15-13
SIZE AS FOUND:	SEE NOTE	SOIL CONDITIONS:	HARD DRY CLAY
		UTILITY CONDITION:	POOR



WEATHER: NIGHT TEMPERATURE: 40°

SURVEY PIN SURVEYED BY: INFRAMAP CORP.

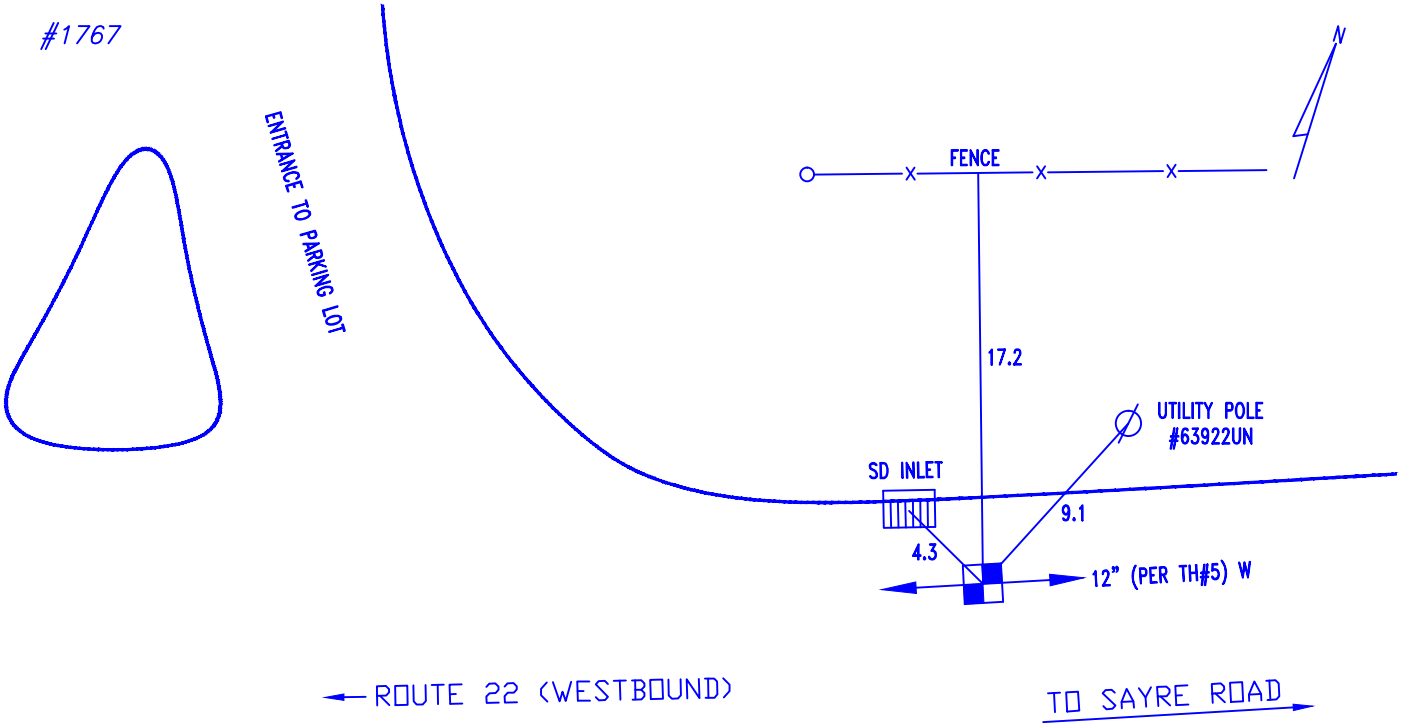
SURVEY INFO.: ALL MEASUREMENTS ON THIS FORM ARE IN ENGLISH UNITS (FEET).

NORTH	EAST	ELEV.
678663.51	559771.79	65.21

HORIZONTAL & VERTICAL CONTROL POINTS PROVIDED BY LOUIS BERGER GROUP.
HORIZONTAL DATUM = NAD 83 & VERTICAL DATUM = NAVD 1988.

NOTES: UNABLE TO OBTAIN SIZE OF UTILITY DUE TO HEAVY CORROSION. 12" CAST IRON WATER PER TEST HOLE #5. PK SET OVER APPROXIMATE CROWN OF PIPE.

NOT TO SCALE



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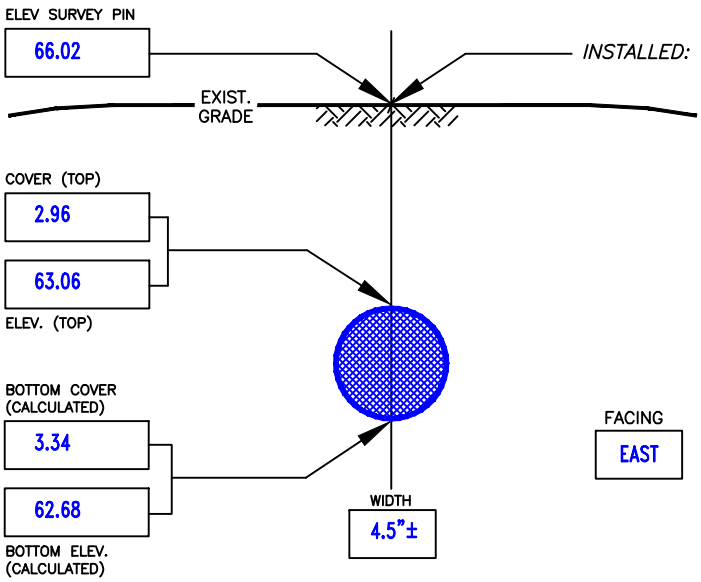
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IMC PROJECT No. 13022 VACUUM TEST HOLE REPORT NO. 2

PROJECT NAME:	ROUTE 22 WB FROM GARY ROAD TO WEST OF SAYRE ROAD	CLIENT PROJECT No.	CC-1304A BERGER
LOCATE REQUESTED BY:	LOUIS BERGER GROUP	PROJECT LOCATION:	TOWNSHIP OF UNION, UNION COUNTY, NEW JERSEY
UTILITY REQUESTED:	GAS	SHEET No. 1 OF 3	PROPOSED: ROAD IMPROVEMENTS
UTILITY FOUND:	GAS	FORM BY: MA ASSISTED BY: AA LO	# OF HOLES: 1
MATERIAL AS FOUND:	STEEL	PAVING CONDITION: N/A	DATE DUG: 02-12-13
SIZE AS FOUND:	4"	SOIL CONDITIONS:	SOFT MOIST SAND
		UTILITY CONDITION:	FAIR



HUB & TACK AT: CROWN OF UTILITY. MARKING TAPE: YELLOW

WEATHER: SUNNY TEMPERATURE: 43°

SURVEY PIN SURVEYED BY: INFRAMAP CORP.

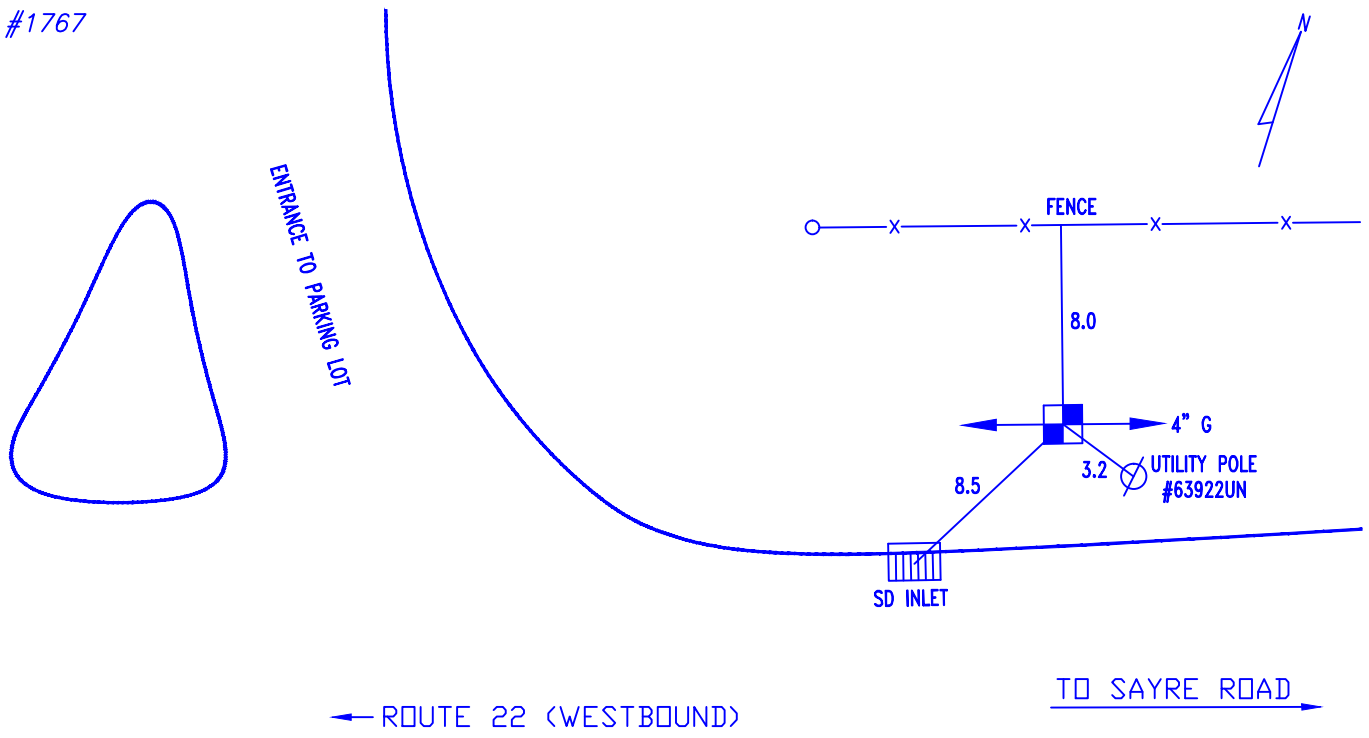
SURVEY INFO.: ALL MEASUREMENTS ON THIS FORM ARE IN ENGLISH UNITS (FEET).

NORTH	EAST	ELEV.
678672.68	559773.22	66.02

HORIZONTAL & VERTICAL CONTROL POINTS PROVIDED BY LOUIS BERGER GROUP.
HORIZONTAL DATUM = NAD 83 & VERTICAL DATUM = NAVD 1988.

NOTES:

NOT TO SCALE



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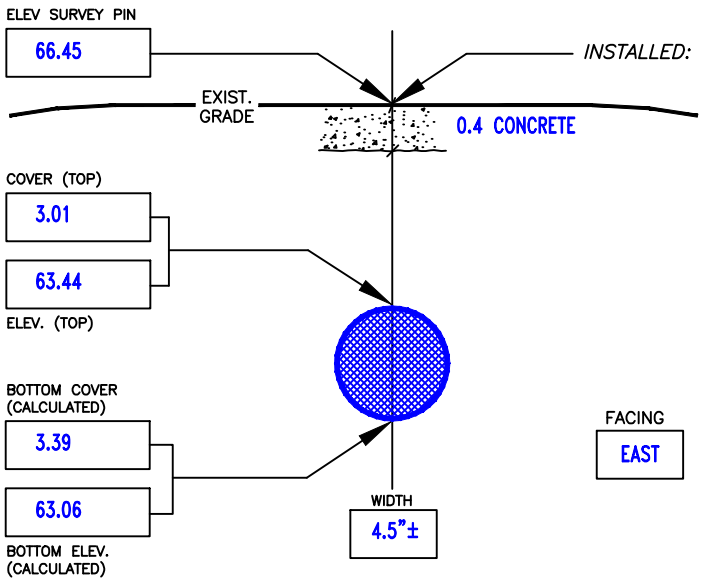
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IMC PROJECT No. 13022 VACUUM TEST HOLE REPORT NO. 3

PROJECT NAME:	ROUTE 22 WB FROM GARY ROAD TO WEST OF SAYRE ROAD	CLIENT PROJECT No.	CC-1304A BERGER
LOCATE REQUESTED BY:	LOUIS BERGER GROUP	PROJECT LOCATION:	TOWNSHIP OF UNION, UNION COUNTY, NEW JERSEY
UTILITY REQUESTED:	GAS	SHEET No. 1 OF 3	PROPOSED: ROAD IMPROVEMENTS
UTILITY FOUND:	GAS	FORM BY: MA ASSISTED BY: AA LO	# OF HOLES: 1
MATERIAL AS FOUND:	STEEL	PAVING CONDITION: FAIR	DATE DUG: 02-12-13
SIZE AS FOUND:	4"	SOIL CONDITIONS:	SOFT MOIST SAND ROCKY
		UTILITY CONDITION:	FAIR



INSTALLED: CHIS."X" AT: CROWN OF UTILITY. MARKING TAPE: YELLOW

WEATHER: SUNNY TEMPERATURE: 43°

SURVEY PIN SURVEYED BY: INFRAMAP CORP.

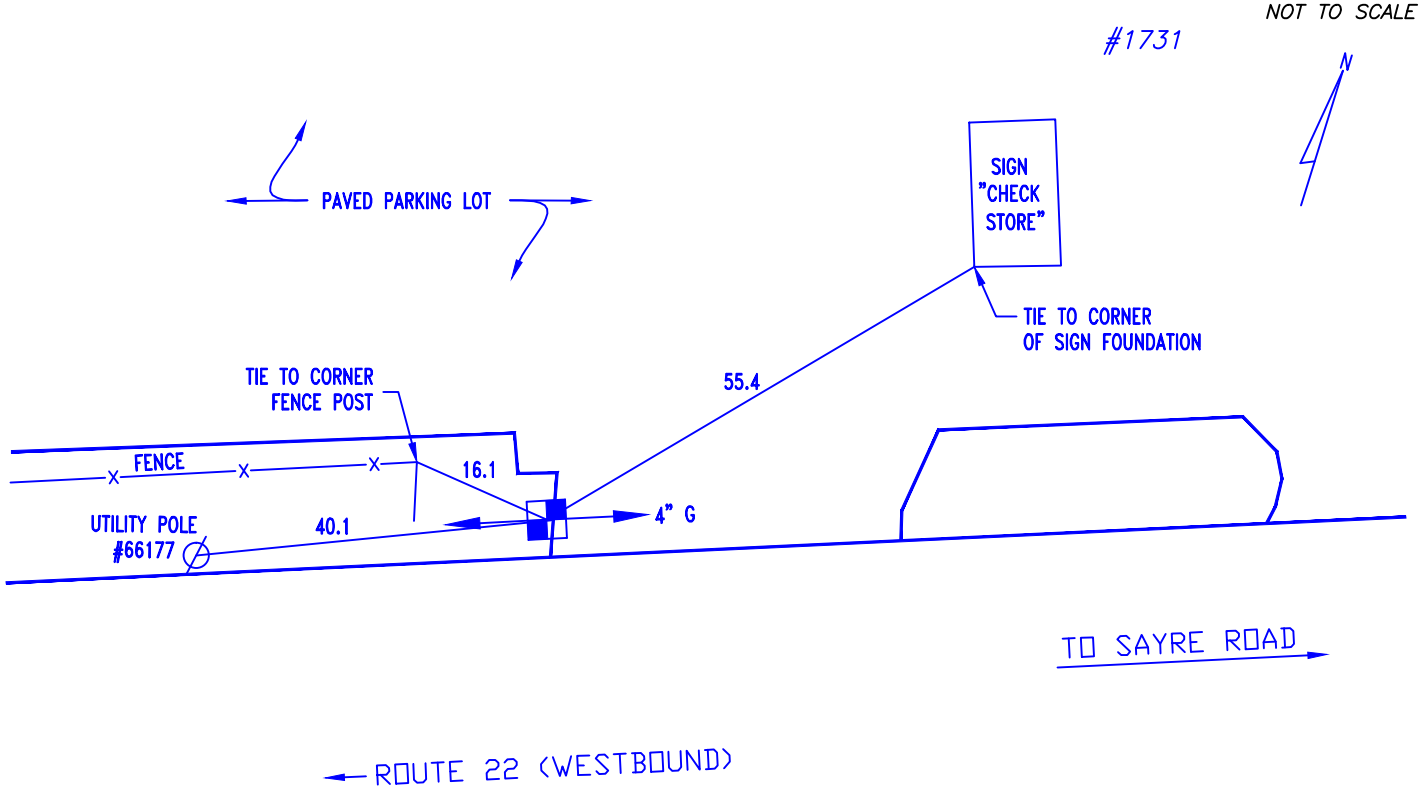
SURVEY INFO.: ALL MEASUREMENTS ON THIS FORM ARE IN ENGLISH UNITS (FEET).

NORTH	EAST	ELEV.
678723.94	559912.37	66.45

HORIZONTAL & VERTICAL CONTROL POINTS PROVIDED BY LOUIS BERGER GROUP.
HORIZONTAL DATUM = NAD 83 & VERTICAL DATUM = NAVD 1988.

NOTES:

NOT TO SCALE



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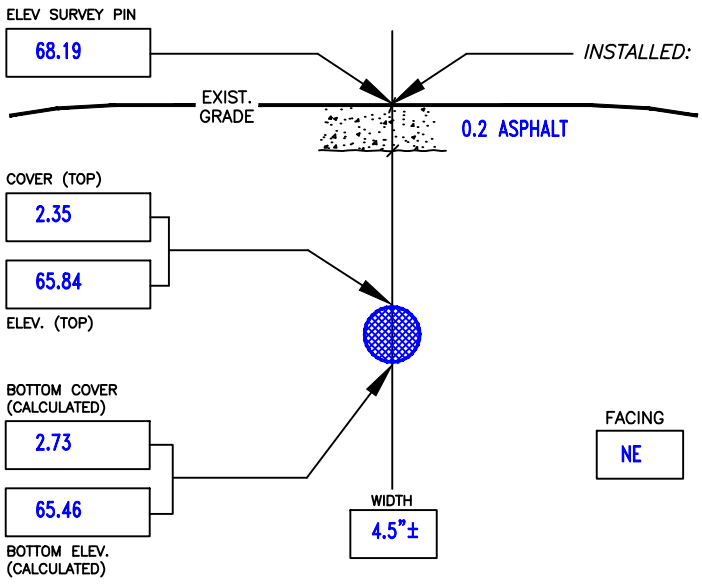
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IMC PROJECT No. 13022 VACUUM TEST HOLE REPORT NO. 4

PROJECT NAME:	ROUTE 22 WB FROM GARY ROAD TO WEST OF SAYRE ROAD
LOCATE REQUESTED BY:	LOUIS BERGER GROUP
UTILITY REQUESTED:	TELEPHONE
UTILITY FOUND:	TELEPHONE & FIBER OPTIC (SEE NOTE)
MATERIAL AS FOUND:	PLASTIC (WHITE PVC)
SIZE AS FOUND:	4"

CLIENT PROJECT No.	CC-1304A BERGER
PROJECT LOCATION:	TOWNSHIP OF UNION, UNION COUNTY, NEW JERSEY
SHEET No. 1 OF 3	PROPOSED: ROAD IMPROVEMENTS
FORM BY: MA ASSISTED BY: SD PS	# OF HOLES: 1
PAVING CONDITION: FAIR	DATE DUG: 02-18-13
SOIL CONDITIONS:	SOFT MOIST CLAY ROCKY
UTILITY CONDITION:	GOOD



INSTALLED: CHIS."X" AT: CROWN OF UTILITY. MARKING TAPE: ORANGE

WEATHER: SUNNY TEMPERATURE: 20°

SURVEY PIN SURVEYED BY: INFRAMAP CORP.

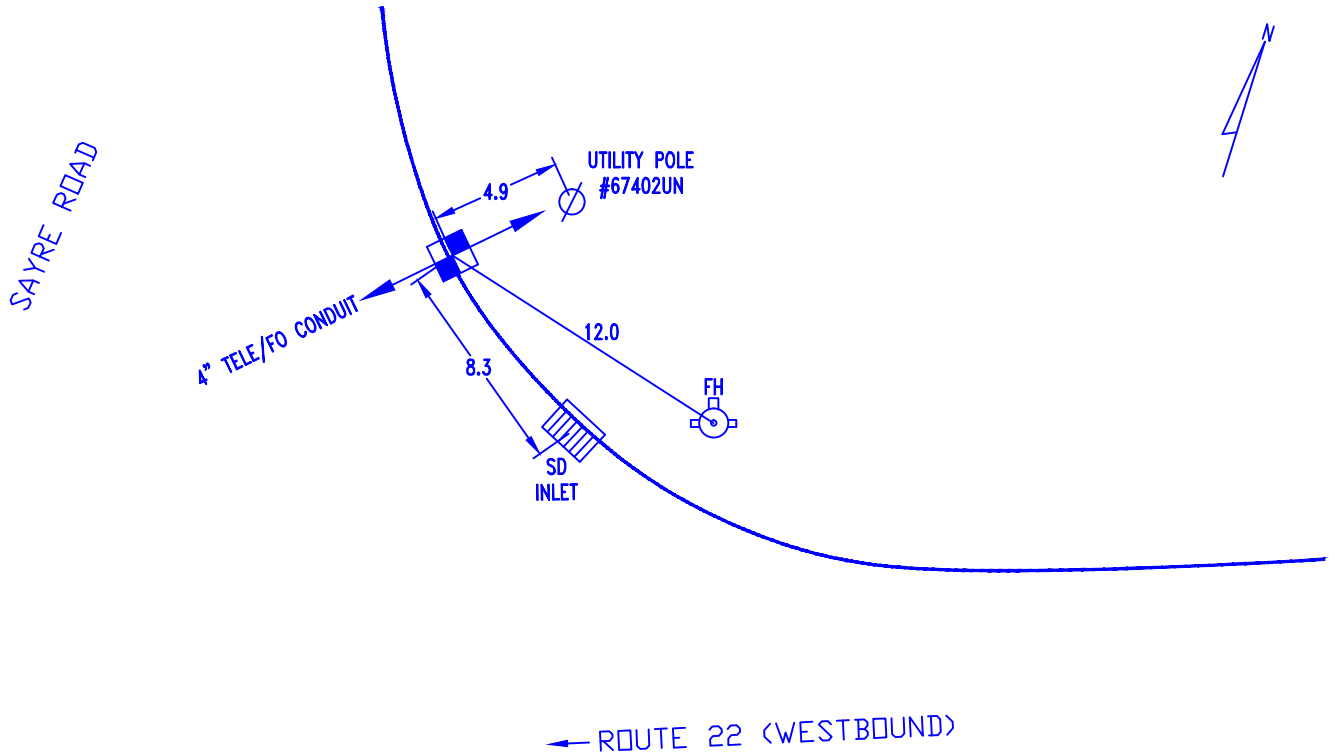
SURVEY INFO.: ALL MEASUREMENTS ON THIS FORM ARE IN ENGLISH UNITS (FEET).

NORTH	EAST	ELEV.
678853.80	560199.59	68.19

HORIZONTAL & VERTICAL CONTROL POINTS PROVIDED BY LOUIS BERGER GROUP.
HORIZONTAL DATUM = NAD 83 & VERTICAL DATUM = NAVD 1988.

NOTES: TELEPHONE AND FIBER OPTIC DROPS AT UTILITY POLE. TELEPHONE AND FIBER OPTIC APPEAR TO BOTH BE IN THE SAME CONDUIT.

NOT TO SCALE



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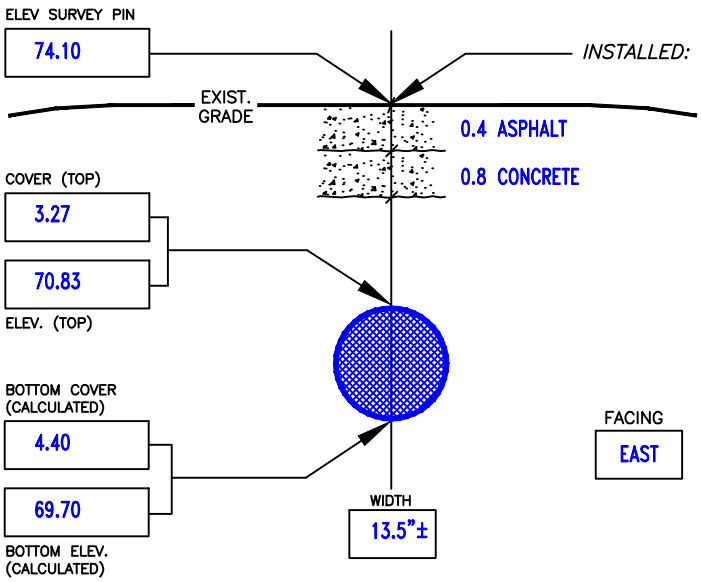
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IMC PROJECT No. 13022 VACUUM TEST HOLE REPORT NO. 5

PROJECT NAME:	ROUTE 22 WB FROM GARY ROAD TO WEST OF SAYRE ROAD	CLIENT PROJECT No.	CC-1304A BERGER
LOCATE REQUESTED BY:	LOUIS BERGER GROUP	PROJECT LOCATION:	TOWNSHIP OF UNION, UNION COUNTY, NEW JERSEY
UTILITY REQUESTED:	WATER	SHEET No. 2 OF 3	PROPOSED: ROAD IMPROVEMENTS
UTILITY FOUND:	WATER	FORM BY: MA ASSISTED BY: LO KH	# OF HOLES: 1
MATERIAL AS FOUND:	CAST IRON	PAVING CONDITION: GOOD	DATE DUG: 02-15-13
SIZE AS FOUND:	12"	SOIL CONDITIONS:	HARD DRY CLAY ROCKY
		UTILITY CONDITION:	FAIR



INSTALLED: PK AT: CROWN OF UTILITY. MARKING TAPE: BLUE

WEATHER: NIGHT TEMPERATURE: 40°

SURVEY PIN SURVEYED BY: INFRAMAP CORP.

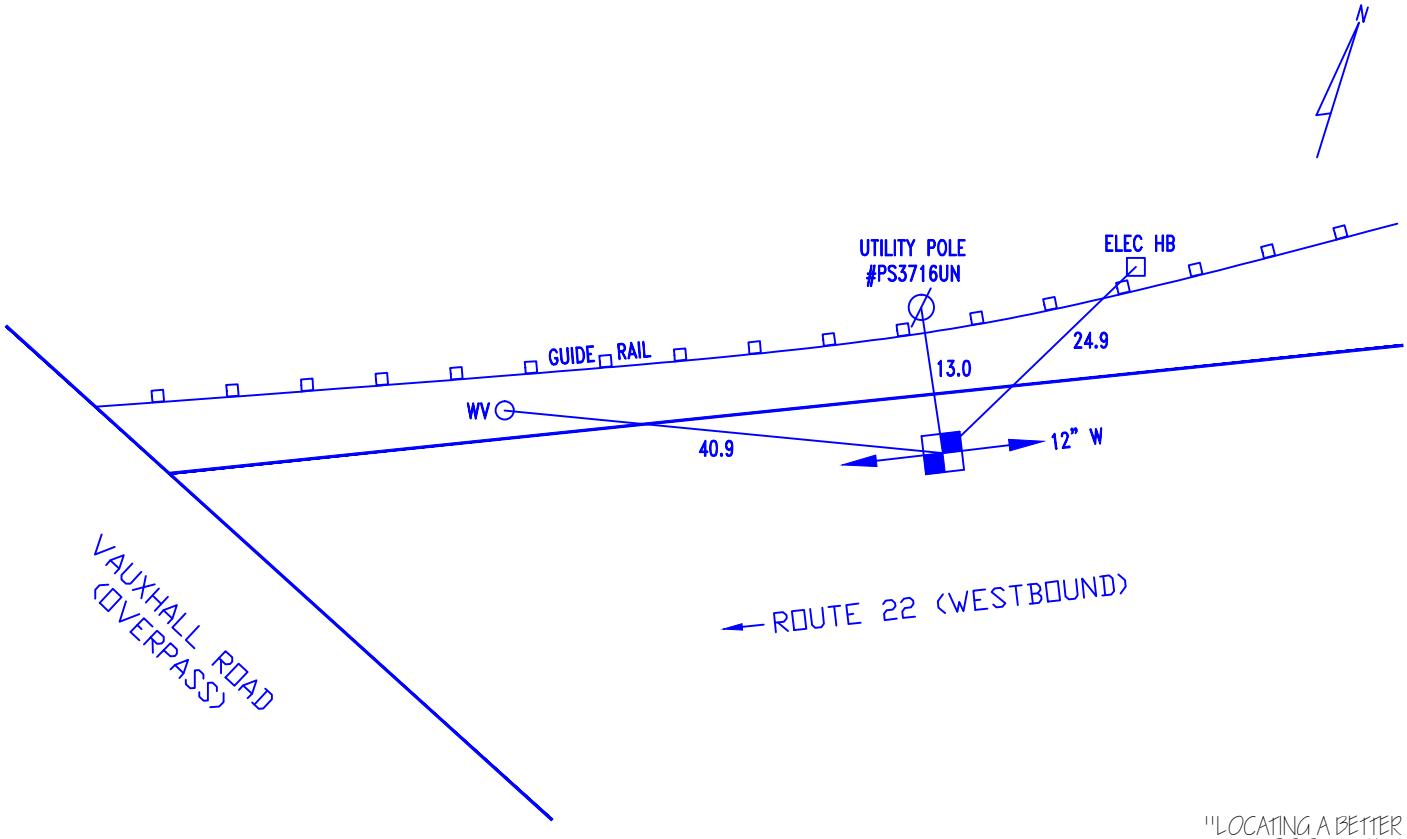
SURVEY INFO.: ALL MEASUREMENTS ON THIS FORM ARE IN ENGLISH UNITS (FEET).

NORTH	EAST	ELEV.
679000.55	560679.74	74.10

HORIZONTAL & VERTICAL CONTROL POINTS PROVIDED BY LOUIS BERGER GROUP.
HORIZONTAL DATUM = NAD 83 & VERTICAL DATUM = NAVD 1988.

NOTES:

NOT TO SCALE



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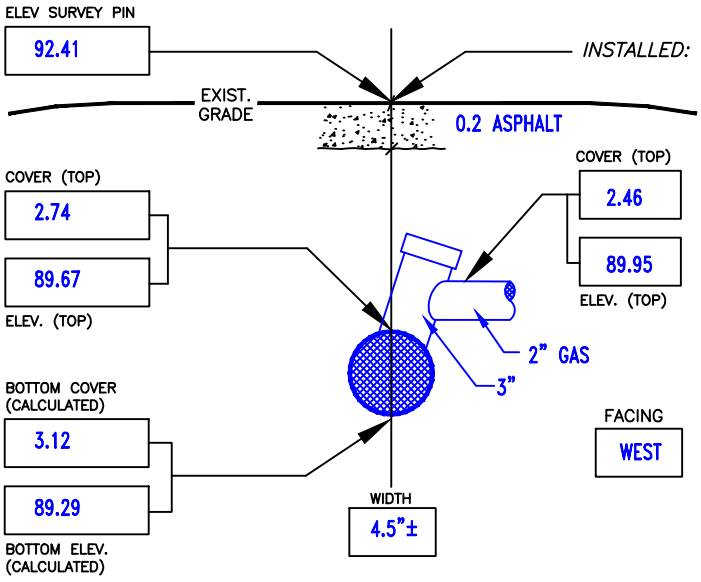
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IMC PROJECT No. 13022 VACUUM TEST HOLE REPORT NO. 6

PROJECT NAME:	ROUTE 22 WB FROM GARY ROAD TO WEST OF SAYRE ROAD	CLIENT PROJECT No.	CC-1304A BERGER
LOCATE REQUESTED BY:	LOUIS BERGER GROUP	PROJECT LOCATION:	TOWNSHIP OF UNION, UNION COUNTY, NEW JERSEY
UTILITY REQUESTED:	GAS	SHEET No. 2 OF 3	PROPOSED: ROAD IMPROVEMENTS
UTILITY FOUND:	GAS	FORM BY: MA ASSISTED BY: AA LO	# OF HOLES: 1
MATERIAL AS FOUND:	PLASTIC (PE)	PAVING CONDITION: FAIR	DATE DUG: 02-12-13
SIZE AS FOUND:	4" (SEE NOTE)	SOIL CONDITIONS:	SOFT MOIST SAND
		UTILITY CONDITION:	GOOD



INSTALLED: PK AT: CROWN OF UTILITY. MARKING TAPE: YELLOW

WEATHER: CLOUDY TEMPERATURE: 42°

SURVEY PIN SURVEYED BY: INFRAMAP CORP.

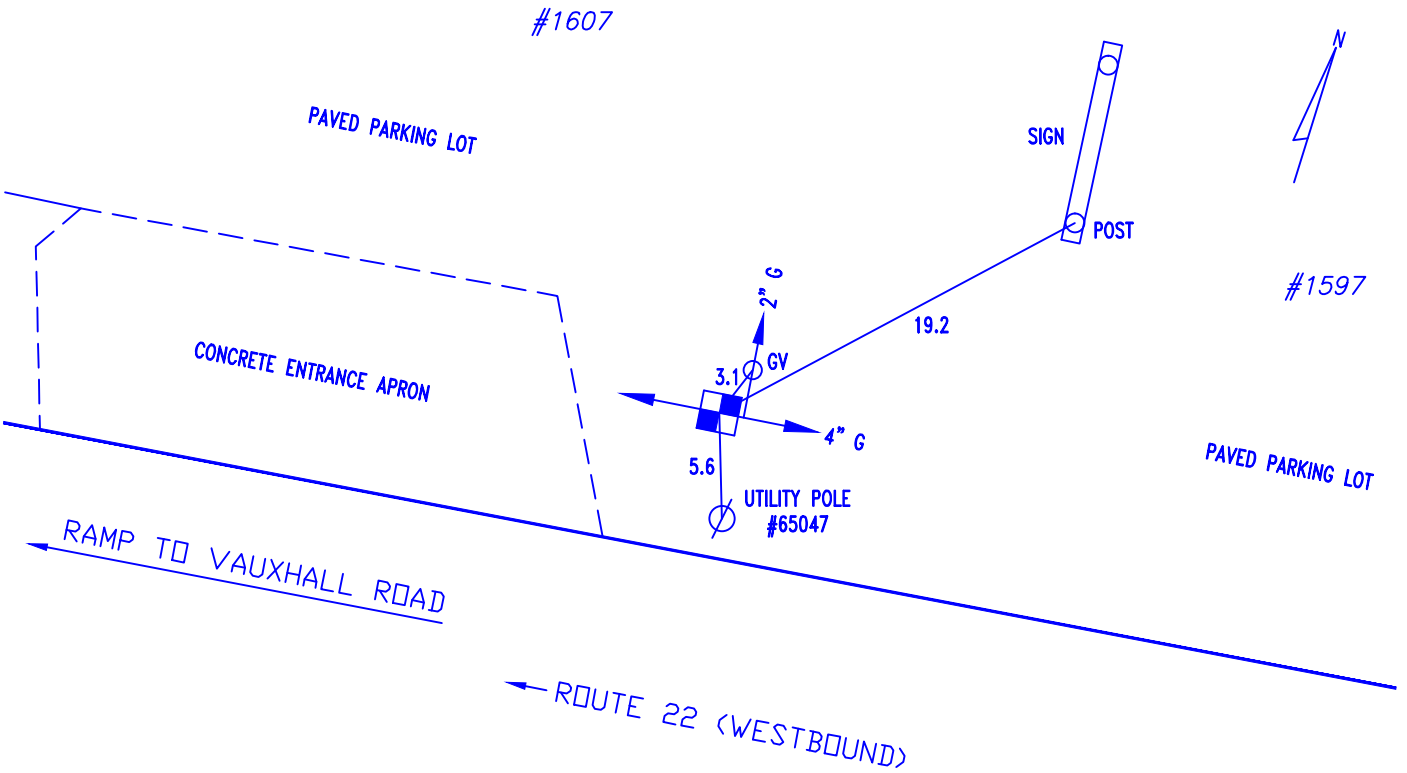
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NORTH	EAST	ELEV.
679133.41	561196.23	92.41

HORIZONTAL & VERTICAL CONTROL POINTS PROVIDED BY LOUIS BERGER GROUP.
HORIZONTAL DATUM = NAD 83 & VERTICAL DATUM = NAVD 1988.

NOTES: TEST HOLE REVEALED 4" AND 2" GAS "TEE". PK SET OVER CROWN OF 4" GAS MAIN. OFFSET TO GAS "TEE" IS 1.6' EAST OF PK. COVER TO CROWN OF 2" GAS IS 2.46.

NOT TO SCALE



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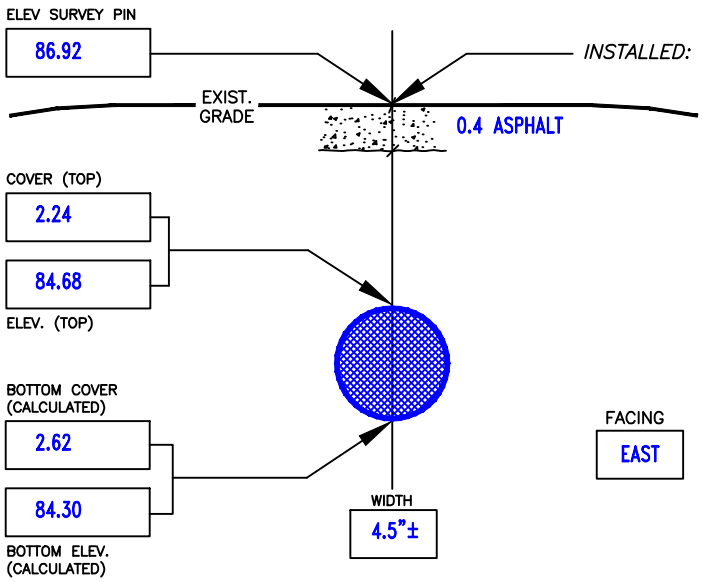
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IMC PROJECT No. 13022 VACUUM TEST HOLE REPORT NO. 7

PROJECT NAME:	ROUTE 22 WB FROM GARY ROAD TO WEST OF SAYRE ROAD	CLIENT PROJECT No.	CC-1304A BERGER
LOCATE REQUESTED BY:	LOUIS BERGER GROUP	PROJECT LOCATION:	TOWNSHIP OF UNION, UNION COUNTY, NEW JERSEY
UTILITY REQUESTED:	GAS	SHEET No. 3 OF 3	PROPOSED: ROAD IMPROVEMENTS
UTILITY FOUND:	GAS	FORM BY: MA ASSISTED BY: AA LO	# OF HOLES: 1
MATERIAL AS FOUND:	PLASTIC (PE)	PAVING CONDITION: FAIR	DATE DUG: 02-12-13
SIZE AS FOUND:	4"	SOIL CONDITIONS:	SOFT MOIST SAND
		UTILITY CONDITION:	GOOD



WEATHER: CLOUDY TEMPERATURE: 43°

SURVEY PIN SURVEYED BY: INFRAMAP CORP.

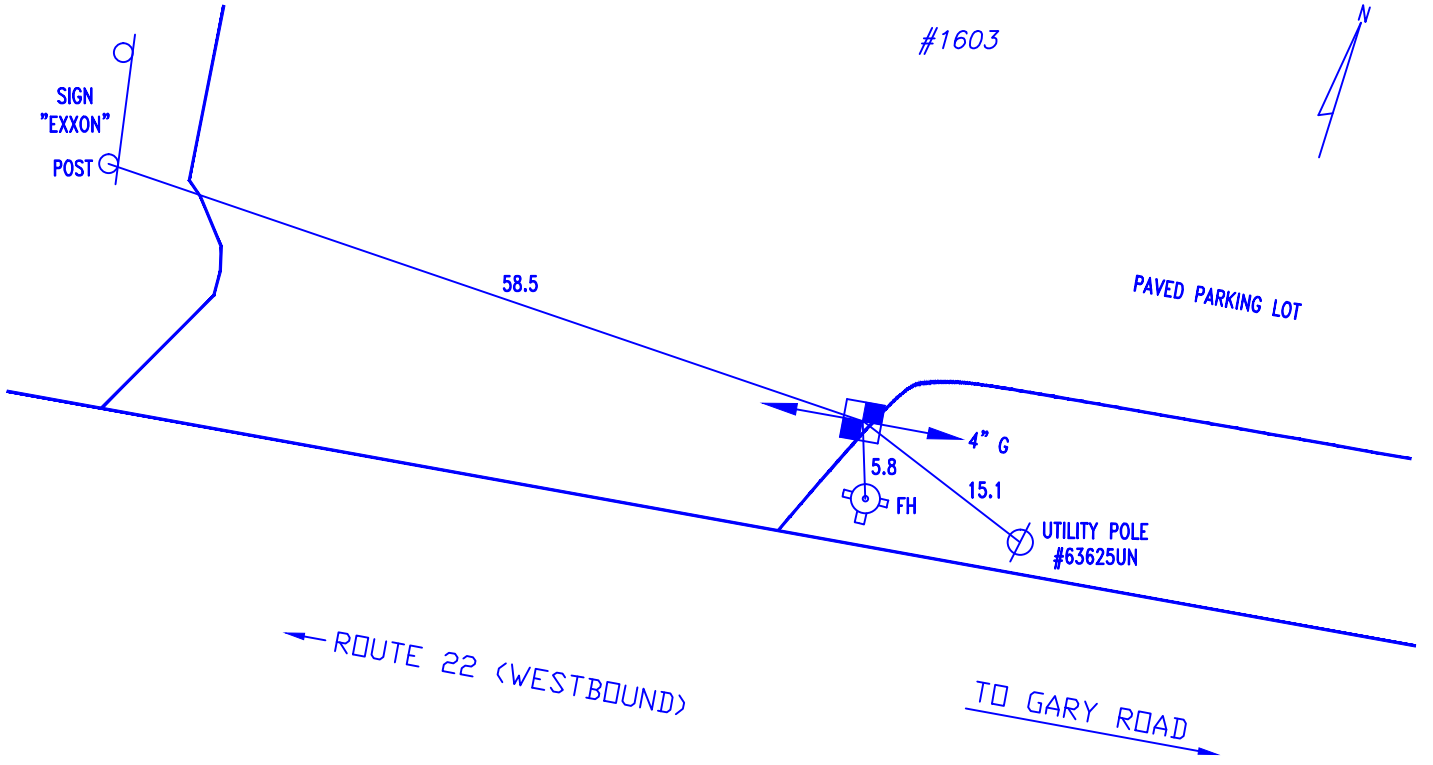
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NORTH	EAST	ELEV.
679174.29	561579.12	86.92

HORIZONTAL & VERTICAL CONTROL POINTS PROVIDED BY LOUIS BERGER GROUP.
HORIZONTAL DATUM = NAD 83 & VERTICAL DATUM = NAVD 1988.

NOTES:

NOT TO SCALE



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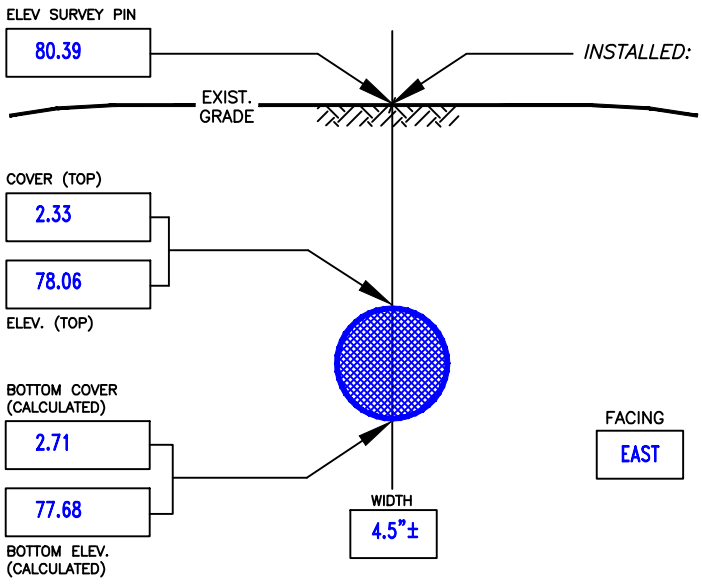
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IMC PROJECT No. 13022 VACUUM TEST HOLE REPORT NO. 8

PROJECT NAME:	ROUTE 22 WB FROM GARY ROAD TO WEST OF SAYRE ROAD	CLIENT PROJECT No.	CC-1304A BERGER
LOCATE REQUESTED BY:	LOUIS BERGER GROUP	PROJECT LOCATION:	TOWNSHIP OF UNION, UNION COUNTY, NEW JERSEY
UTILITY REQUESTED:	GAS	SHEET No. 3 OF 3	PROPOSED: ROAD IMPROVEMENTS
UTILITY FOUND:	GAS	FORM BY: MA ASSISTED BY: LO AA	# OF HOLES: 1
MATERIAL AS FOUND:	PLASTIC (PE)	PAVING CONDITION: N/A	DATE DUG: 02-12-13
SIZE AS FOUND:	4"	SOIL CONDITIONS:	SOFT MOIST SAND ROCKY
		UTILITY CONDITION:	GOOD



INSTALLED: HUB & TACK AT: CROWN OF UTILITY. MARKING TAPE: YELLOW

WEATHER: SUNNY TEMPERATURE: 42°

SURVEY PIN SURVEYED BY: INFRAMAP CORP.

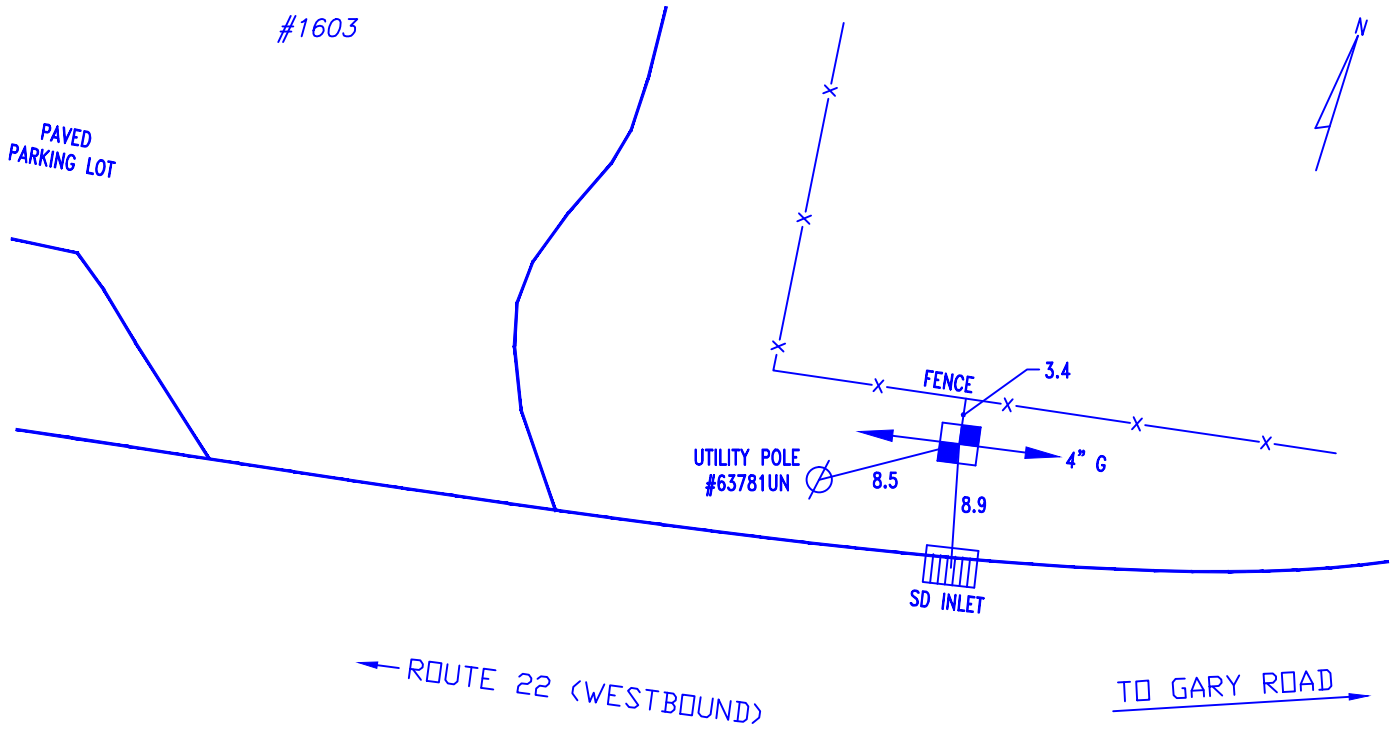
SURVEY INFO.: ALL MEASUREMENTS ON THIS FORM ARE IN ENGLISH UNITS (FEET).

NORTH	EAST	ELEV.
679193.90	561719.46	80.39

HORIZONTAL & VERTICAL CONTROL POINTS PROVIDED BY LOUIS BERGER GROUP.
HORIZONTAL DATUM = NAD 83 & VERTICAL DATUM = NAVD 1988.

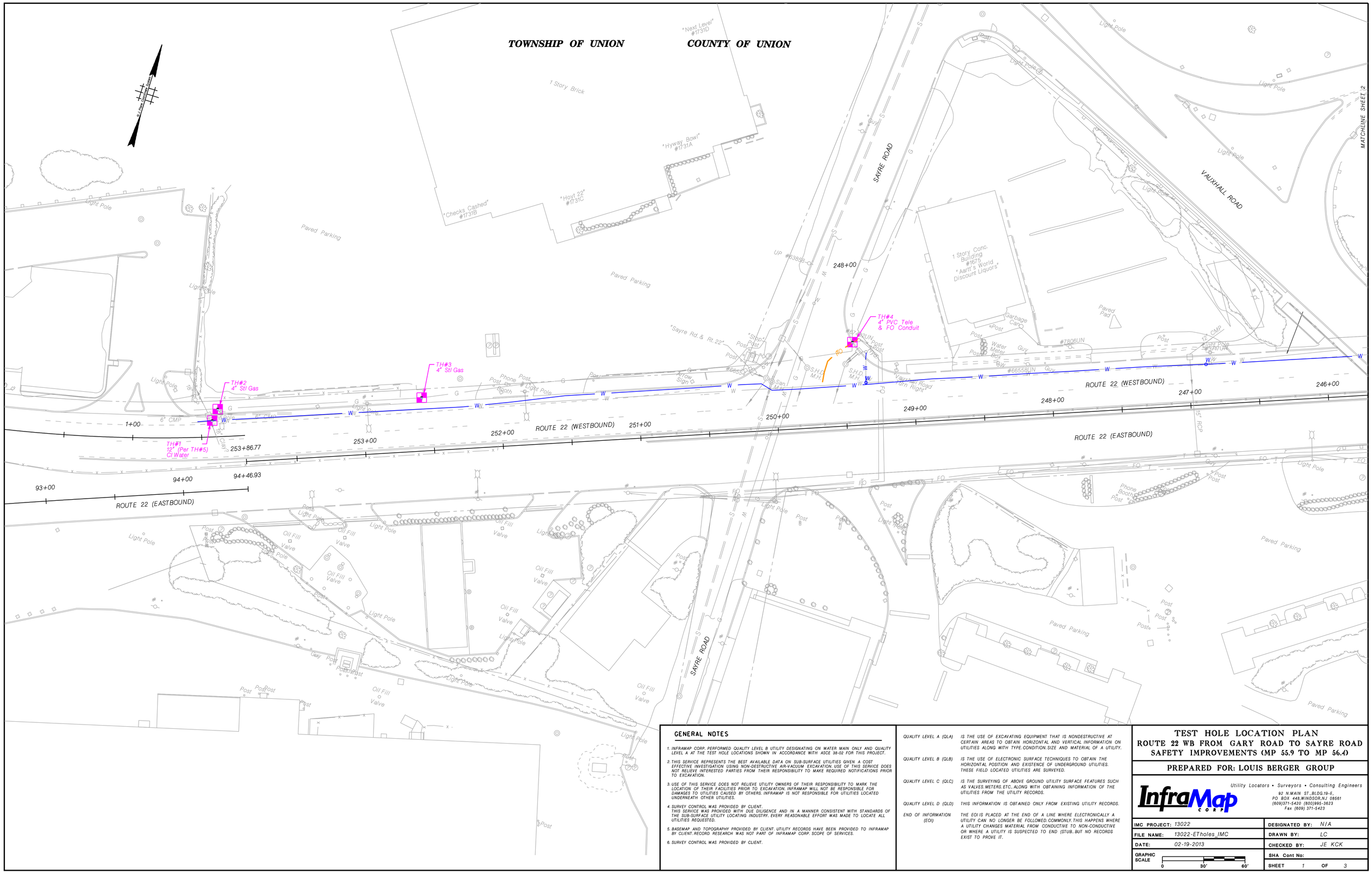
NOTES:

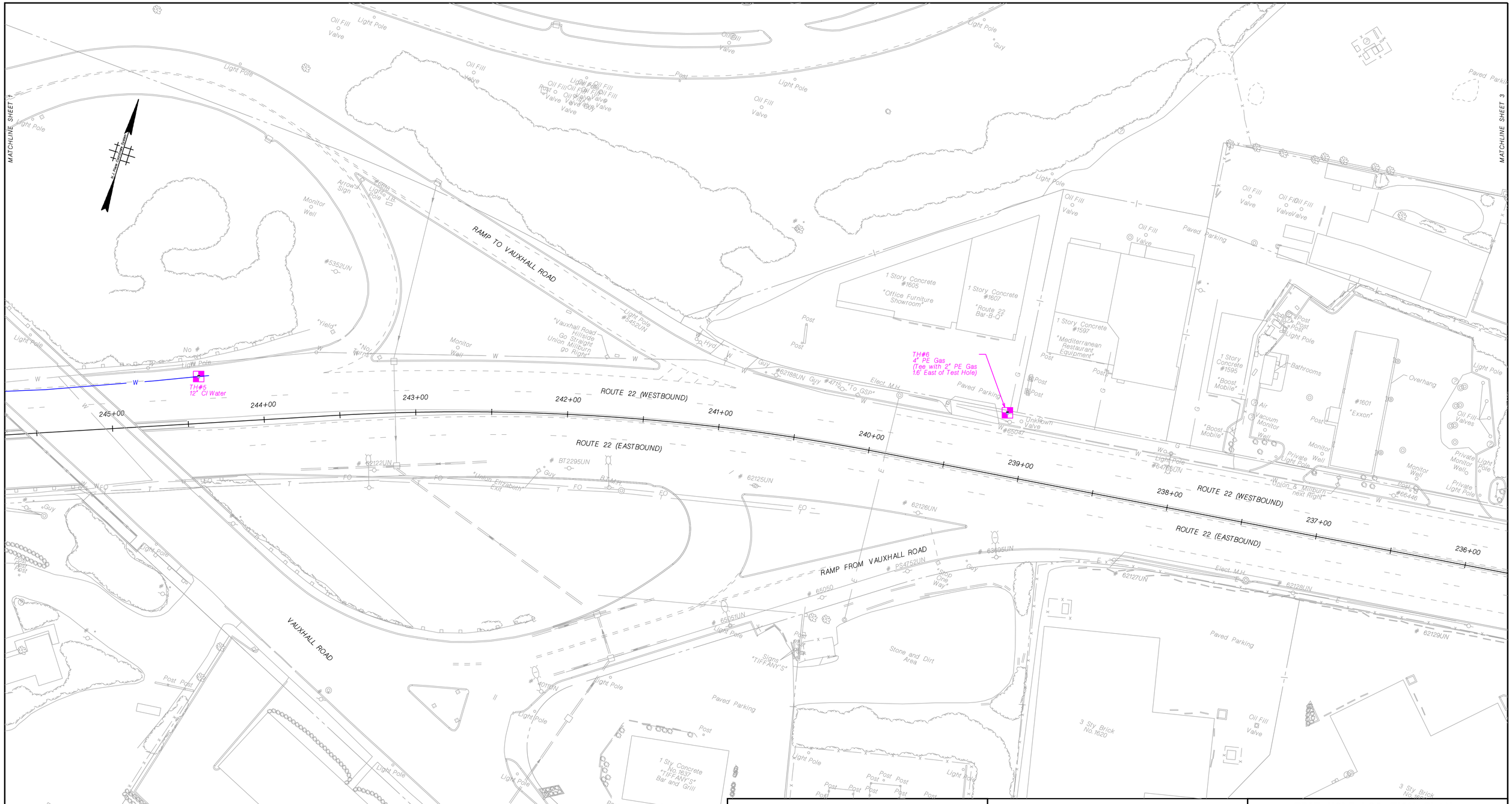
NOT TO SCALE



THIS FORM DESIGN AND CONTENTS ARE PROTECTED UNDER U.S. COPYRIGHT LAW, 1994

"LOCATING A BETTER WAY"
1-800-UNDER IT


TOWNSHIP OF UNION
COUNTY OF UNION
MATCHLINE SHEET 2
SAYRE ROAD
VAUXHALL ROAD
1 Story Brick
"Next Level" #1731D
"Hyway Bowl" #1731A
"Hoyt 22" #1731C
"Checks Cashed" #1731B
Paved Parking
1 Story Conc. Building #1675 "Aarti's World Discount Liquors"
Paved Pad
Garbage Cans
Water Meter
Post Box
Light Pole
Post
Guy
Oil Fill Valve
Phone Booth
Sign
Arrow Sign
Utility Pole
Overhead Wires
Underground Wires
Fence
Curb
Edge of Pavement
Gravel Road
Dirt Road
Clay
6" CMP
12" CMP
15" CMP
S.H.D. MH
San. MH
UP #63858-C
#66558UN
#7806UN
#67610UN
TH#1 12" (Per TH#5) CI Water
TH#2 4" Stl Gas
TH#3 4" Stl Gas
TH#4 4" PVC Tele & FO Conduit
1+00
93+00
94+00
94+46.93
253+86.77
253+00
252+00
251+00
250+00
249+00
248+00
247+00
246+00
ROUTE 22 (WESTBOUND)
ROUTE 22 (EASTBOUND)
"Sayre Rd. & Rt. 22"
"Stop" Post
Right Turn Only
Left Turn Only
Left Turn Right
Left Turn Left
Do Not Enter
Exit Only
Keep Right
Keep Left
One Way
Do Not Block Intersection
Do Not Block Driveway
Do Not Block Crosswalk
Do Not Block Box
Do Not Block Sidewalk
Do Not Block Curb
Do Not Block Ramp
Do Not Block Entrance
Do Not Block Exit
Do Not Block Loading Zone
Do Not Block Fire Hydrant
Do Not Block Fire Department Connection
Do Not Block Fire Lane
Do Not Block Fire Department Access
Do Not Block Fire Department Entrance
Do Not Block Fire Department Exit
Do Not Block Fire Department Loading Zone
Do Not Block Fire Department



GENERAL NOTES

1. INFRAMAP CORP. PERFORMED QUALITY LEVEL B UTILITY DESIGNATING ON WATER MAIN ONLY AND QUALITY LEVEL A AT THE TEST HOLE LOCATIONS SHOWN IN ACCORDANCE WITH ASCE 38-02 FOR THIS PROJECT.
2. THIS SERVICE REPRESENTS THE BEST AVAILABLE DATA ON SUB-SURFACE UTILITIES GIVEN A COST EFFECTIVE INVESTIGATION USING NON-DESTRUCTIVE AIR-VACUUM EXCAVATION. USE OF THIS SERVICE DOES NOT RELIEVE INTERESTED PARTIES FROM THEIR RESPONSIBILITY TO MAKE REQUIRED NOTIFICATIONS PRIOR TO EXCAVATION.
3. USE OF THIS SERVICE DOES NOT RELIEVE UTILITY OWNERS OF THEIR RESPONSIBILITY TO MARK THE LOCATION OF THEIR FACILITIES PRIOR TO EXCAVATION. INFRAMAP WILL NOT BE RESPONSIBLE FOR DAMAGES TO UTILITIES CAUSED BY OTHERS. INFRAMAP IS NOT RESPONSIBLE FOR UTILITIES LOCATED UNDERNEATH OTHER UTILITIES.
4. SURVEY CONTROL WAS PROVIDED BY CLIENT. THIS SERVICE WAS PROVIDED WITH DUE DILIGENCE AND IN A MANNER CONSISTENT WITH STANDARDS OF THE SUB-SURFACE UTILITY LOCATING INDUSTRY. EVERY REASONABLE EFFORT WAS MADE TO LOCATE ALL UTILITIES REQUESTED.
5. BASEMAP AND TOPOGRAPHY PROVIDED BY CLIENT. UTILITY RECORDS HAVE BEEN PROVIDED TO INFRAMAP BY CLIENT. RECORD RESEARCH WAS NOT PART OF INFRAMAP CORP. SCOPE OF SERVICES.
6. SURVEY CONTROL WAS PROVIDED BY CLIENT.

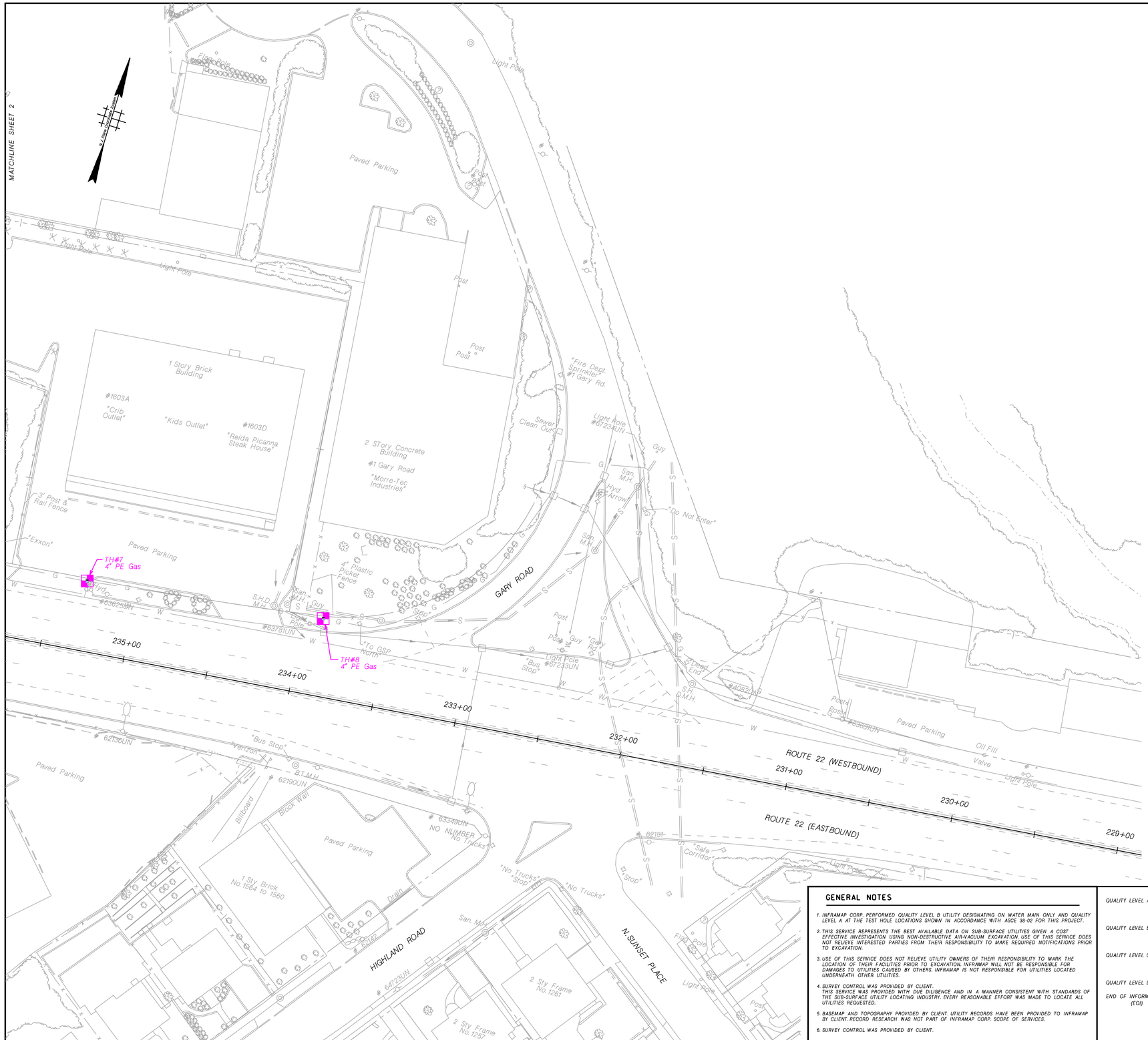
QUALITY LEVEL A (QLA)	IS THE USE OF EXCAVATING EQUIPMENT THAT IS NONDESTRUCTIVE AT CERTAIN AREAS TO OBTAIN HORIZONTAL AND VERTICAL INFORMATION ON UTILITIES ALONG WITH TYPE.CONDITION.SIZE AND MATERIAL OF A UTILITY.
QUALITY LEVEL B (QLB)	IS THE USE OF ELECTRONIC SURFACE TECHNIQUES TO OBTAIN THE HORIZONTAL POSITION AND EXISTENCE OF UNDERGROUND UTILITIES. THESE FIELD LOCATED UTILITIES ARE SURVEYED.
QUALITY LEVEL C (QLC)	IS THE SURVEYING OF ABOVE GROUND UTILITY SURFACE FEATURES SUCH AS VALVES.METERS.ETC., ALONG WITH OBTAINING INFORMATION OF THE UTILITIES FROM THE UTILITY RECORDS.
QUALITY LEVEL D (QLD)	THIS INFORMATION IS OBTAINED ONLY FROM EXISTING UTILITY RECORDS.
END OF INFORMATION (EOI)	THE EOI IS PLACED AT THE END OF A LINE WHERE ELECTRONICALLY A UTILITY CAN NO LONGER BE FOLLOWED.COMMONLY.THIS HAPPENS WHERE A UTILITY CHANGES MATERIAL FROM CONDUCTIVE TO NON-CONDUCTIVE OR WHERE A UTILITY IS SUSPECTED TO END (STUB..BUT NO RECORDS EXIST TO PROVE IT.

TEST HOLE LOCATION PLAN
ROUTE 22 WB FROM GARY ROAD TO SAYRE ROAD SAFETY IMPROVEMENTS (MP 55.9 TO MP 56.4)

PREPARED FOR: LOUIS BERGER GROUP

InfraMap CORP
Utility Locators • Surveyors • Consulting Engineers
92 N.MAIN ST.,BLDG.19-E,
PO BOX 448,WINDSOR,NJ 08561
(609)371-5420 (800)995-3623
Fax (609) 371-5423

IMC PROJECT:	13022	DESIGNATED BY:	N/A
FILE NAME:	13022-ETholes_IMC	DRAWN BY:	LC
DATE:	02-19-2013	CHECKED BY:	JE KCK
GRAPHIC SCALE	0 30' 60'	SHA Cont No:	
		SHEET	2 OF 3



GENERAL NOTES

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2. THIS SERVICE REPRESENTS THE BEST AVAILABLE DATA ON SUB-SURFACE UTILITIES GIVEN A COST EFFECTIVE INVESTIGATION USING NON-DESTRUCTIVE AIR-VACUUM EXCAVATION. USE OF THIS SERVICE DOES NOT RELIEVE INTERESTED PARTIES FROM THEIR RESPONSIBILITY TO MAKE REQUIRED NOTIFICATIONS PRIOR TO EXCAVATION.
3. USE OF THIS SERVICE DOES NOT RELIEVE UTILITY OWNERS OF THEIR RESPONSIBILITY TO MARK THE LOCATION OF THEIR FACILITIES PRIOR TO EXCAVATION. INFRAMAP WILL NOT BE RESPONSIBLE FOR DAMAGES TO UTILITIES CAUSED BY OTHERS. INFRAMAP IS NOT RESPONSIBLE FOR UTILITIES LOCATED UNDERNEATH OTHER UTILITIES.
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TEST HOLE LOCATION PLAN
ROUTE 22 WB FROM GARY ROAD TO SAYRE ROAD SAFETY IMPROVEMENTS (MP 55.9 TO MP 56.4)

PREPARED FOR: LOUIS BERGER GROUP

InfraMap CORP
Utility Locators • Surveyors • Consulting Engineers
92 N.MAIN ST.,BLDG.19-E,
PO BOX 448,WINDSOR,NJ 08561
(609)371-5420 (800)995-3623
Fax (609) 371-5423

IMC PROJECT:	13022	DESIGNATED BY:	N/A
FILE NAME:	13022-ETholes_IMC	DRAWN BY:	LC
DATE:	02-19-2013	CHECKED BY:	JE KCK
GRAPHIC SCALE	0 30' 60'	SHA Cont No:	
		SHEET	3 OF 3

Route 22 Vicinity of Vauxhall Road to West of Bloy Street, Safety Improvements
Contact Information - Utility Companies
CC1304A

Comcast	**Response**	**Verification**
Mr. George Palyca Comcast Cable 800 Rahway Avenue Union, New Jersey 07083 (908)-851-8858 George_Palyca@cable.comcast.com	√	√
Mr. Ed Lubanski Comcast Construction Dept. 800 Rahway Avenue Union, New Jersey 07083 (908)-851-8525 Ed_Lubanski@cable.comcast.com		

Gas	**Response**	**Verification**
Mr. Gregory Balint Elizabethtown Gas 520 Green Lane Union, NJ 07083 (908)-662-8321 gbalint@aglresources.com	√	√

PSE&G (Electric & Gas)	**Response**	**Verification**
Mr. Len A. Pannucci Program Manager-3rd Party Relocation Delivery Projects and Construction 4000 Hadley Road South Plainfield, NJ 07080 Office (908) 412-2228 len.pannucci@pseg.com	√	√
Mr. James Quanvie Public Service Electric & Gas Co. Sr. Engineering Plant Supervisor 472 Weston Canal Road Somerset, NJ 08873 732-764-3050 james.quanvie@pseg.com		

Sanitary Sewer	Response	Verification
Philip A. Haderer, P.E., C.M.E. Township Engineer Township of Union 1976 Morris Avenue Union, NJ 07083 (908)-851-8506 Fax: (908)-851-4070 phaderer@uniontownship.com		√

Verizon	Response	Verification
Thomas Grabowski Verizon Communications - NJ Centralized Engineering Services 6000 Hadley Rd. South Plainfield, NJ 07080 908-412-6169 908-753-5369 fax thomas.j.grabowski@verizon.com		√

Water	Response	Verification
Mr. Michael Wolan New Jersey American Water 120 Raider Boulevard Hillsborough, NJ 08844 (908)-431-3225 Mike.Wolan@amwater.com	√	√

Sunesys	Response	Verification
Mr. Chris Mumber Project Manager Sunesys / BlairPark Services 202 Titus Avenue Warrington, PA 18976 O: 267-927-2034 C: 267-718-0976 F: 267-927-2090 cmumber@sunesys.com	√	√

COMCAST OF NJ LLC II
800 Rahway Ave
Union, NJ 07083

Memo

To: Louis Berger Group
412 Mount Kemble Ave
PO Box 1946
Morristown, NJ 07962-1946

ATTN: Hong Y. Sun, P.E.

From: Robert Knoepfel

Date: May 13, 2013

RE : **Route 22 Westbound, Gary Rd to West of Sayre Rd, Union**

I am writing this memo to confirm location of any CATV facilities at the above mentioned project. Upon reviewing our prints I have determined that Comcast Cable of NJ has **additional Aerial Facilities** at this location, currently not on your plan.

I have indicated these locations on your plot map, as well as verified the facilities already on your plan, enclosed.

If you should have any questions or if I can be of further assistance please call me 732-602-7444 ext.6202293.

Thank You

Bob Knoepfel
Construction Surveyor

ROUTE 22

N SUNSET PL

GARDNER ST

VAUX HALL RD

HIGHLAND AVE

ERHARDT ST

ROBERT ST

LEWIS

BLVD

REEVES

16-65539 64765

16-65540 62282 62282

16-65541

16-65518 DSA44T 28.90 51.30 11 6 0 VTEOD -J 2 14 MIDVA PSA

16-65528 LE244T 24.80 57.50 10 12 0 VTEOL 6 3 PSB

16-65539 DSA44T 28.7 43 11 6 0 VTEOD 2 10 MIDVA PSA

16-65540 LE244T 27.3 45.1 13 4P5 0 VTEOL 12 3 PSA

16-65541 LE244T 28.8 43 14 4P5 0 VTEOL 9 3 PSA

16-65517 LE244A 23.80 51.70 5 4P5 0 ACMLE 8 3 PSA

16-65526 LE244T 22.70 51.70

16-65537 LE244T 26.10 57.90 11 9 0 VTEOL 10 1P5 PSB

16-65504 LE244A 25.80 57.80 7 3 0 ACMLE 8 1P5 PSB

16-65503 LE244T

DROP POLE 64723

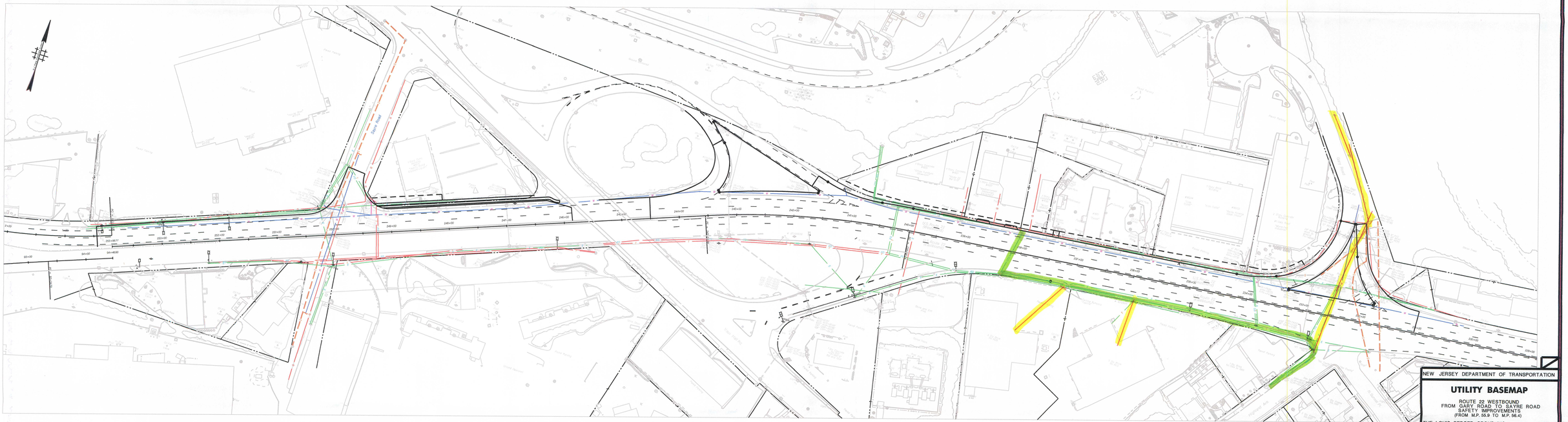
...\BentleyComm\UnNo\DGN\un655.dsn 4/29/2009 1:52:14 PM

Comcast

STATE	FEDERAL PROJECT NO.
N.J.	

TOWNSHIP OF UNION

COUNTY OF UNION



NEW JERSEY DEPARTMENT OF TRANSPORTATION

UTILITY BASEMAP

ROUTE 22 WESTBOUND
FROM GARY ROAD TO SAYRE ROAD
SAFETY IMPROVEMENTS
(FROM M.P. 55.9 TO M.P. 56.4)

THE LOUIS BERGER GROUP, INC.
MORRISTOWN, NEW JERSEY

ALREADY ON PLAN

EXISTING/NOT ON PLAN

Elizabethtown Gas

520 Green Lane
Union, NJ 07083

www.elizabethtowngas.com

October 11, 2010

Mr. Hong Y. Sun, P.E.
Director, Highway Design / Project Manager
The Louis Berger Group, Inc.
412 Mount Kemble Avenue
PO Box 1946
Morristown, NJ 07962-1946

Re: U.S. Route 22 WB and Vauxhall Road
Interchange Improvements
Township of Union

Dear Mr. Sun:

Enclosed is a marked-up copy of the plan for the above referenced project on which our facilities have been plotted. Please be advised these locations are approximate and subject to field verification.

If you have any questions, please contact me at (908) 662-8321.

Sincerely,
Elizabethtown Gas Company

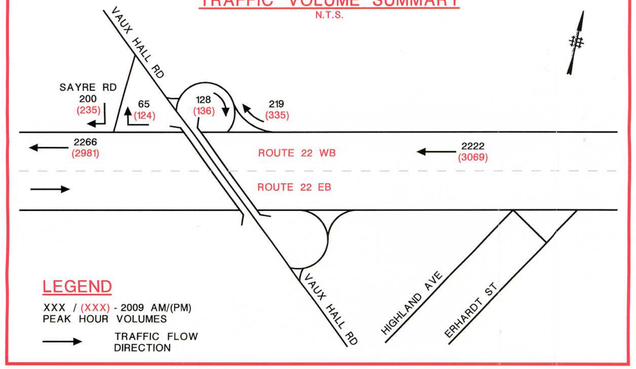
Gregory J. Balint
Project Engineer

Enclosure

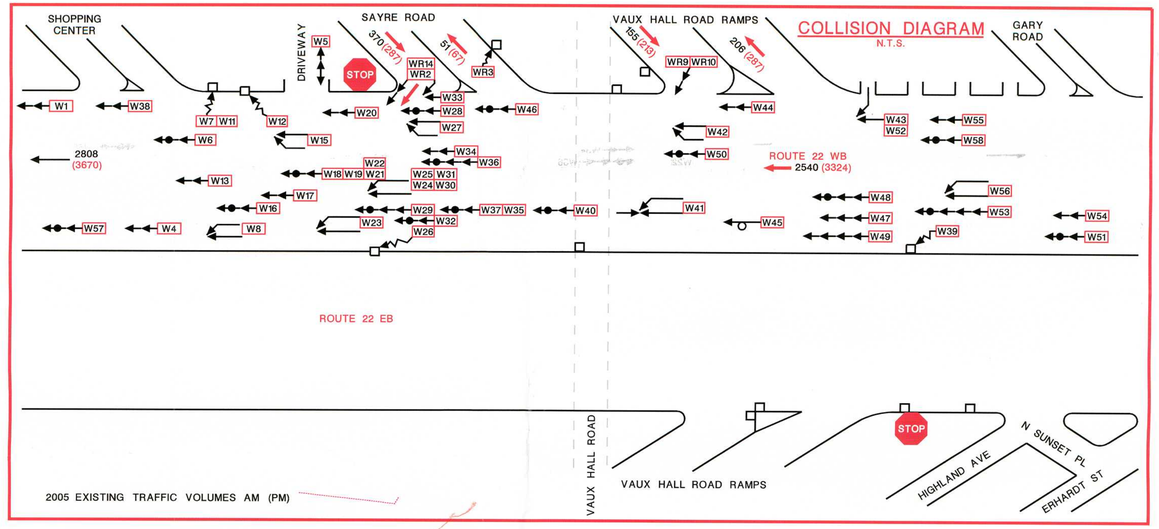
STATE	FEDERAL PROJECT NO.
N.J.	*

COUNTY OF UNION

TRAFFIC VOLUME SUMMARY
N.T.S.



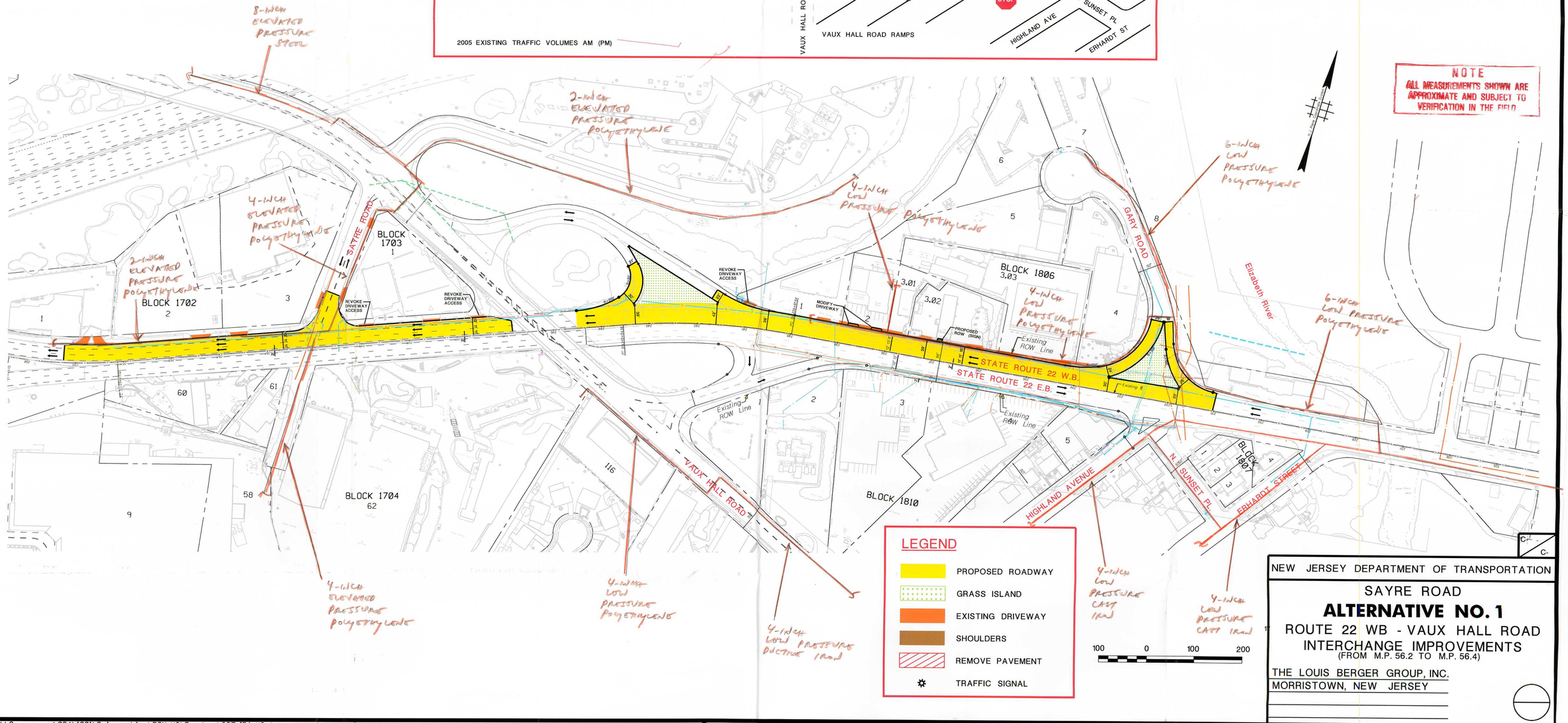
COLLISION DIAGRAM
N.T.S.



COLLISION DIAGRAM LEGEND

SYMBOLS		MANNER OF COLLISION	
MOVING VEHICLE	M MOTORCYCLE	REAR END	HEAD ON
PARKED VEHICLE	P PEDESTRIAN	OVERTAKE	LEFT TURN
BACKING VEHICLE	B BICYCLE	OUT OF CONTROL	RIGHT TURN
STOPPED VEHICLE	FIXED OBJECT	SKIDDING	RIGHT ANGLE
STOP TRAFFIC SIGNAL	FATAL	OVERTURNED	SIDE SWIPE

NOTES:
LOCATION OF ROUTE 22 CRASHES ARE NOT LANE SPECIFIC
E35 NUMBER ASSIGNED TO POLICE ACCIDENT REPORT



NOTE
ALL MEASUREMENTS SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION IN THE FIELD

NEW JERSEY DEPARTMENT OF TRANSPORTATION

SAYRE ROAD

ALTERNATIVE NO. 1

ROUTE 22 WB - VAUX HALL ROAD INTERCHANGE IMPROVEMENTS
(FROM M.P. 56.2 TO M.P. 56.4)

THE LOUIS BERGER GROUP, INC.
MORRISTOWN, NEW JERSEY

ID= $USER$ date= 5/13/2010 2:08:12 PM scale: 1"=100'

file= V:\Operations\034\1001\Deliverables\DGN_V8\Roadway\897_IPA_V8.dgn

Sayre Rd Alternative 1

Public Service Electric and Gas Company
Delivery Projects and Construction
744 Broad Street, 13th Floor, M/C 446, Newark, NJ 07102
fax: 973.624.9047

PSE&G

October 13, 2011

Mr. Kamlesh R. Shah, P.E.
Supervising Engineer 2
NJ Department of Transportation
1035 Parkway Avenue
P.O. Box 600
Trenton, NJ 08625-0600

RE: Route 22 Westbound and Vauxhall Road
Township of Union
Union County, New Jersey

Dear Mr. Shah:

I have received your correspondence and location plan relative to the above referenced project. Please be advised, we have ***electric*** facilities within the project limits. However, until the project scope has been adequately defined and more detailed plans are made available, we cannot determine if and to what extent we may be involved or as to how we will manage this project going forward. I have enclosed a GIS one-line sketch of the facilities within the project limits. This sketch is being provided for your reference and design purposes only; the actual location of these facilities must be verified in the field by survey and/or test hole excavation where applicable.

Please be advised, our current operating guidelines as agreed to and approved by the NJDOT, emphasize that no facility record research, mark-ups, layout or design can take place until a signed executed agreement from the NJDOT has been received. In the interim, please continue to forward all correspondence, information requests and contractual documents to my attention. Any technical related questions should be directed to:

Mr. James Quanvie
Sr. Engineering Plant Supervisor
472 Weston Canal Road
Somerset, NJ 08873
(732) 764-3080
james.quanvie@pseg.com

Should you have any questions or concerns, please feel free to contact me directly at the above address, by phone at (973) 430-5135, or via e-mail at len.pannucci@pseg.com.

Sincerely,

L.A. Pannucci, PMP
Program Manager-3rd Party Relocation
Projects & Construction Management

enclosure
c: James Quanvie, Sr.Eng Plant Supv-Central (MC 442)
Rich Foley, Project Manager-DP&C (T13)
File

Route 22 westbound and Vauxhall Road
Twp.of Union,
Union County
UPC # **058003**

Please complete the following questionnaire and return it to Designer's Engineer by **July 22, 2011.**

(✓) The Company Engineer to be contacted is:

Name See Attached Letter
Company
Title
Address

Telephone
Fax
E MAIL

(____) The UTILITY AGREEMENT shall be sent to the following person:

(✓) Same as above or fill in below:

Name
Company
Title

Address

Telephone
Fax

(✓) We DO HAVE existing facilities within the project limits.

(____) We DO NOT HAVE existing facilities within the project limits.

(____) We HAVE <u>PROPOSED</u> facilities planned within the project limits.

(____) **The following companies are tenants on/in our facilities within the project limits.**

_____
_____
_____
_____

(____) We would like the NJDOT to arrange for the following work to be done for our facilities should it be necessary for them to be relocated or modified.
- (____) Design/Engineering
- (____) Construction - Some or All? _____
- (__✓__) Neither - the Company will perform (or arrange to have performed) all needed work.
- (____) Not certain at this time.

Questions concerning this matter should be directed to the NJDOT Design Engineer noted in the caption above or the NJDOT Lead Engineer for this project, Bhavesh Shah at 609-530-8078.

Thank you for your cooperation in this matter.

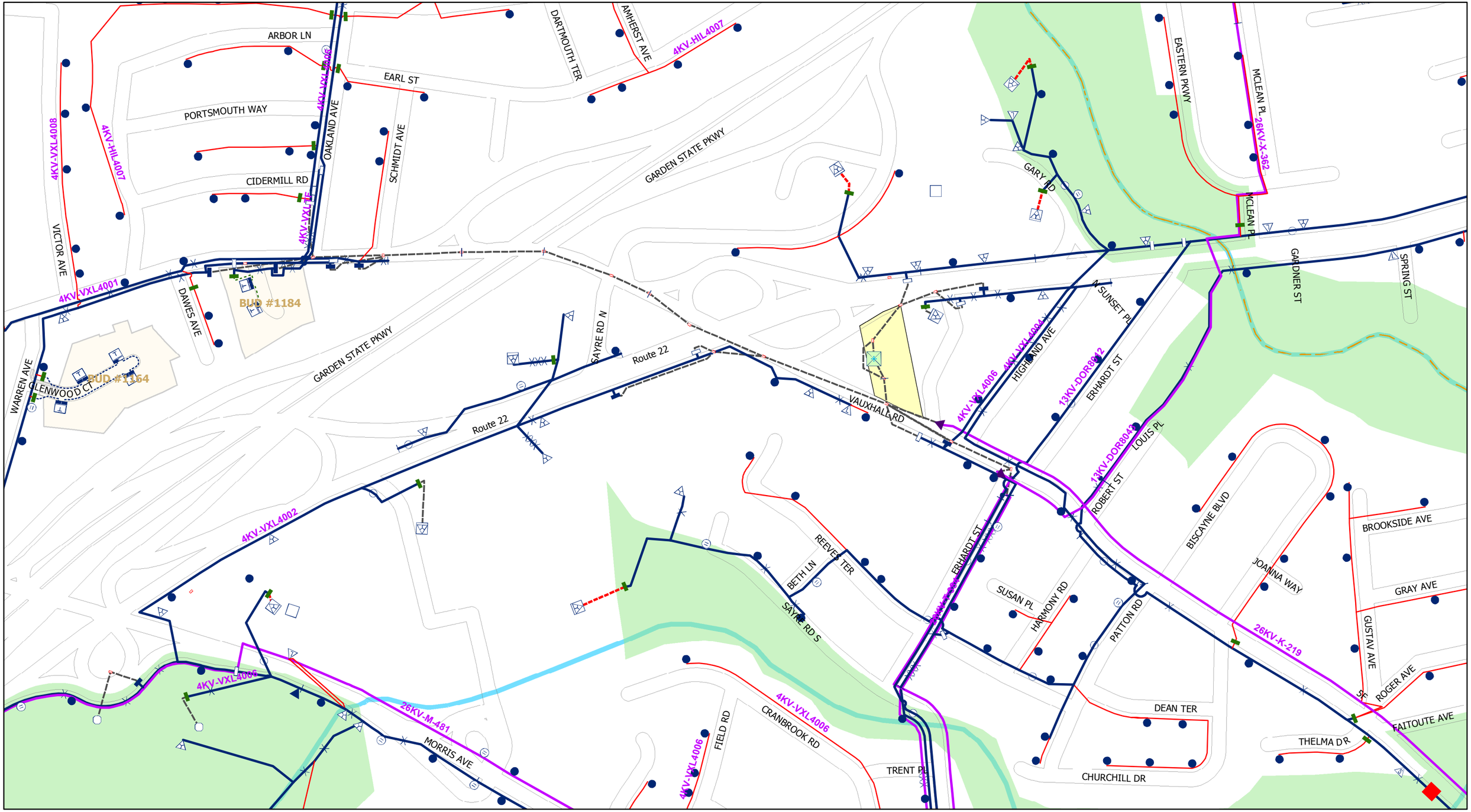
Sincerely,

Kamlesh R. Shah, P.E.
Supervising Engineer 2
Division of Project Development

Enclosure

C: File

Route 22 and Vauxhall Rd, Union



PSE&G **Delivery Projects & Construction**
744 Broad Street
Newark, NJ 07102

0 225 450 900 1,350 1,800 Feet

10/13/2011

N
W E
S

State of New Jersey

DEPARTMENT OF TRANSPORTATION
P.O. Box 600
Trenton, New Jersey 08625-0600

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

JAMES S. SIMPSON
Commissioner

July 19, 2011

Mr. Philip A. Haderer, P.E. – Township Engineer
Union Township Sanitary Sewer
1976 Morris Avenue
Union, NJ 07083

11 JUL 20 AM 11:38

RE: Route 22 westbound and Vauxhall Road
Township of Union, Union County UPC # 058003

Dear Mr. Haderer:

The New Jersey Department of Transportation (NJDOT) is developing contract plans and specifications for a project known as Route 22 westbound and Vauxhall Road interchange, Township of Union, Union County. The location of the project is shown on the enclosed plan of Preferred Alternative. The scope of work will include widening of Route 22 westbound for auxiliary lane. No Utility work is anticipated at this time. If required, the NJ DOT will prepare Master Agreement CO. (M.A. CO.) or Utility Agreement as necessary to handle any proposed Utility relocation work.

In accordance with NJDOT Utility and Railroad Engineering Procedures, our preliminary investigation disclosed that **Union Township Sanitary Sewer** is franchised to operate within the proposed project limits and may have facilities affected by the State's proposed construction.

Should you have an existing or proposed plant within the project limits, it is necessary for us to verify your facilities and enter into an engineering dialog with you.

Page Two
Route 22 westbound and Vauxhall Road
Township of Union, Union County
UPC # **058003**

Please complete the following questionnaire and return it to Designer's Engineer by **August 5, 2011.**

(✓) The Company Engineer to be contacted is:

Name PHILIP A. HADERER
Company
Title TOWNSHIP ENGINEER
Address TOWNSHIP OF UNION
1976 MORRIS AVE.
UNION, NJ 07083

Telephone 908/851-5500
Fax 908/851-4410
E MAIL phaderer@UNIONTOWNSHIP.COM

(✓) The UTILITY AGREEMENT shall be sent to the following person:

(✓) Same as above or fill in below:

Name
Company
Title
Address

Telephone
Fax

(✓) We DO HAVE existing facilities within the project limits.

(___) We DO NOT HAVE existing facilities within the project limits.

(___) We HAVE PROPOSED facilities planned within the project limits.

Route 22 westbound and Vauxhall Road
Township of Union, Union County
UPC # **058003**

(✓) **The following companies are tenants on/in our facilities within the project limits.**

JOINT MEETING OF ESSEX & UNION COUNTIES

(✓) We would like the NJDOT to arrange for the following work to be done for our facilities should it be necessary for them to be relocated or modified.

( ) Design/Engineering
( ) Construction - Some or All? _____
( ) Neither - the Company will perform (or arrange to have performed) all needed work.
(✓) Not certain at this time.

Questions concerning this matter should be directed to the NJDOT Design Engineer noted in the caption above or the NJDOT Lead Engineer for this project, Bhavesh Shah at 609-530-8078.

Thank you for your cooperation in this matter.

Sincerely,

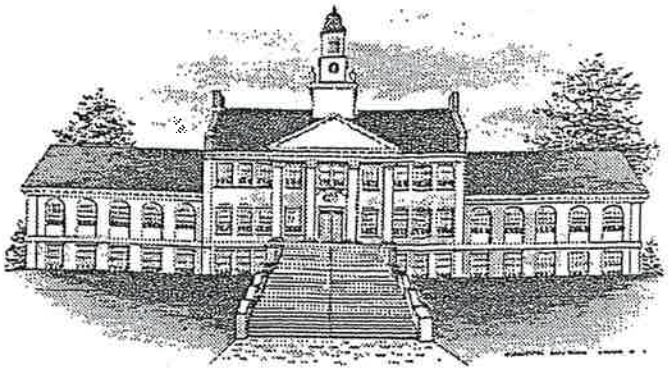
Shah

Kamlesh R. Shah, P.E.
Supervising Engineer 2
Division of Project Development

Enclosure

C: File

CC-897



TOWNSHIP OF UNION

IN THE COUNTY OF UNION

DEPARTMENT of ENGINEERING
Municipal Building - 1976 Morris Avenue
Post Office Box 3609
Union, New Jersey 07083-1894
Phone: (908) 851-8506
Fax: (908) 851-4670

UTWP-G0901

April 2, 2009

The Louis Berger Group, Inc.
412 Mount Kemble Avenue
P.O. Box 1946
Morristown, NJ 07962

RECEIVED
MAY 06 2009
LBG INCOMING

Attn: Dennis E. Conklin, P.E. DEC

Re: New Jersey Department of Transportation
Route 22 Eastbound from Vauxhall Road to Gary Road, Safety Improvements
Union Township, Union County, New Jersey

Dear Mr. Conklin:

We are in receipt of your letter, dated April 24, 2009, requesting the locations of existing sanitary lines within the limits of the proposed work. Per your request, we have verified from our records the existing sanitary sewer facilities located within the project limits as dual trunk lines owned by the Joint Meeting of Essex and Union, as seen in red on the enclosed plan. These are not Township owned sanitary facilities. For additional information regarding the sanitary facilities, please contact Joseph Bonaccorso of Joint Meeting at (908) 353-1313.

If you have any questions or require any additional information, please do not hesitate to contact this office at (908) 851-8506.

Very truly yours,

TOWNSHIP OF UNION

Philip A. Haberer

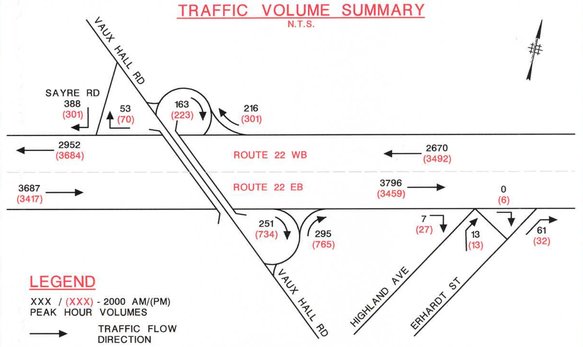
PHILIP A. HABERER, P.E., C.M.E.
TOWNSHIP ENGINEER

PAH:RDM:rdm
Enclosure
cc: Ron Manzella, Assistant Administrator
Eileen Birch, Township Clerk
Sergio Panunzio, Superintendent of Public Works
George Dearness, DPW

STATE	FEDERAL PROJECT NO.
N.J.	*

COUNTY OF UNION

TRAFFIC VOLUME SUMMARY
N.T.S.

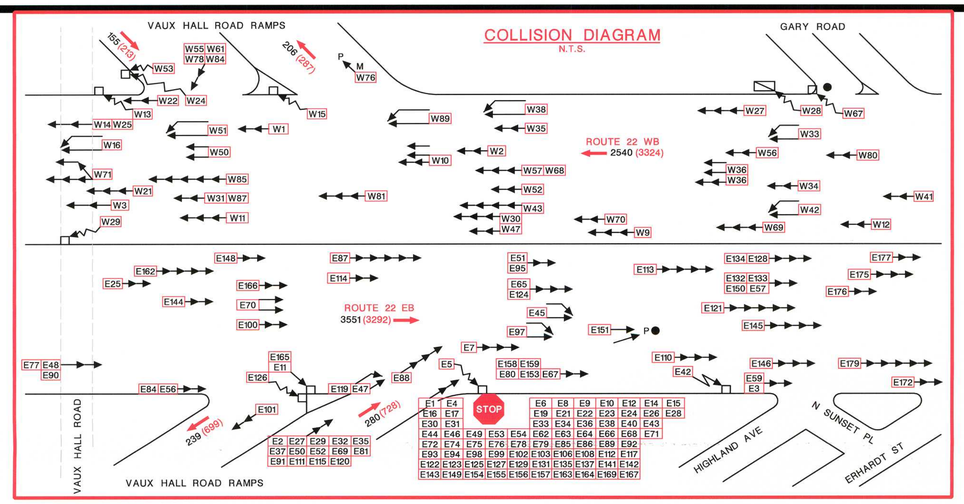


LEGEND

XXX / (XXX) - 2000 AM/(PM) PEAK HOUR VOLUMES

TRAFFIC FLOW DIRECTION

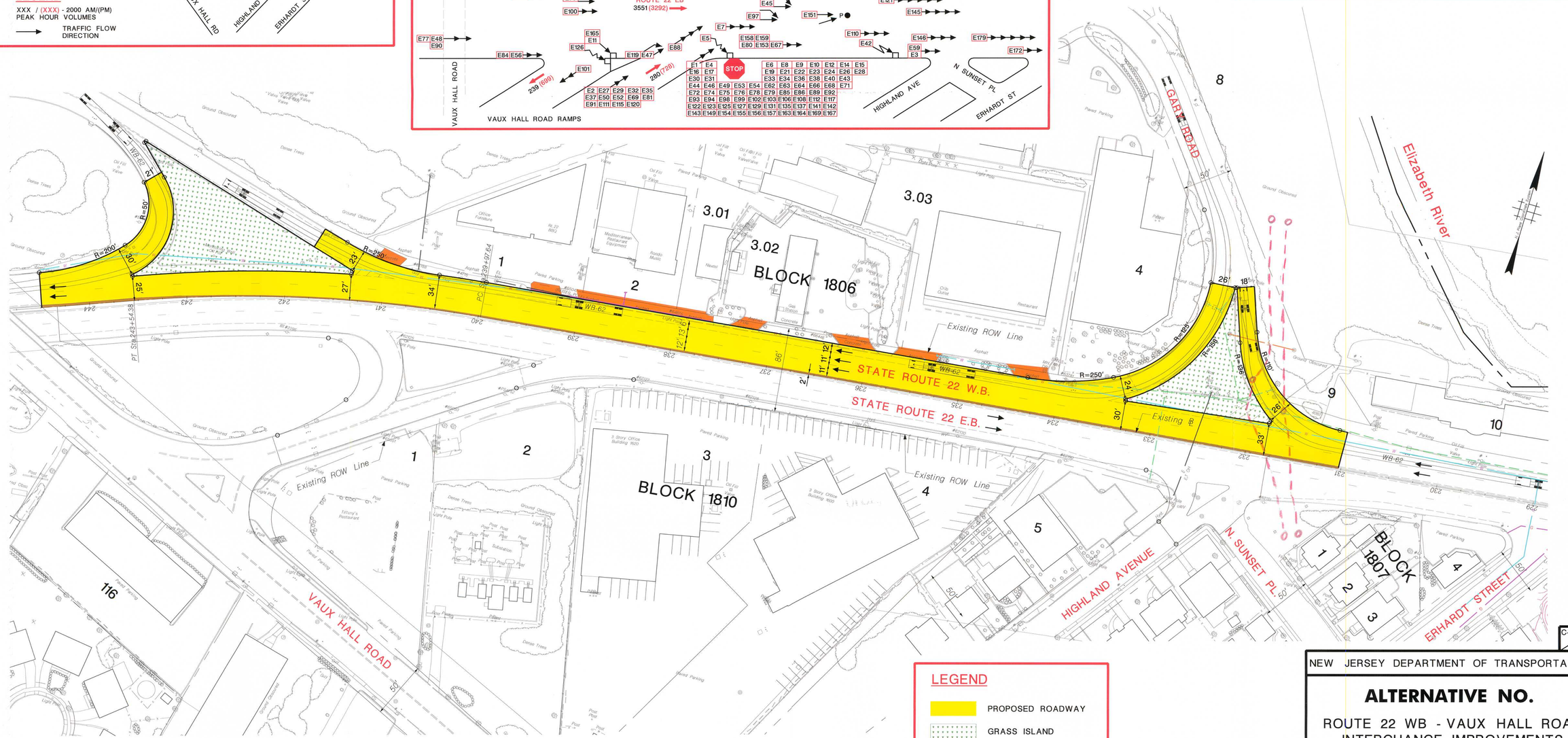
COLLISION DIAGRAM
N.T.S.



COLLISION DIAGRAM LEGEND

SYMBOLS		MANNER OF COLLISION	
MOVING VEHICLE	M MOTORCYCLE	REAR END	HEAD ON
PARKED VEHICLE	P PEDESTRIAN	OVERTAKE	LEFT TURN
BACKING VEHICLE	B BICYCLE	OUT OF CONTROL	RIGHT TURN
STOPPED VEHICLE	FIXED OBJECT	SKIDDING	RIGHT ANGLE
STOP TRAFFIC SIGNAL	FATAL	OVERTURNED	SIDE SWIPE

NOTES:
LOCATION OF ROUTE 22 CRASHES ARE NOT LANE SPECIFIC
E35 NUMBER ASSIGNED TO POLICE ACCIDENT REPORT



LEGEND

- PROPOSED ROADWAY
- GRASS ISLAND
- EXISTING DRIVEWAY
- SHOULDERS

50 0 50 100

NEW JERSEY DEPARTMENT OF TRANSPORTATION

ALTERNATIVE NO.

ROUTE 22 WB - VAUX HALL ROAD INTERCHANGE IMPROVEMENTS
(FROM M.P. 56.2 TO M.P. 56.4)

THE LOUIS BERGER GROUP, INC.
MORRISTOWN, NEW JERSEY

ID= $USER$ date= $DATE$ scale: 1"=100' $TIME$
file= $FILE$

File: CC892

State of New Jersey

DEPARTMENT OF TRANSPORTATION
P.O. Box 600
Trenton, New Jersey 08625-0600

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

JAMES S. SIMPSON
Commissioner

July 15, 2011

Mr. Thomas Grabowski
Verizon Communications - NJ
Centralized Engineering Services
6000 Hadley Road
South Plainfield, NJ 07080

RE:
Route 22 westbound and Vauxhall Road
Twp.of Union,
Union County

UPC # 058003

NJDOT
1035 Parkway Avenue
P O Box 600
Div. of Project Development
E & O Building
Trenton, NJ 08625
ATTN: Kamlesh Shah, P.E.
Phone Number: 609-530-5539
FAX Number: 609-530-3595

Dear Mr. **Grabowski**,

The New Jersey Department of Transportation (NJDOT) is developing contract plans and specifications for a project known as Route 22 westbound and Vauxhall Road interchange, Twp.of Union, Union County. The location of the project is shown on the enclosed plan of Prefferred Alternative. The scope of work will include widening of Rt 22 westbound for auxiliary lane. No Utility work is anticipated at this time. If required, the NJ DOT will prepare Master Agreement CO. (M.A. CO.) or Utility Agreement as necessary to handle any proposed Utility relocation work.

In accordance with NJDOT Utility and Railroad Engineering Procedures, our preliminary investigation disclosed that **Verizon, NJ Inc.** (Telephone) is franchised to operate within the proposed project limits and may have facilities affected by the State's proposed construction.

Should you have an existing or proposed plant within the project limits, it is necessary for us to verify your facilities and enter into an engineering dialog with you.

Route 22 Westbound and Vauxhall Road
Twp.of Union,
Union County
UPC # **058003**

Please complete the following questionnaire and return it to Designer's Engineer by **August 5, 2011.**

(____) The Company Engineer to be contacted is:

Name THOMAS GRABOWSKI
Company VERIZON - NJ
Title ENGINEER.
Address 6000 HADLEY RD.
SOUTH PLAINFIELD, NJ 07080

Telephone 908-412-6169
Fax 908-753-5369
E MAIL thomas.j.grabowski@verizon.com

(____) The UTILITY AGREEMENT shall be sent to the following person:

(____) Same as above or fill in below:

Name FRANK ANTISELL
Company VERIZON - NJ
Title MANAGER.

Address 6000 HADLEY RD.
SOUTH PLAINFIELD NJ 07080

Telephone 908-412-6160
Fax 908-753-5369

(X) We DO HAVE existing facilities within the project limits.

(____) We DO NOT HAVE existing facilities within the project limits.

(____) We HAVE <u>PROPOSED</u> facilities planned within the project limits.

Route 22 Westbound and Vauxhall Road
Twp.of Union,
Union County
UPC # **058003**

(____) **The following companies are tenants on/in our facilities within the project limits.**

_____
_____
_____
_____

(____) We would like the NJDOT to arrange for the following work to be done for our facilities should it be necessary for them to be relocated or modified.

(____) Design/Engineering
(____) Construction - Some or All? _____
(X) Neither - the Company will perform (or arrange to have performed) all needed work.
(____) Not certain at this time.

Questions concerning this matter should be directed to the NJDOT Design Engineer noted in the caption above or the NJDOT Lead Engineer for this project, Bhavesh Shah at 609-530-8078.

Thank you for your cooperation in this matter.

Sincerely,

Kamlesh R. Shah, P.E.
Supervising Engineer 2
Division of Project Development

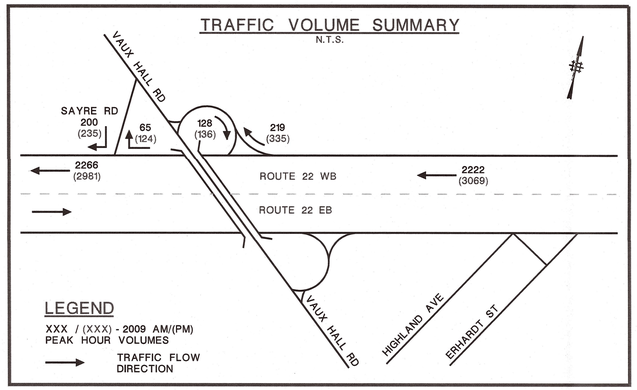
Enclosure

C: File

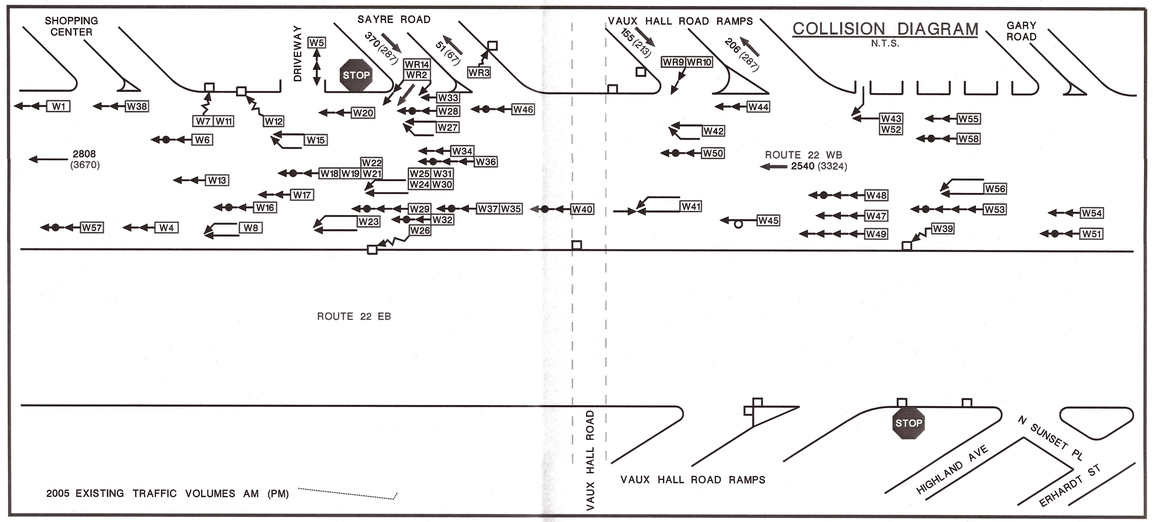
STATE	FEDERAL PROJECT NO.
N.J.	*

COUNTY OF UNION

TRAFFIC VOLUME SUMMARY
N.T.S.



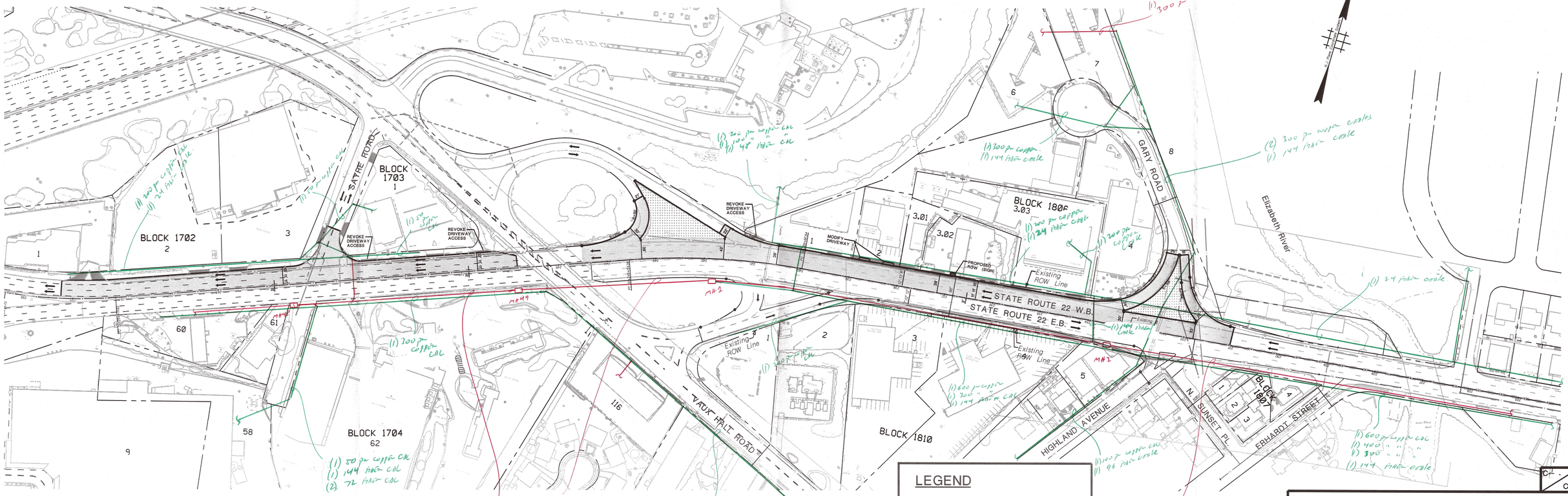
COLLISION DIAGRAM
N.T.S.



COLLISION DIAGRAM LEGEND

SYMBOLS		MANNER OF COLLISION	
MOVING VEHICLE	M MOTORCYCLE	REAR END	HEAD ON
PARKED VEHICLE	P PEDESTRIAN	OVERTAKE	LEFT TURN
BACKING VEHICLE	B BICYCLE	OUT OF CONTROL	RIGHT TURN
STOPPED VEHICLE	FIXED OBJECT	SKIDDING	RIGHT ANGLE
STOP TRAFFIC SIGNAL	FATAL	OVERTURNED	SIDE SWIPE

NOTES:
LOCATION OF ROUTE 22 CRASHES ARE NOT LANE SPECIFIC
E35 NUMBER ASSIGNED TO POLICE ACCIDENT REPORT



LEGEND

- PROPOSED ROADWAY
- GRASS ISLAND
- EXISTING DRIVEWAY
- SHOULDERS
- REMOVE PAVEMENT
- TRAFFIC SIGNAL

100 0 100 200

NEW JERSEY DEPARTMENT OF TRANSPORTATION

SAYRE ROAD

ALTERNATIVE NO. 1

ROUTE 22 WB - VAUX HALL ROAD INTERCHANGE IMPROVEMENTS
(FROM M.P. 56.2 TO M.P. 56.4)

THE LOUIS BERGER GROUP, INC.
MORRISTOWN, NEW JERSEY

C-

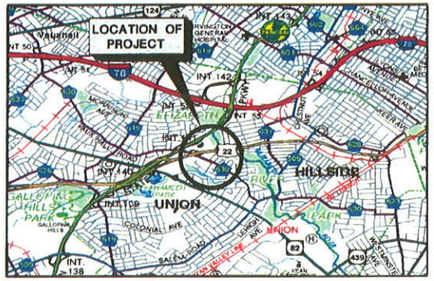
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Sayre Rd Alternative 1

STATE	FEDERAL PROJECT NO
N.J.	FS-4395(101)

TOWNSHIP OF UNION **COUNTY OF UNION**



KEY MAP
N.T.S.

EXISTING UNDERGROUND
(1) 3000 PAIR COPPER CABLE
(1) 1200 " " "
(2) 900 " " "
(4) 1" ABS PIPE
(1) 432 FIBER OPTIC CABLE
(1) 144 " " "
(1) 72 " " "
(1) 24 " " "
(6) 3.5" MULTI-TILE CONDUITS

EXISTING AERIAL
(1) 600 PAIR COPPER CABLE
(1) 200 " " "
(1) 48 FIBER OPTIC CABLE
(1) 24 " " "

GARY ROAD

Elizabeth River

(3)
EXISTING AERIAL
(1) 72 FIBER OPTIC CABLE

STATE ROUTE 22 W.B.
STATE ROUTE 22 E.B.

Existing ROW Line

EXISTING UNDERGROUND RISER TO P6217S
(2) 3.5" MULTI-TILE CONDUITS
(1) 1200 PAIR COPPER CABLE
(1) 600 PAIR COPPER CABLE
(1) 72 FIBER OPTIC CABLE
(1) 144 " " "

(1)
EXISTING AERIAL
(1) 600 PAIR COPPER CABLE
(1) 300 " " "
(1) 144 FIBER OPTIC CABLE

(2)
EXISTING AERIAL
(1) 300 PAIR COPPER CABLE
(1) 144 FIBER OPTIC CABLE
(1) 72 " " "

(4)
EXISTING AERIAL
(1) 600 PAIR COPPER CABLE
(1) 24 FIBER OPTIC CABLE

VAUX HALL ROAD

HIGHLAND AVENUE

N. SUNSET PL.

ERHARDT STREET

VERIZON FACILITIES
2-16-2010

LEGEND:

RED	●	EXISTING FACILITIES TO BE REMOVED OR ABANDONED.
GREEN	●	PERMANENT FACILITIES TO BE CONSTRUCTED.
YELLOW	●	TEMPORARY FACILITIES TO BE CONSTRUCTED AND REMOVED.
BLUE	●	FACILITIES TO BE CONSTRUCTED AT 100% OWNERS EXPENSE.

50 0 50 100

NEW JERSEY DEPARTMENT OF TRANSPORTATION

SCHEME OF ACCOMMODATION
TELEPHONE FACILITIES
(FROM M.P. 56.3 TO M.P. 56.5)
ROUTE 22 EASTBOUND
FROM VAUX HALL ROAD TO HIGHLAND AVENUE
CONTRACT NO. 031093780

THE LOUIS BERGER GROUP, INC.
CERTIFICATE OF AUTHORIZATION NO. 24GA27933700

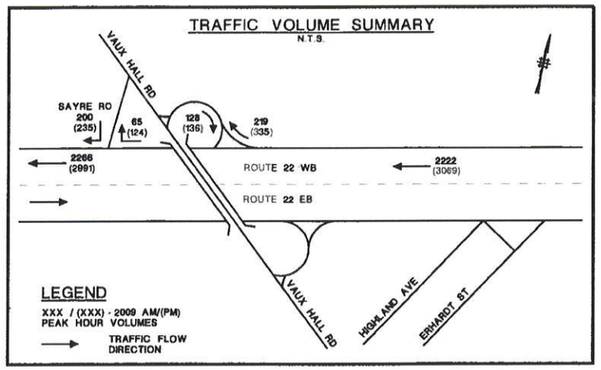
HONG Y. SUN DATE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE NO. 47342

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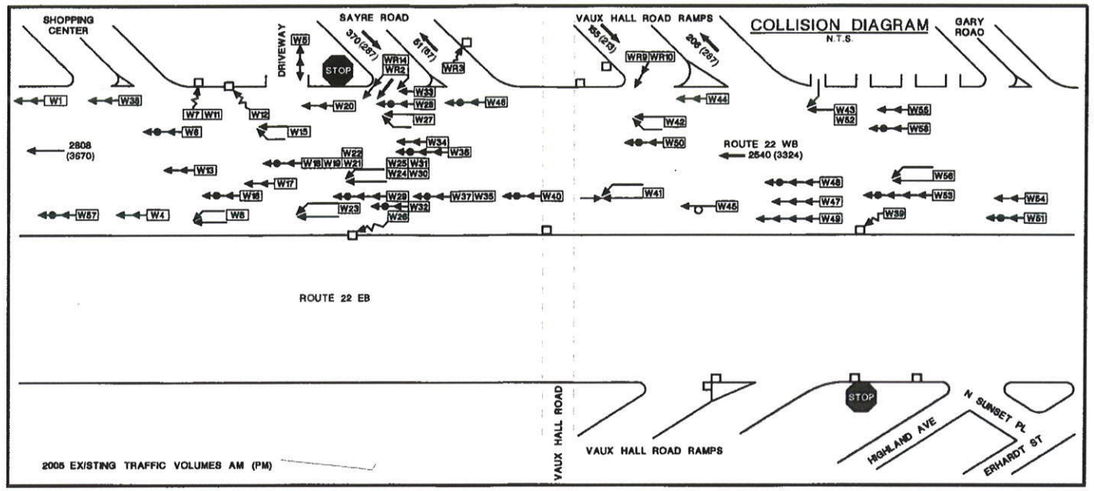
STATE	FEDERAL PROJECT NO.
N.J.	*

COUNTY OF UNION

TRAFFIC VOLUME SUMMARY
N.T.S.



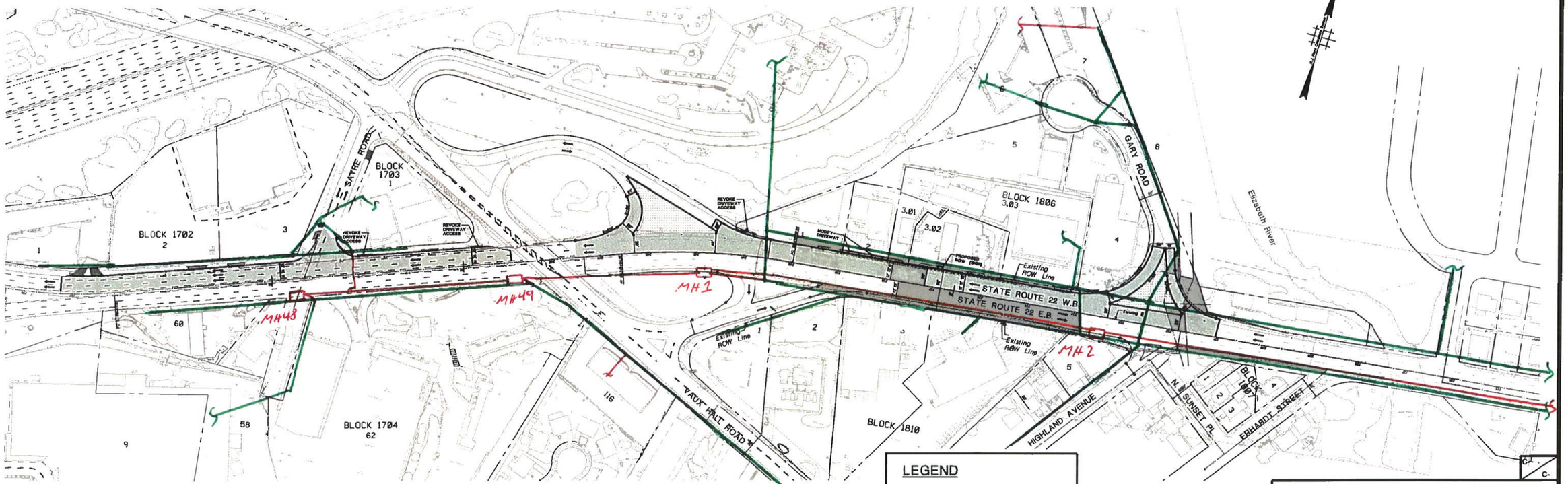
COLLISION DIAGRAM
N.T.S.



COLLISION DIAGRAM LEGEND

SYMBOLS		MANNER OF COLLISION	
MOVING VEHICLE	M MOTORCYCLE	REAR END	HEAD ON
PARKED VEHICLE	P PEDESTRIAN	OVERTAKE	LEFT TURN
BACKING VEHICLE	B BICYCLE	OUT OF CONTROL	RIGHT TURN
STOPPED VEHICLE	FIXED OBJECT	SKIDDING	RIGHT ANGLE
STOP TRAFFIC SIGNAL	FATAL	OVERTURNED	SIDE SWIPE

NOTES:
LOCATION OF ROUTE 22 CRASHES ARE NOT LANE SPECIFIC
E35 NUMBER ASSIGNED TO POLICE ACCIDENT REPORT



VERIZON FACILITY MARK UP 8/19/2010
— AERIAL
— UNDERGROUND

LEGEND
- PROPOSED ROADWAY
- GRASS ISLAND
- EXISTING DRIVEWAY
- SHOULDERS
- REMOVE PAVEMENT
- TRAFFIC SIGNAL

100 0 100 200

NEW JERSEY DEPARTMENT OF TRANSPORTATION

SAYRE ROAD

ALTERNATIVE NO. 1

ROUTE 22 WB - VAUX HALL ROAD INTERCHANGE IMPROVEMENTS
(FROM M.P. 56.2 TO M.P. 56.4)

THE LOUIS BERGER GROUP, INC.
MORRISTOWN, NEW JERSEY

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file= V:\Operations\034\100\Deliverables\DGN.V8\Roadway\897_IPA_V8.dgn Sayre Rd Alternative 1

NEW JERSEY
AMERICAN WATER

120 Raider Blvd.
Hillsborough, NJ 08844

P 908-431-3225
F 908-431-3260

RECEIVED
JUL 26 2011
Division of Project Development

July 21, 2011

NJ Department of Transportation

P.O. Box 600
Trenton, NJ 08625-0600
Attention: Kamlesh Shah

Re: NJDOT Route 22 WB and Vauxhall Road
Union Twp

Dear Mr. Shah,

Enclosed is an executed copy of the Utility Questionnaire for the above project.

Please feel free to contact me if you have any questions.

Sincerely yours,

Michael Wolan
Sr. Engineering Project Manager

Route 22 westbound and Vauxhall Road
Twp.of Union,
Union County
UPC # **058003**

Please complete the following questionnaire and return it to Designer's Engineer by **August 5, 2011.**

(✓) The Company Engineer to be contacted is:

Name MICHAEL WOLAN
Company NJ AMERICAN WATER
Title SR. ENGINEERING PROJECT MANAGER
Address 120 RAIDER BLVD
HILLSBOROUGH, NJ 08844

Telephone 908-431-3225
Fax 908-431-3260
E MAIL MIKE.WOLAN@AMWATER.COM

(✓) The UTILITY AGREEMENT shall be sent to the following person:

(✓) Same as above or fill in below:

Name
Company
Title
Address

Telephone
Fax

(✓) We DO HAVE existing facilities within the project limits.

(___) We DO NOT HAVE existing facilities within the project limits.

(___) We HAVE PROPOSED facilities planned within the project limits.

Page Three

Route 22 westbound and Vauxhall Road
Twp.of Union,
Union County
UPC # **058003**

(____) **The following companies are tenants on/in our facilities within the project limits.**

_____
_____
_____
_____

(✓) We would like the NJDOT to arrange for the following work to be done for our facilities should it be necessary for them to be relocated or modified.

(✓) Design/Engineering
(✓) Construction - Some or All? TO BE DETERMINED DURING DESIGN
(____) Neither - the Company will perform (or arrange to have performed) all needed work.
(____) Not certain at this time.

Questions concerning this matter should be directed to the NJDOT Design Engineer noted in the caption above or the NJDOT Lead Engineer for this project, Bhavesh Shah at 609-530-3078.

Thank you for your cooperation in this matter.

Sincerely,

Shah

Kamlesh R. Shah, P.E.
Supervising Engineer 2
Division of Project Development

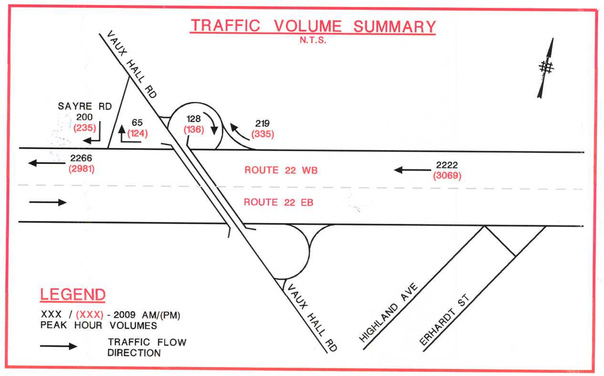
Enclosure

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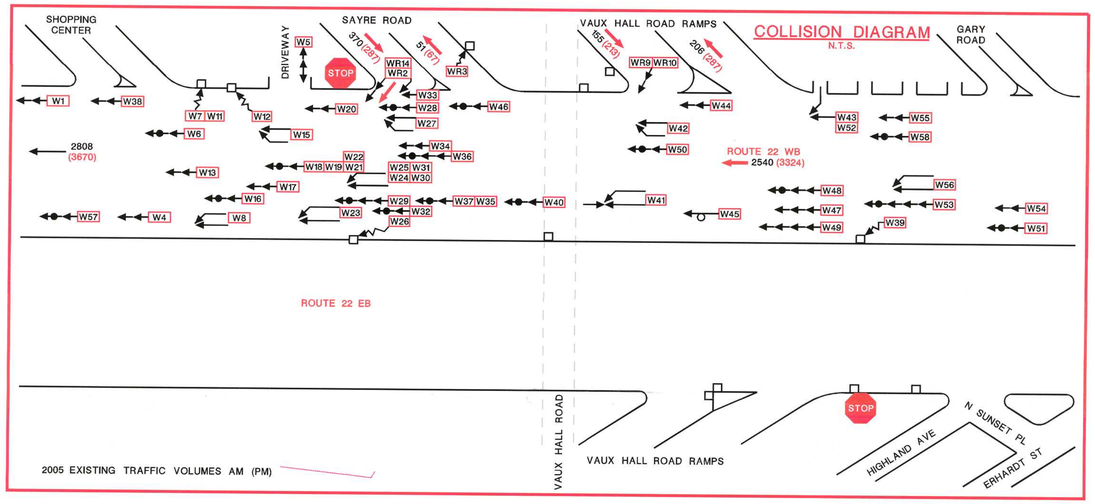
STATE	FEDERAL PROJECT NO.
N.J.	*

COUNTY OF UNION

TRAFFIC VOLUME SUMMARY
N.T.S.



COLLISION DIAGRAM
N.T.S.

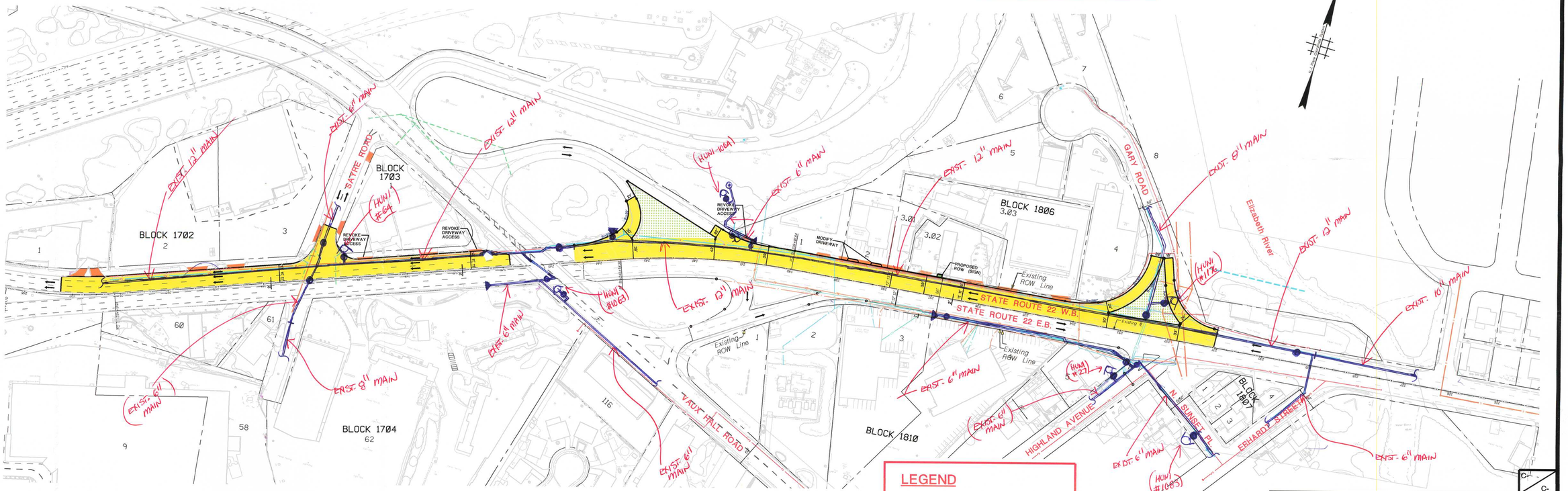


COLLISION DIAGRAM LEGEND

SYMBOLS		MANNER OF COLLISION	
MOVING VEHICLE	M MOTORCYCLE	REAR END	HEAD ON
PARKED VEHICLE	P PEDESTRIAN	OVERTAKE	LEFT TURN
BACKING VEHICLE	B BICYCLE	OUT OF CONTROL	RIGHT TURN
STOPPED VEHICLE	FIXED OBJECT	SKIDDING	RIGHT ANGLE
TRAFFIC SIGNAL	FATAL	OVERTURNED	SIDE SWIPE

NOTES:
LOCATION OF ROUTE 22 CRASHES ARE NOT LANE SPECIFIC
E35 NUMBER ASSIGNED TO POLICE ACCIDENT REPORT

NEW JERSEY AMERICAN WATER COMPANY
FIELD VERIFICATION REQUIRED



LEGEND

- PROPOSED ROADWAY
- GRASS ISLAND
- EXISTING DRIVEWAY
- SHOULDERS
- REMOVE PAVEMENT
- TRAFFIC SIGNAL

100 0 100 200

NEW JERSEY AMERICAN WATER COMPANY
FIELD VERIFICATION REQUIRED

NEW JERSEY DEPARTMENT OF TRANSPORTATION

SAYRE ROAD

ALTERNATIVE NO. 1

ROUTE 22 WB - VAUX HALL ROAD INTERCHANGE IMPROVEMENTS
(FROM M.P. 56.2 TO M.P. 56.4)

THE LOUIS BERGER GROUP, INC.
MORRISTOWN, NEW JERSEY

ORIGINAL COPY OF MARK-OUT

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Sayre Rd Alternative 1

Contact Sunesys

Sunesys provides dynamic, forward-thinking telecommunications services and dark fiber businesses, healthcare organizations, K-12 and higher education institutions in the states of California, Delaware, Florida, Georgia, Illinois, Maryland, New Jersey, Ohio, and Pennsylvania. We also partner with telecommunications carriers to lease end-to-end dark fiber.

NORTHEAST
Headquarters and Northeastern Regional Office
185 Titus Avenue
Warrington, PA 18976
tel 888.35.FIBER
tel 267.927.2000
fax 267.927.2099
Map to this location

SOUTHEAST
Southeastern Regional Office
7421 Douglas Boulevard
Suite N #404
Douglasville, GA 30135
tel 678.653.4237
fax 267.927.2099
Map to this location

MIDWEST
Mid-Western Regional Office
349 Lebanon Road
West Mifflin, PA 15122
tel 412.462.4561
fax 412.462.4564
Map to this location

MIDWEST
Chicago Sales & Operations
18 West 140 Butterfield Road
15th Floor
Oakbrook Terrace, IL 60181
tel 630.613.7252
fax 630.613.7001
Map to this location

WEST
Western Regional Office
1325 Pico Street
Suite 106
Corona, CA 92881
tel 951.278.0400
fax 951.278.2334
Map to this location

WEST
Northern California Operations
4044 Clipper Court
Fremont, CA 94538
tel 510.656.2040
fax 510.656.2041
Map to this location

Emergency Contact Information

For immediate assistance please call
800.286.6664

Send Feedback

Email Sunesys

Send us your resume

Latest News

Sunesys expands reach of metro footprint in Atlanta and neighboring suburban markets
8/8/2011

Industry leader Sunesys joins Allied Fiber's Dark Fiber Community
3/22/2011

Sunesys, a Quanta Services company, selected to install 1,600 mile fiber optic network in Pennsylvania
1/4/2011

See all news

CUSTOMER TESTIMONIALS
Cooper University
Lake Elsinore Unified School District

WHITE PAPERS
The Private Fiber Optic Network Advantage

The Benefits of Private High Bandwidth Managed Wide Area Networks for Education IT Infrastructures

The Benefits of Dark Fiber for Healthcare IT Infrastructures

CASE STUDIES
Children's Memorial Hospital
Cooper University Hospital
Englewood Hospital and Medical Center
Northwestern University
NutriSystem
Philadelphia School District
Trion
Villanova University
West New York Board of Education

ABOUT SUNESYS
Overview
Management Team
News
Events
Careers

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Ilie, Ion

From: Mumber, Chris [CMumber@sunesys.com]
Sent: Wednesday, August 24, 2011 10:53 AM
To: Ilie, Ion
Subject: Route 22 Eastbound from Vaux Hall Road to Highland Avenue, Safety Improvements Union Township, Union County, New Jersey
Attachments: Rt 22 - Vauxhall Rd - Union Co.pdf; 897_Rte22-Vauxhall_SCHEMESVERIZON.PDF

Ion,

Hello, my name is Chris Mumber and I will be the Sunesys project manager for this.

I have attached a drawing showing our facilities. We have a 24ct fiber optic cable on the pole line along RT 22 within the project limits. It seems the pole line is just being relocated and all we will have to do is transfer our facilities once PSEG gets done their work. If you need me to meet you on site to go over the scope and a time frame to do our work.

Any questions or concerns please get back to me.

Chris

sunesys

Chris Mumber | **Project Manager**
202 Titus Avenue | Warrington, PA 18976
tel 267.927.2034 | **fax** 267.927.2090 | **mob** 267.718.0976
web sunesys.com | **em** cmumber@sunesys.com

********ORIGINAL**********

From: Rhoads, Rick
Sent: Monday, August 22, 2011 2:56 PM
To: Mumber, Chris
Subject: Fw: Route 22 Eastbound from Vaux Hall Road to Highland Avenue, Safety Improvements Union Township, Union County, New Jersey

Have you seen this?

From: Ford, Chuck
To: Rhoads, Rick
Cc: O'Neill, Brian
Sent: Mon Aug 22 13:50:01 2011
Subject: RE: Route 22 Eastbound from Vaux Hall Road to Highland Avenue, Safety Improvements Union Township, Union County, New Jersey

Check w/Chris...he might have this already

Chuck Ford | **Director of Operations**
mob 267.718.0951 | **em** cford@sunesys.com

From: Rhoads, Rick
Sent: Monday, August 22, 2011 2:42 PM
To: Ford, Chuck
Cc: O'Neill, Brian
Subject: FW: Route 22 Eastbound from Vaux Hall Road to Highland Avenue, Safety Improvements Union Township, Union County, New Jersey

Ron got a call about this today. James confirmed that we do have fiber here for a Next G node. NYD-5051.

Rick Rhoads | Splicer
mob 267.718.0986 | em rrhoads@sunesys.com

From: Rhoads, Ron
Sent: Monday, August 22, 2011 2:26 PM
To: Rhoads, Rick
Subject: Fwd: Route 22 Eastbound from Vaux Hall Road to Highland Avenue, Safety Improvements Union Township, Union County, New Jersey

Begin forwarded message:

From: "Ilie, Ion" <Illie@louisberger.com>
To: "Rhoads, Ron" <Ron.Rhoads@sunesys.com>
Cc: "Sun, Hong" <hsun@louisberger.com>, "Gumedelli, Naveen" <ngumedelli@louisberger.com>, "Perpetua Kashani" <Perpetua.Kashani@dot.state.nj.us>, "Hardev Dave" <Hardev.Dave@dot.state.nj.us>
Subject: Re: Route 22 Eastbound from Vaux Hall Road to Highland Avenue, Safety Improvements Union Township, Union County, New Jersey

Mr. Rhoads,

The New Jersey Department of Transportation (NJDOT) has engaged The Louis Berger Group, Inc. to perform the final design for the Safety Improvements to the Route 22 Eastbound from Vaux Hall Road to Highland Avenue in Union Township, Union County, New Jersey. The primary purpose of this project is to add an acceleration lane to reduce the number of accidents along this stretch of roadway. The project is under construction.

Please review the attached plan and provide us with your comments and information as necessary (e.g. as-built plans) to verify the following:

- Location of existing Sunesys facilities within the project limits, with your mark-ups of your facilities.
- Type and size of your facilities, number of conduits, number of cables, etc.,
- Depth of cover,
- Operation restrictions,
- Facilities not shown on plans.

Given the accelerated construction schedule, relocation of existing facilities and completion of the construction is critical. Your prompt attention to this matter will be greatly appreciated.

As per our telephone conversation we don't have an agreement with your company for your facilities relocation. If there are Sunesys existing facilities please let us know if you will do the relocation work first and the

agreement after. There is a possibility that PSE&G could do the work.

Please provide us with your comments and return to us by August 25, 2011.

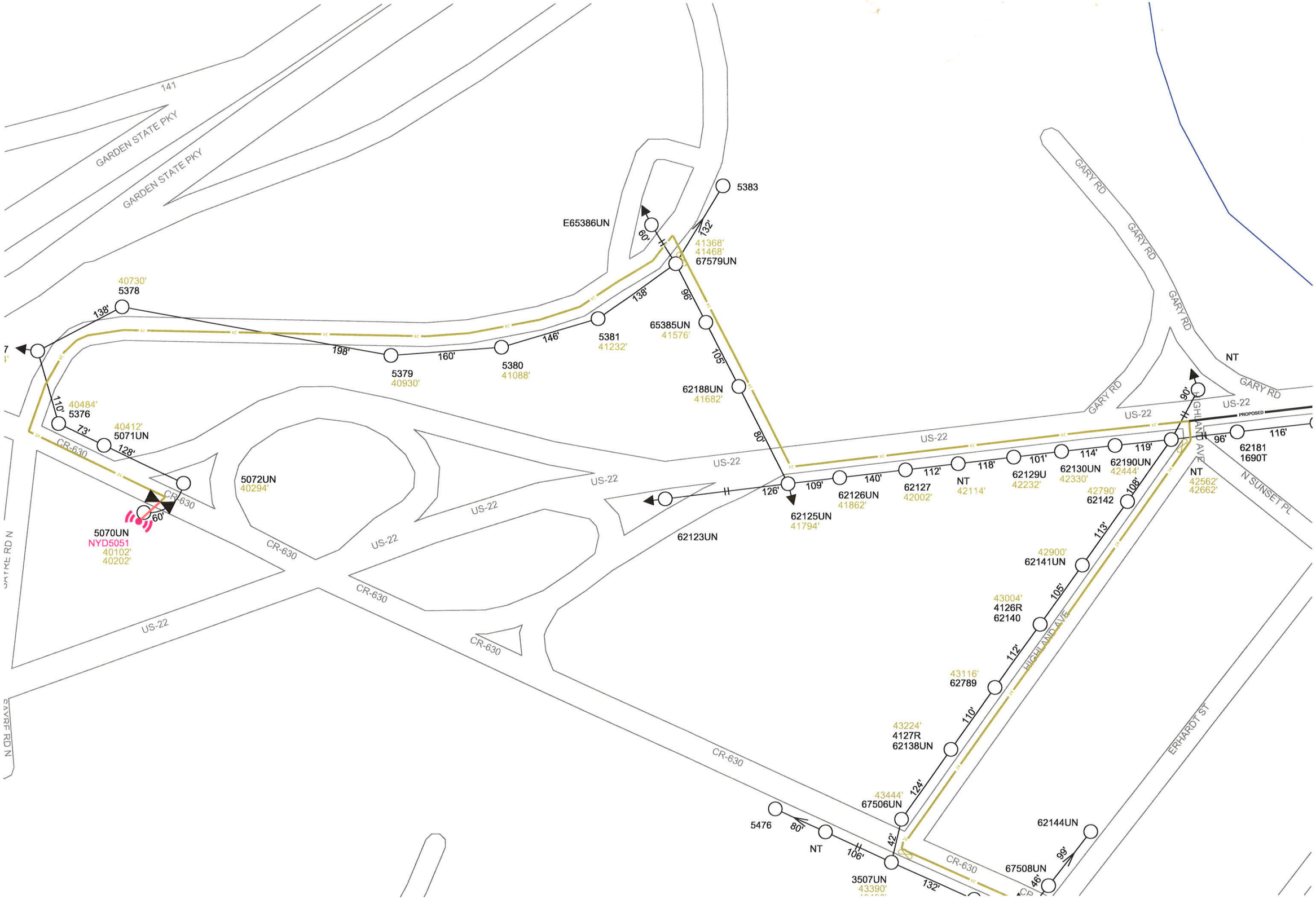
Thank you for your cooperation in this matter.

Questions concerning this matter should be directed to:

Ion I. Ilie, Electrical Engineer
The Louis Berger Group, Inc.
412 Mount Kemble Ave.
Morristown, NJ 07960-6654
Telephone: 973 407 1585
Facsimile: 973 267 6468
Email: iilie@louisberger.com<mailto:iilie@louisberger.com>

or:

Perpetua Kashani / Resident Engineer
NJDOT, Region North Construction
Work: (908)-686-8651
Cell: (201)-394-8377


GARDEN STATE PKY
GARDEN STATE PKY
141
E65386UN
60'
132'
5383
41368'
41468'
67579UN
138'
96'
65385UN
41576'
105'
62188UN
41682'
80'
5381
41232'
146'
5380
41088'
160'
5379
40930'
198'
40730'
5378
138'
40484'
5376
110'
73'
40412'
5071UN
128'
CR-630
5072UN
40294'
5070UN
NYD5051
40102'
40202'
60'
US-22
CR-630
GARY RD
GARY RD
GARY RD
GARY RD
NT
90'
HIGHLAND AVE
US-22
PROPOSED
96'
116'
62181
1690T
126'
109'
62126UN
41862'
140'
62127
42002'
112'
NT
42114'
118'
62129U
42232'
101'
62130UN
42330'
114'
62190UN
42444'
119'
NT
42562'
42662'
42790'
62142
108'
62125UN
41794'
62123UN
113'
42900'
62141UN
105'
43004'
4126R
62140
112'
43116'
62789
110'
43224'
4127R
62138UN
124'
43444'
67506UN
42'
5476
80'
NT
106'
3507UN
43390'
132'
62144UN
99'
67508UN
46'
N SUNSET PL
ERHARDT ST
CR-630

cc 1221 File

Louis J. Marello
Engineer- NJ, DE, PA, Metro NY
400 Hamilton Ave.
White Plains, N.Y. 10601

T: 914-397-3744
F: 914-397-5537
lmarello@att.com

H. Sun
Y. Shihor
N. Gunedelli
A. Chen

April 10, 2009

Received
4/13/09

Louis Berger Group, Inc.
Attn: Mr. Alvin Chen
412 Mount Kemble Avenue
P.O. Box 1946
Morristown, NJ 07962-1946

Re: New Jersey Department of Transportation
Route 22 Eastbound from Vaux Hall Road to Highland Avenue, Safety Improvements
Union Township, Union County, New Jersey

Dear Mr. Chen:

We had received the information you sent to our office in reference to the above-mentioned projects. Our consultant, as well as myself, have reviewed the plans and found that AT&T does not have facilities located within the limits of your project area. Therefore, it has been determined that we have no facility conflicts with the above-mentioned project.

Your continued cooperation in the protection of AT&T's facilities is greatly appreciated.

Sincerely,

Louis J Marello

Louis J. Marello
OSP- Engineer- Field Operations

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