

# **I-95 FROM MORAVIA ROAD TO THE FORT MCHENRY TUNNEL**

## **AIR QUALITY ANALYSIS EVALUATION**

June 2016

**Baltimore City, Maryland**



**U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION**



**MARYLAND DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION**

# TABLE OF CONTENTS

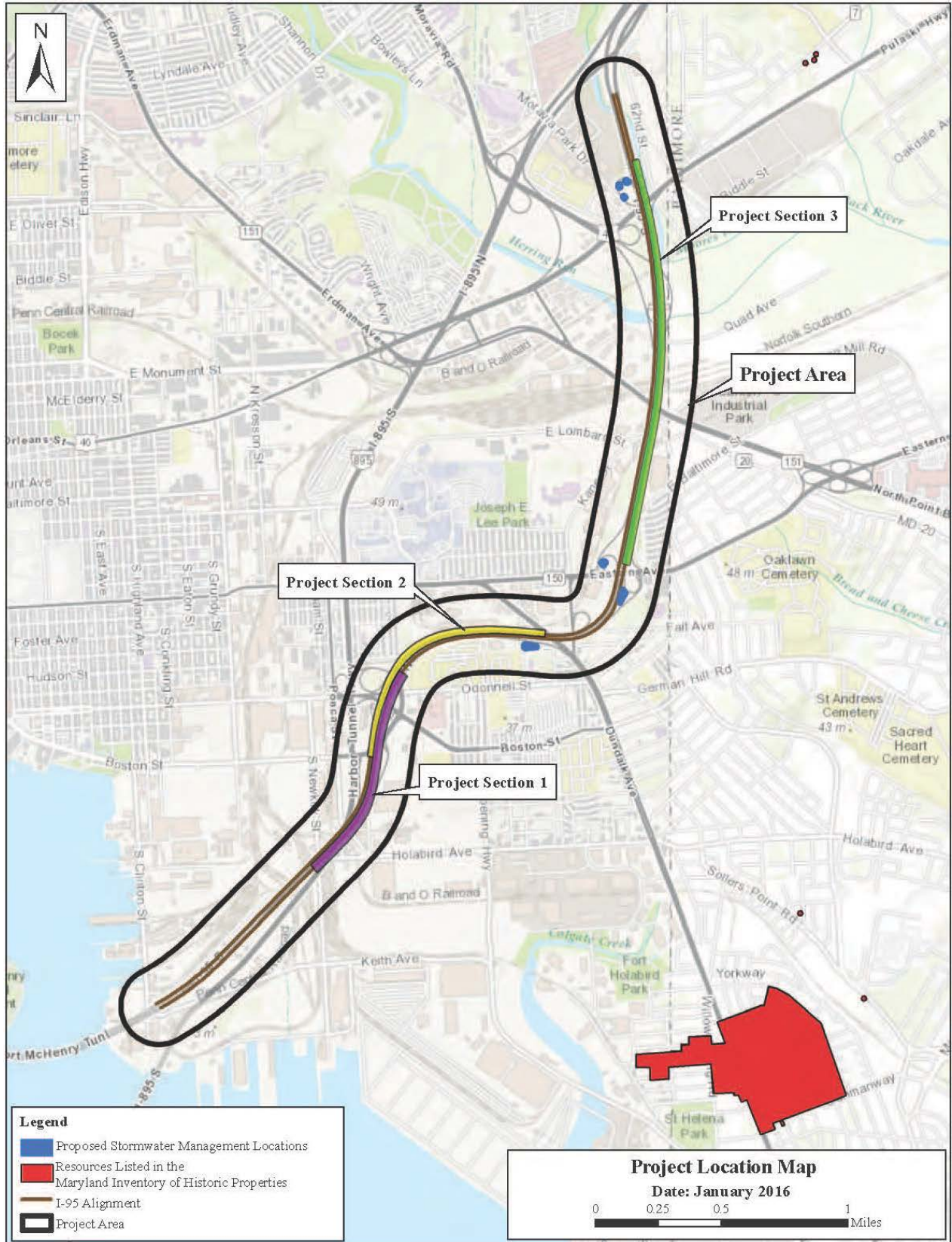
<b>I. INTRODUCTION</b> .....	1
<b>II. AIR QUALITY BACKGROUND</b> .....	3
<b>III. ENVIRONMENTAL ANALYSIS</b> .....	5
<b>IV. ENVIRONMENTAL CONSEQUENCES</b> .....	6
1. Regional Conformity Determination .....	6
2. Project Level Conformity .....	6
3. MSAT Assessment.....	10
4. Construction Impacts .....	11
<b>V. INTERAGENCY CONSULTATION GROUP / PUBLIC COORDINATION</b> .	12
<b>LIST OF FIGURES</b>	
FIGURE 1 – Location Map.....	2
FIGURE 2 - National MSAT Emission Trends 1999 – 2050.....	11
<b>LIST OF TABLES</b>	
TABLE 1 - National Ambient Air Quality Standards (NAAQS).....	4
TABLE 2 - Monitored Ambient Air Quality Data 2013-2015 .....	6
TABLE 3 - Traffic Data - I-95 Southbound .....	9
TABLE 4 - Traffic Data - I-95 Northbound .....	10
<b>APPENDICES</b>	
APPENDIX A - Plans	
APPENDIX B - Monitored Ambient Air Quality Data 2013-2015	
APPENDIX C - Traffic Data	
APPENDIX D - Interagency Consultation Group Coordination	

## **I. INTRODUCTION**

This analysis presents the results of a review of air quality impacts associated with proposed improvements to I-95 from Moravia Road to the Fort McHenry Tunnel in Baltimore City, Maryland. This analysis is intended as an evaluation of the project level air quality impacts of the proposed roadway improvements. This evaluation is provided to meet the requirements of the Clean Air Act (CAA) and the National Environmental Policy Act (NEPA).

In the project area, I-95 is a divided urban interstate running north to south with three travel lanes in each direction. Land use within the project area includes medium density residential, commercial, forest, industrial, institutional, other developed lands, and high density residential. The project area extends for approximately 3.7 miles along I-95, from the Fort McHenry Tunnel to north of US 40 (**Figure 1**).

The purpose of the project is to improve capacity within the project limits. This will be accomplished by restriping I-95 to provide an additional mainline lane in each direction; adjusting the deck of the viaduct structures to relocate the existing median shoulder/lane cross slope break to the new shoulder/lane edge; reconstructing the existing median at-grade traffic barriers and bridge parapets to accommodate the roadway cross slope adjustments; reconstructing outside bridge parapets to 42"; and reconstructing existing at-grade shoulders with full depth pavement section. Refer to **Appendix A** for project design plans.



**FIGURE 1 – Location Map**

## II. AIR QUALITY BACKGROUND

The Clean Air Act (CAA) Amendments and the Final Transportation Conformity Rule (40 CFR Parts 51 and 93) direct the U.S. Environmental Protection Agency (EPA) to implement environmental policies and regulations that will ensure acceptable levels of air quality. Both the CAA and the Final Transportation Conformity Rule apply to the proposed transportation project because it involves federal action and funding.

According to the CAA, Title I, Section 176 (c) 2, “*No federal agency may approve, accept, or fund any transportation plan, program, or project unless such plan, program, or project has been found to conform to any applicable implementation plan in effect under this chapter.*” The CAA, Title I, Section 176 (c) 1, defines conformity as; “*Conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and that such activities will not:*

- i. cause or contribute to any new violation of any standard in any area;*
- ii. increase the frequency or severity of any existing violation of any standard in any area;*  
*or*
- iii. delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.”*

As required by the CAA, National Ambient Air Quality Standards (NAAQS) have been established for six major air pollutants. These pollutants, known as criteria pollutants, are carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter (PM<sub>10</sub> & PM<sub>2.5</sub>), sulfur dioxide (SO<sub>2</sub>), and lead (Pb). These national standards are summarized in **Table 1**. The "primary" standards have been established to protect the public health. The "secondary" standards are intended to protect the nation's welfare, accounting for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the general welfare.

The CAA Amendments require that the EPA publish a designation list of all geographic areas in compliance with the NAAQS, as well as those areas not in compliance with the NAAQS. The designation of an area is made on a pollutant-by-pollutant basis. EPA's area designations consist of attainment, unclassified, maintenance, and nonattainment. Ambient air quality is monitored through a network of stations to determine conditions throughout the country. EPA reviews the monitoring data, designating areas where pollutant levels exceed the NAAQS as nonattainment. After a nonattainment area improves conditions to meet the standard for the corresponding pollutant, it is re-designated as a maintenance area. Typically these designations are applied to entire counties or groups of counties.

To comply with the CAA, EPA has issued proposed rules, guidance clarifications, and final rules concerning transportation conformity and pollutants for which standards have been set.

Following is a summary of recent rules and clarifications:

- *Transportation Conformity Rule PM<sub>2.5</sub> and PM<sub>10</sub> Amendments; Final Rule, March 24, 2010;*
- *Using MOVES in Project-Level Carbon Monoxide Analyses, December 2010;*

- *Transportation Conformity Rule Restructuring Amendments*, March 14, 2012;
- *Transportation Conformity Regulations, as of April 2012*;
- *National Ambient Air Quality Standards for Particulate Matter*, January 15, 2013; and
- *Update to the Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM<sub>2.5</sub> and PM<sub>10</sub> Nonattainment and Maintenance Areas*, November 2015.

EPA has only provided rules and guidance for project level analyses of CO and particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>).

**TABLE 1 - National Ambient Air Quality Standards (NAAQS)**

Pollutant	Primary/ Secondary	Primary Standards		Form
		Level	Averaging Time	
Carbon Monoxide 76 FR 54294	Primary	9 ppm	8-hour	Not to be exceeded more than once per year
		35 ppm	1-hour	
Lead 73 FR 66964	Primary and Secondary	0.15 µg/m <sup>3</sup>	Rolling 3-Month Average	Not to be exceeded
Nitrogen Dioxide 77 FR 20218	Primary	100 ppb	1-hour	98 <sup>th</sup> percentile, averaged over 3 years
	Primary and Secondary	53 ppb	Annual	Annual Mean
Particulate Matter (PM <sub>10</sub> ) 78 FR 3086	Primary and Secondary	150 µg/m	24-hour	Not to be exceeded more than once per year on average over 3 years
Particulate Matter (PM <sub>2.5</sub> ) 71 FR 61144	Primary	12 µg/m <sup>3</sup>	Annual	Annual mean averaged over 3 years
	Secondary	15 µg/m <sup>3</sup>	Annual	Annual mean averaged over 3 years
	Primary and Secondary	35 µg/m <sup>3</sup>	24-hour	98 <sup>th</sup> percentile, averaged over 3 years
Ozone 80 FR 65292	Primary and Secondary	0.070 ppm	8-hour	Annual fourth highest daily maximum 8-hour concentration, averaged over 3 years
Sulfur Dioxide 77 FR 20218	Primary	75 ppb	1-hour	Not to be exceeded more than once per year
	Secondary	0.5 ppm	3-hour	

In addition to the criteria pollutants for which there are NAAQS, EPA also regulates air toxics. Toxic air pollutants are those pollutants known or suspected to cause cancer or other serious health effects. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries). The CAA identified 188 air toxics. In 2001 EPA identified a list of 21 Mobile Source Air Toxics (MSATs), and highlighted six of these MSATs as “priority” MSAT. The EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk

drivers. These seven MSATs are: acrolein; benzene; 1,3-butadiene; diesel exhaust (organic gases and diesel particulate matter); formaldehyde; naphthalene; and polycyclic organic matter.

### III. ENVIRONMENTAL ANALYSIS

The I-95 from Moravia Road to the Fort McHenry Tunnel improvement project is located in Baltimore City, Maryland, which is part of the Baltimore, MD designated area. The CO maintenance period for this region ended December 15, 2015; therefore the area is no longer subject to transportation conformity in regards to CO. The area was classified as maintenance for the 1997 annual  $PM_{2.5}$  standard by EPA on December 16, 2014. Maryland is neither within a  $PM_{10}$  maintenance nor nonattainment area.

For regional conformity determination, states develop State Implementation Plans (SIPs) to establish a plan for attaining and maintaining the NAAQS, as required by the CAA. Proposed and existing transportation projects and programs are compiled in short term (covering approximately 2-6 years) and long term (covering approximately 20 years) plans called transportation improvement programs (TIPs) and long range plans, respectively, for urbanized areas. As defined by the United States Census Bureau, urbanized areas are geographic areas with a population greater than 50,000. These urbanized areas are governed by Metropolitan Planning Organizations (MPOs). MPOs are policy-making organizations which develop the TIPs and long range plans for their respective urbanized areas. Per 40 CFR 93.115, a project must be included in a long range plan and TIP that conforms to the SIP to achieve regional conformity. For the Baltimore, MD area, the Baltimore Regional Transportation Board (BRTB) serves as the MPO. The current long range plan, *Maximize2040*, was adopted by BRTB on November 24, 2015. The latest TIP, covering fiscal years 2016 to 2019, was also adopted by BRTB on November 24, 2015. This assessment includes regional conformity determination for the project.

At the project level, pollutants could possibly have localized (hot-spot) levels above the NAAQS. As outlined by 40 CFR 93.116 in the *Transportation Conformity Regulations, as of April 2012*, any highway or transit project which is proposed to receive funding assistance and/or approval through federal programs or the Federal Highway Administration (FHWA) must not “cause or contribute to any new localized CO,  $PM_{10}$ , and/or  $PM_{2.5}$  violations, increase the frequency or severity of any existing CO,  $PM_{10}$ , and/or  $PM_{2.5}$  violations, or delay timely attainment of any NAAQS or any required interim emission reductions or other milestones in CO,  $PM_{10}$ , and  $PM_{2.5}$  nonattainment and maintenance areas.” To determine project level conformity, analyses must be performed for the respective pollutant set in the corresponding nonattainment or maintenance area where a project is located. To make the determination that a project is conforming, consultation in accordance with 40 CFR 93.105 is completed via the Interagency Consultation Group (ICG). The ICG for Maryland highway projects includes a representative from FHWA, EPA, the Maryland Department of the Environment (MDE), and the appropriate MPO. This assessment includes a project level conformity determination.

#### IV. ENVIRONMENTAL CONSEQUENCES

##### 1. Regional Conformity Determination

The currently approved BRTB long range transportation plan and TIP have been determined to conform to the requirements of the Clean Air Act Amendments of 1990 in accordance with 40 CFR 93.114. The current conformity determination is consistent with the final conformity rule found in 40 CFR Parts 51 and 93. The current long range plan includes the project as part of a list of MDTA projects, with the project name I-95: Section 00, therefore, the project is included in a regionally conforming long range plan that meets the requirements of 40 CFR 93.115.

##### 2. Project Level Conformity

Since Baltimore City is within a maintenance area for PM<sub>2.5</sub>, a project-specific PM<sub>2.5</sub> assessment has been provided.

To assist in analyzing potential project impacts to PM<sub>2.5</sub> levels, recent ambient air quality data from MDE air monitoring stations has been referenced. The closest MDE air monitoring station for the study area is located at the Baltimore City Fire Department in Baltimore, MD. Monitoring data is also available at stations located at the Oldtown Fire Station in Baltimore, MD, and 600 Dorsey Avenue in Essex, MD. All these stations are located in EPA Region 3. Monitored ambient, annual PM<sub>2.5</sub> data at these stations for the years 2013-2015 is presented in **Table 2** (see **Appendix B** for details).

**TABLE 2 – Monitored PM<sub>2.5</sub> Data 2013-2015**

Site (ordered by closest to farthest from project location)	Site 24510008 Baltimore City Fire Dept. Baltimore MD			Site 245100040 Oldtown Fire Station Baltimore MD			Site 240053001 600 Dorsey Avenue Essex MD		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
<b>Weighted Annual Mean (ug/m<sup>3</sup>)</b>	9.4	9.3	9.9	9.1	11.1	11.1	9.5	9.7	10.1

On March 10, 2006, EPA issued a final rule to address localized impacts of particulate matter: “PM<sub>2.5</sub> and PM<sub>10</sub> Hot-Spot Analyses in Project-Level Transportation Conformity Determinations for the New PM<sub>2.5</sub> and Existing PM<sub>10</sub> National Ambient Air Quality Standards” (71 FR 12468). These rule amendments require the assessment of localized air quality impacts of federally funded or approved transportation projects in PM<sub>10</sub> and PM<sub>2.5</sub> nonattainment and maintenance areas. In November 2013 EPA issued “Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM<sub>2.5</sub> and PM<sub>10</sub> Nonattainment and Maintenance Areas,” which helps state and local agencies complete quantitative PM<sub>2.5</sub> and PM<sub>10</sub> hot-spot analyses for project-level transportation conformity determinations of certain highway and transit projects.

Projects that require hot-spot analysis for PM<sub>2.5</sub> are those that are listed in 40 CFR 93.123(b)(1), which Appendix B to the December 2010 *Transportation Conformity Guidance for Quantitative*



*Hot-Spot Analyses in PM<sub>2.5</sub> and PM<sub>10</sub> Nonattainment and Maintenance Areas* defines as examples of projects of local air quality concern and include:

- (i) *New highway projects that have a significant number of diesel vehicles, and expanded projects that have a significant increase in the number of diesel vehicles;*
- (ii) *Projects affecting intersections that are at Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;*
- (iii) *New bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location;*
- (iv) *Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and*
- (v) *Projects in or affecting locations, areas, or categories of sites which are identified in the PM<sub>10</sub> or PM<sub>2.5</sub> applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violations.*

As discussed in examples outlined in the preamble to the March 10, 2006 final rule, projects of local air quality concern, 40 CFR 93.123(b)(1)(i) and (ii), have been interpreted as applying to projects that would involve a significant increase in the number of diesel transit buses and diesel trucks on the existing facility. As provided in the November 2015 guidance, Appendix B, examples of projects that are of air quality concern and, therefore, covered by 40 CFR 93.123(b)(1)(i) and (ii) include the following:

- A project on a new highway or expressway that serves a significant volume of diesel truck traffic, such as facilities with greater than 125,000 annual average daily traffic (AADT) and 8% or more of such AADT is diesel truck traffic;
- New exit ramps and other highway facility improvements to connect a highway or expressway to a major freight, bus, or intermodal terminal;
- Expansion of an existing highway or other facility that affects a congested intersection (operated at Level-of-Service D, E, or F) that has a significant increase in the number of diesel trucks; and,
- Similar highway projects that involve a significant increase in the number of diesel transit busses and/or diesel trucks.

To assist with the ICG process, SHA has prepared the following assessment of the proposed improvements:

- This project is considered under the following paragraph of 40 CFR 93:
  - 40 CFR 92.123(b)(1)(i), as amended, which includes “*New highway projects that have a significant number of diesel vehicles, and expanded projects that have a significant increase in the number of diesel vehicles.*”

- The proposed improvements do not meet the criteria set forth in 40 CFR 93.123(b)(1)(i) to be considered a project of local air quality concern based on the following considerations:
  - The proposed project involves restriping I-95 to provide an additional mainline lane in each direction between the Fort McHenry Tunnel and north of US 40.
  - As shown in **Tables 3** and **4**, I-95 accommodates between 8 and 11 percent truck traffic within the project limits. For the 2040 no-build conditions, the highest average daily traffic (ADT) directional volume is 87,700 vehicles per day, southbound along I-95, south of Moravia Road, and the highest directional average daily number of trucks is 7,855, southbound along I-95, north of O'Donnell Street. For the 2040 build conditions, the highest average daily traffic (ADT) directional volume is 89,150 vehicles per day, southbound on I-95, south of Moravia Road, which is 1,450 more daily vehicles than the no-build condition (87,700). The highest directional average daily number of trucks is 8,340 vehicles, northbound on I-95, north of O'Donnell Street, which is 140 more daily trucks than the no-build condition (8,200).
  - Depicted truck percentages represent the amount of light, medium and heavy truck activity along the given roadway segment. Unless predicated by significant land use changes (heavy truck generators), existing truck percentages are used as the primary factor in determining future percentages. The build condition will improve operation of the roadway, relieving system congestion and improving safety, but will not necessarily induce new truck traffic origin-destination patterns.

Based on review and analysis as discussed above, there will not be a substantial increase in the number of diesel trucks with the construction of the project and it is determined that the project will meet the Clean Air Act and 40 CFR 93.109 requirements for Fine Particulate Matter – PM<sub>2.5</sub>. These requirements are met without a hot-spot analysis because the project has not been found to be a project of local air quality concern as outlined under 40 CFR 93.123(b)(1). The project will not cause or contribute to a new violation of the PM<sub>2.5</sub> NAAQS, increase the frequency or severity of any existing violation, or delay timely attainment of any PM<sub>2.5</sub> standard or any required interim PM<sub>2.5</sub> emission reductions or other milestones.

**TABLE 3 - Traffic Data – I-95 Southbound**

<b>Segment</b>	<b>Condition</b>	<b>Existing 2015</b>	<b>No-Build 2040</b>	<b>Build 2040</b>
<b>North of US 40</b>	<b>ADT (vpd)</b>	57,250	73,400	74,850
	<b>Percent Trucks (%)</b>	9	9	9
	<b>Daily Truck Volumes (vpd)</b>	5,153	6,606	6,737
<b>South of Moravia Road</b>	<b>ADT (vpd)</b>	70,050	87,700	89,150
	<b>Percent Trucks (%)</b>	8	8	8
	<b>Daily Truck Volumes (vpd)</b>	5,604	7,016	7,132
<b>South of Eastern Avenue</b>	<b>ADT (vpd)</b>	67,700	81,800	83,250
	<b>Percent Trucks (%)</b>	9	9	9
	<b>Daily Truck Volumes (vpd)</b>	6,093	7,362	7,493
<b>North of O'Donnell Street</b>	<b>ADT (vpd)</b>	72,600	87,280	88,730
	<b>Percent Trucks (%)</b>	9	9	9
	<b>Daily Truck Volumes (vpd)</b>	6,534	7,855	7,986
<b>South of O'Donnell Street</b>	<b>ADT (vpd)</b>	62,100	71,720	73,170
	<b>Percent Trucks (%)</b>	9	9	9
	<b>Daily Truck Volumes (vpd)</b>	5,589	6,455	6,585
<b>South of Keith Avenue</b>	<b>ADT (vpd)</b>	66,500	75,420	76,870
	<b>Percent Trucks (%)</b>	10	10	10
	<b>Daily Truck Volumes (vpd)</b>	6,650	7,542	7,687

**TABLE 4 - Traffic Data – I-95 Northbound**

Segment	Condition	Existing 2015	No-Build 2040	Build 2040
North of US 40	ADT (vpd)	51,950	66,550	67,950
	Percent Trucks (%)	11	11	11
	Daily Truck Volumes (vpd)	5,715	7,321	7,475
South of Moravia Road	ADT (vpd)	66,600	83,150	84,550
	Percent Trucks (%)	9	9	9
	Daily Truck Volumes (vpd)	5,994	7,484	7,610
South of Eastern Avenue	ADT (vpd)	57,250	69,400	70,800
	Percent Trucks (%)	10	10	10
	Daily Truck Volumes (vpd)	5,725	6,940	7,080
North of O'Donnell Street	ADT (vpd)	68,450	82,000	83,400
	Percent Trucks (%)	10	10	10
	Daily Truck Volumes (vpd)	6,845	8,200	8,340
South of O'Donnell Street	ADT (vpd)	58,150	66,850	68,250
	Percent Trucks (%)	10	10	10
	Daily Truck Volumes (vpd)	5,815	6,685	6,825
South of Keith Avenue	ADT (vpd)	61,950	70,200	71,600
	Percent Trucks (%)	10	10	10
	Daily Truck Volumes (vpd)	6,195	7,020	7,160

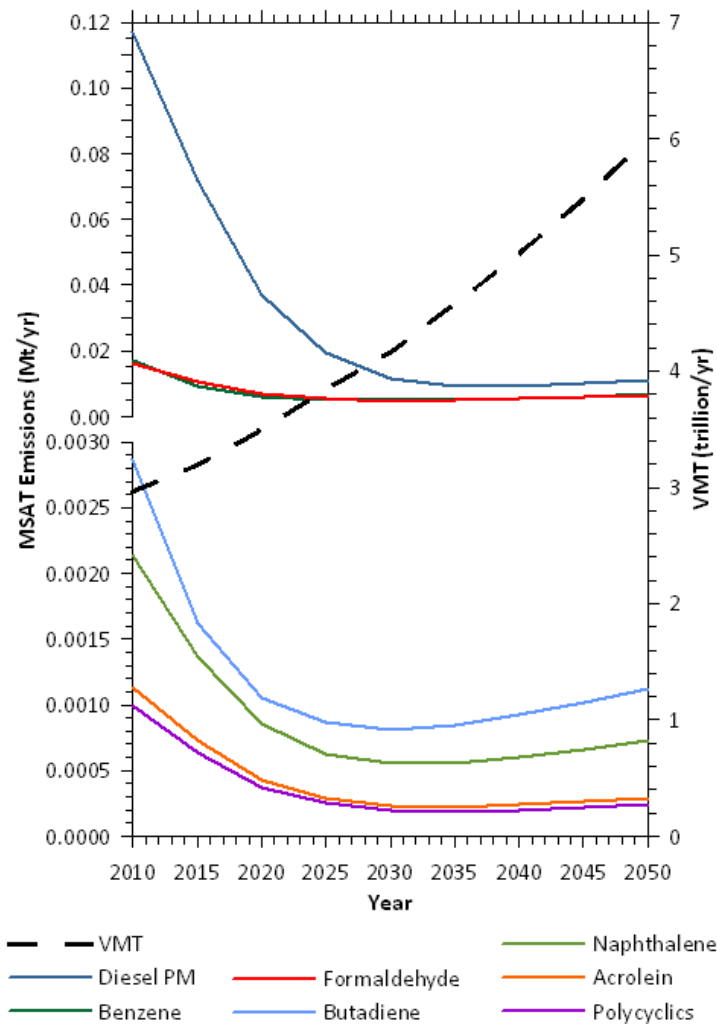
**3. MSAT Assessment**

The FHWA December 2012 *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA* requires an assessment of MSATs under specific conditions. The project qualifies as a programmatic categorical exclusion under 23 CFR 771.117(c). Therefore in accordance with the referenced FHWA guidance, the project would be considered a Project with No Meaningful Potential MSAT Effects.

The purpose of the project is to improve capacity within the project limits. This project has been determined to generate minimal air quality impacts for CAA criteria pollutants and has not been linked with any special MSAT concerns. As such, this project will not result in substantial changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause an increase in MSAT impacts of the project from that of the no-build alternative.

Moreover, EPA regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's Motor Vehicle Emission Simulator (MOVES) model forecasts a combined reduction of over 80 percent in the total annual emission rate for the priority MSAT from 2010 to 2050 while vehicle-miles of travel are projected to increase by over

100 percent (Figure 2). This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this project.



Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors.

Source: EPA MOVES2010b model runs conducted during May - June 2012 by FHWA.

**FIGURE 2 - National MSAT Emission Trends 1999 – 2050 for Vehicles Operating on Roadways Using EPA's MOVES2010b Model**

#### 4. Construction Impacts

The construction phase of the proposed project has the potential to impact the local ambient air quality by generating fugitive dust through activities such as demolition and materials handling. The State of Maryland has addressed this possibility by establishing procedures to be followed by contractors involved in site work through publishing the *Maryland State Highway Administration Standard Specifications for Construction and Materials*. The Maryland Air and

Radiation Management Administration was consulted to determine the adequacy of the specifications in terms of satisfying the requirements of the *Regulations Governing the Control of Air Pollution in the State of Maryland*. The Maryland Air and Radiation Management Administration found the specifications to be consistent with the requirements of these regulations. Therefore, during the construction period, all appropriate measures (Code of Maryland Regulations 26.11.06.03 D) would be incorporated to minimize the impact of the proposed transportation improvements on the air quality of the area. Mobile source emissions can also be minimized during construction by not permitting idling delivery trucks or other equipment during periods of unloading or other non-active use. The existing number of traffic lanes should be maintained during construction, to the maximum extent possible, and construction schedules should be planned in a manner that will not create traffic disruption and increase air pollutants. Application of these measures will ensure that the construction impact of the project is insignificant.

#### **V. INTERAGENCY CONSULTATION GROUP / PUBLIC COORDINATION**

Copies of this air quality analysis will be circulated to FHWA, EPA, MDE, and BRTB staff for a 15 day Interagency Consultation Group review and comment period. FHWA, EPA, and MDE concurred that this project meets the requirements of the CAA and 40 CFR 93 without an additional quantitative hot-spot analysis (**Appendix D**.) BRTB requested confirmation that the year of operation for the project is 2018, which was confirmed by SHA. This air quality analysis will be placed on SHA and MDTA's websites for a 15 day public review and comment period.

## **APPENDIX**

**A - PLANS**

**B - MONITORED AMBIENT AIR QUALITY DATA 2013-2015**

**C - TRAFFIC DATA**

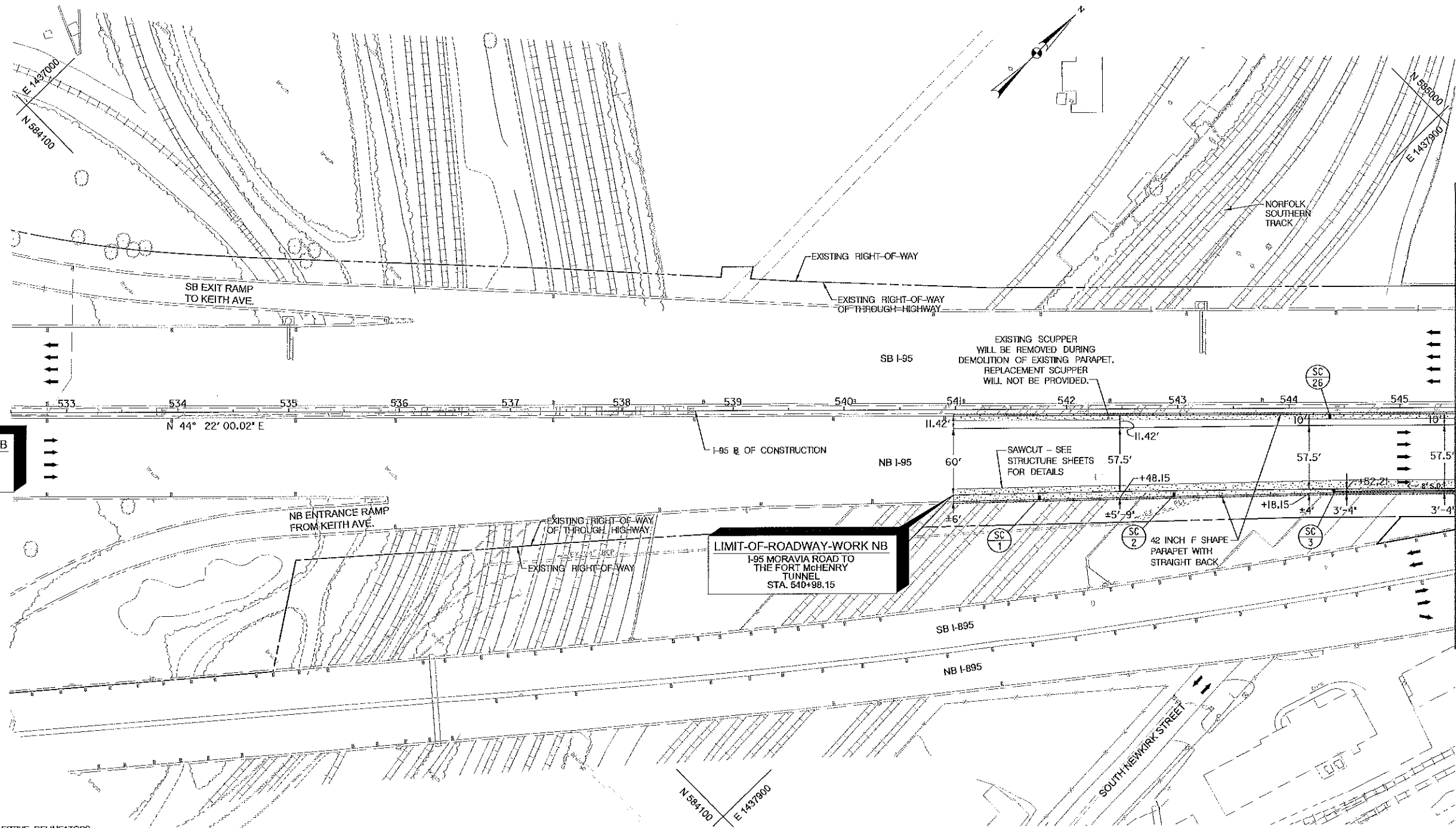
**D - INTERAGENCY CONSULTATION GROUP COORDINATION**

## **APPENDIX A - PLANS**



TO FORT McHENRY TUNNEL

TO WHITE MARSH



**LIMIT-OF-RESTRIPING NB**  
 I-95 MORAVIA ROAD TO THE FORT McHENRY TUNNEL  
 STA. 530+07.95

**LIMIT-OF-ROADWAY-WORK NB**  
 I-95 MORAVIA ROAD TO THE FORT McHENRY TUNNEL  
 STA. 540+98.15

CONCRETE TRAFFIC BARRIER REFLECTIVE DELINEATORS  
 STA. 540+98 TO STA. 545+50, RT MEDIAN 5 EA  
 STA. 540+98 TO STA. 545+50, RT OUTSIDE 5 EA

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-1
GEOMETRIC LAYOUT	GS-1
SUPERELEVATION TABLE	SE-4
TRAFFIC CONTROL	MT-4, MT-24
STRUCTURAL SHEETS	SI-1 TO SI-23
DRAINAGE SCHEDULE	DD-1
SIGNING PLAN	SN-2.01, SN-2.02
LIGHTING PLAN	LT-03, LT-04
ITS PLAN	ITS-02, ITS-03
SEDIMENT CONTROL PLAN	ES-1



**LEGEND**

	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY		PROPOSED INLET/SCUPPER
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT		PROPOSED MOD. TYPE 'S' INLET, 8 LF. RCP AND PIPE CONNECTION
	GRIND AND RESURFACE		SOIL BORING AND BORING NUMBER
	WEDGE AND LEVEL		



81 MOSHER STREET | BALTIMORE, MD 21217  
 PH: (410) 728-2900 FAX: (410) 728-3150

Engineers Construction Managers Planners Scientists  
 www.rk.com



**MARYLAND TRANSPORTATION AUTHORITY**

Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
 I-95 (BALTIMORE CITY)  
 ROADWAY PLAN

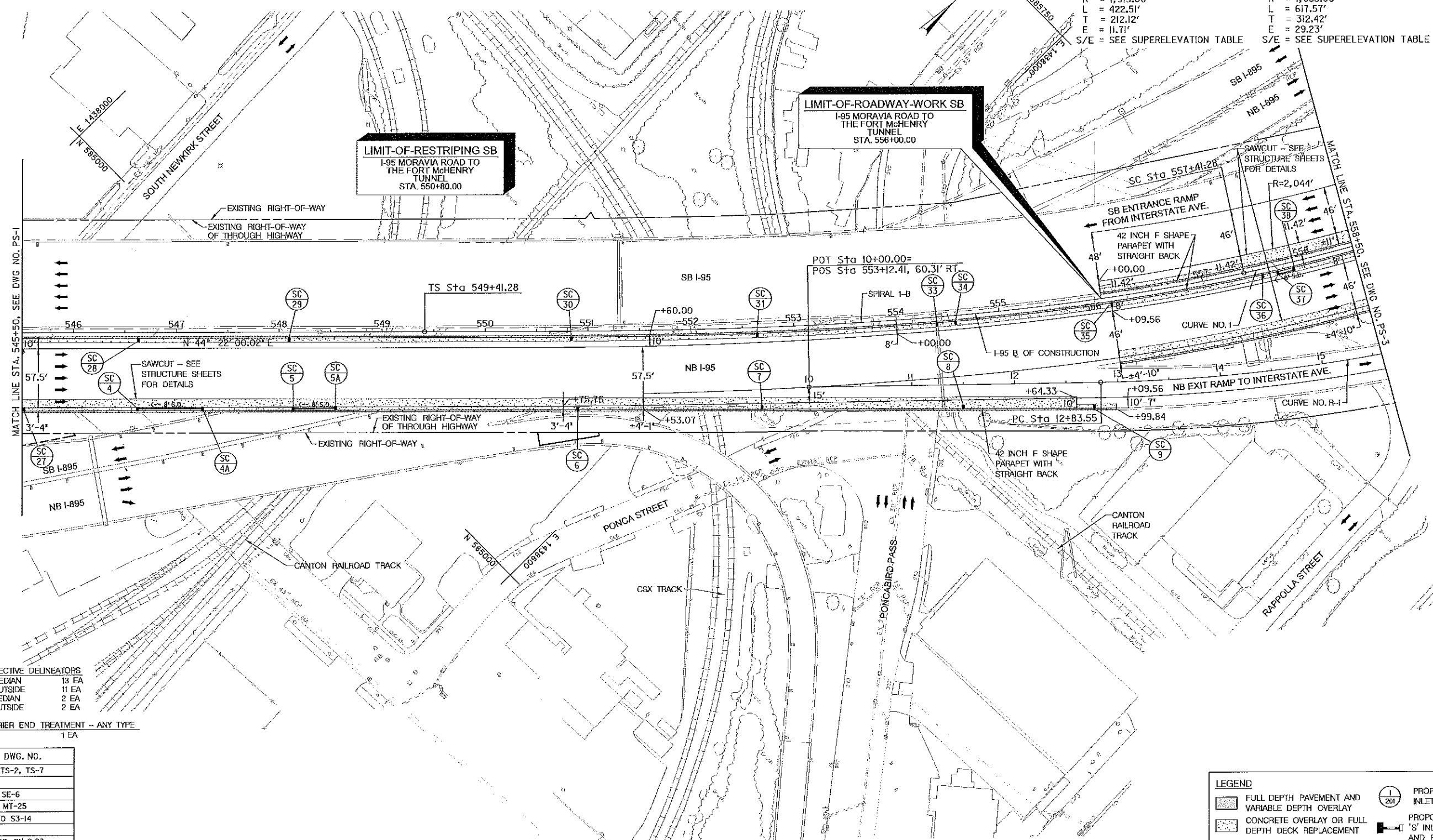
DESIGNED BY: D.I.R.    DRAWN BY: A.W.G.    CHECKED BY: J.M.R.  
 CONST. REVIEW BY:    DATE: MAY 2016    SCALE: AS SHOWN

CONTRACT NO. FT-3003  
 DRAWING NO. PS-1 of 16  
 SHEET NO. 24 OF 488

TO FORT McHENRY TUNNEL

TO WHITE MARSH

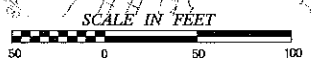
CURVE NO. 1	CURVE NO. R-1
P.I. N 585,893.5818	P.I. N 585,767.2789
E 1,439,002.5954	E 1,439,082.6039
$\Delta = 12^\circ - 38' - 28.37''$	$\Delta = 21^\circ - 22' - 48.94''$
$Dc = 2^\circ - 59' - 31.01''$	$Dc = 3^\circ - 27' - 43.13''$
R = 1,915.00'	R = 1,655.00'
L = 422.51'	L = 617.57'
T = 212.12'	T = 312.42'
E = 11.71'	E = 29.23'
S/E = SEE SUPERELEVATION TABLE	S/E = SEE SUPERELEVATION TABLE



CONCRETE TRAFFIC BARRIER REFLECTIVE DELINEATORS  
 STA. 545+50 TO STA. 558+50, RT MEDIAN 13 EA  
 STA. 545+50 TO STA. 556+00, RT OUTSIDE 11 EA  
 STA. 556+00 TO STA. 558+50, LT MEDIAN 2 EA  
 STA. 556+10 TO STA. 558+50, RT OUTSIDE 2 EA

REMOVE AND RESET TRAFFIC BARRIER END TREATMENT - ANY TYPE  
 STA. 555+86 TO STA. 556+10, RT 1 EA

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-1, TS-2, TS-7
GEOMETRIC LAYOUT	GS-1
SUPERELEVATION TABLE	SE-4, SE-6
TRAFFIC CONTROL	MT-5, MT-25
STRUCTURAL SHEETS	S2-1 TO S3-14
DRAINAGE SCHEDULE	DD-1
SIGNING PLAN	SN-2.02, SN-2.03
LIGHTING PLAN	LT-04, LT-05
ITS PLAN	ITS-03, ITS-04
SEDIMENT CONTROL PLAN	ES-2



LEGEND	
	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT
	GRIND AND RESURFACE
	WEDGE AND LEVEL
	PROPOSED INLET/SCUPPER
	PROPOSED MOD. TYPE 'S' INLET, 8 L.F. RCP AND PIPE CONNECTION
	SOIL BORING AND BORING NUMBER

**RK&K**  
 81 MOSHER STREET | BALTIMORE, MD 21217  
 P: (410) 728-8900 F: (410) 728-2100  
 Engineers Construction Managers Planners Scientists  
 www.rk&k.com

**MARYLAND TRANSPORTATION AUTHORITY**  
 Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

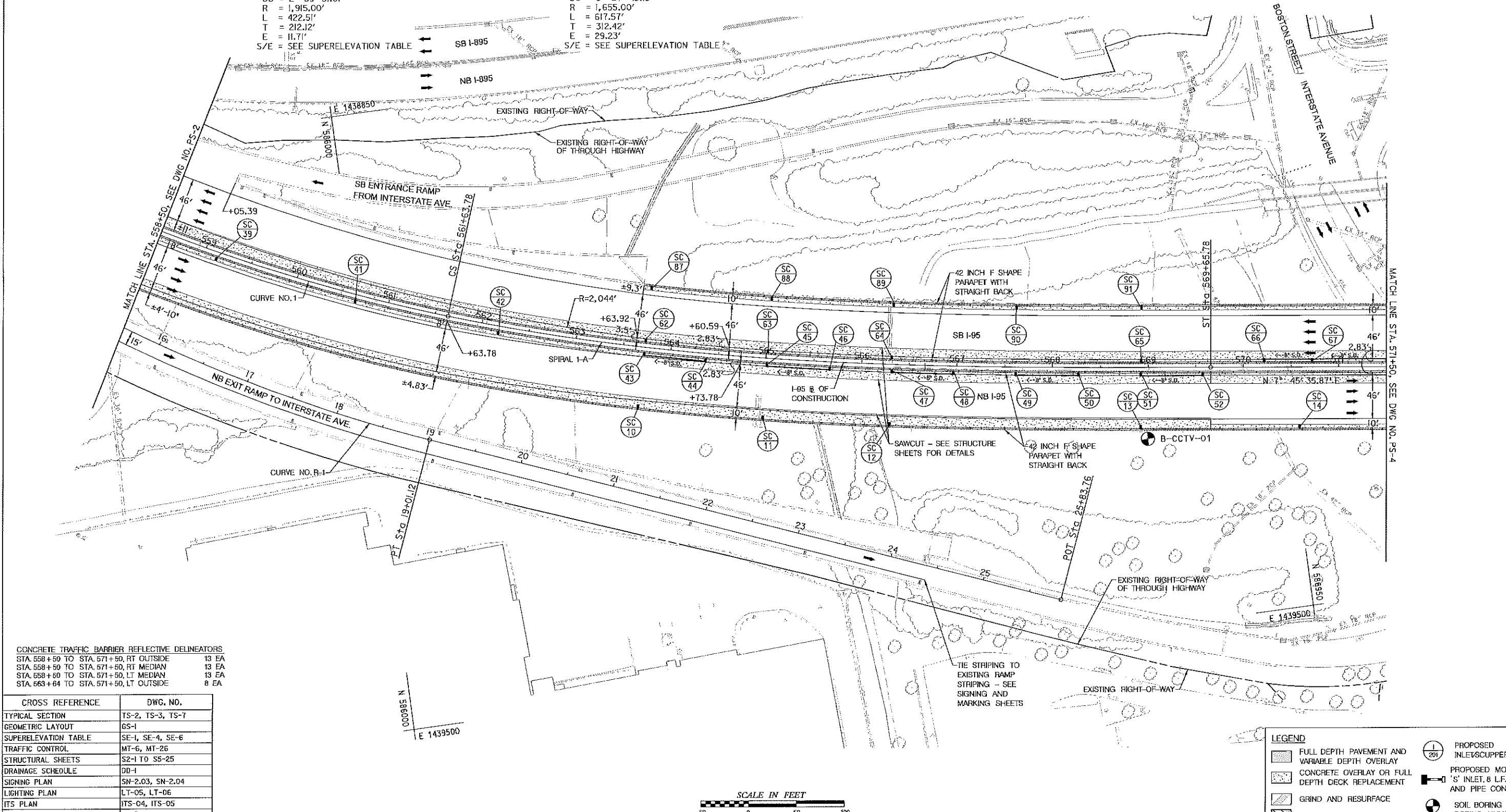
**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
 I-95 (BALTIMORE CITY)  
 ROADWAY PLAN

DESIGNED BY D.L.R. DRAWN BY A.W.G. CHECKED BY J.M.R.  
 CONST. REVIEW BY   DATE MAY 2016 SCALE AS SHOWN

CONTRACT NO. FT-3003  
 DRAWING NO. **PS-2 of 16**  
 SHEET NO. 25 OF 488

**CURVE NO. 1**  
 P.I. N 585,893.5818  
 E 1,439,002.5954  
 $\Delta = 12^\circ - 38' - 28.37''$   
 $Dc = 2^\circ - 59' - 31.01''$   
 R = 1,915.00'  
 L = 422.51'  
 T = 212.12'  
 E = 11.71'  
 S/E = SEE SUPERELEVATION TABLE

**CURVE NO. R-1**  
 P.I. N 585,767.2789  
 E 1,439,082.6039  
 $\Delta = 21^\circ - 22' - 48.94''$   
 $Dc = 3^\circ - 27' - 43.13''$   
 R = 1,655.00'  
 L = 617.57'  
 T = 312.42'  
 E = 29.23'  
 S/E = SEE SUPERELEVATION TABLE



**CONCRETE TRAFFIC BARRIER REFLECTIVE DELINEATORS**  
 STA. 558+50 TO STA. 571+50, RT OUTSIDE 13 EA  
 STA. 558+50 TO STA. 571+50, RT MEDIAN 13 EA  
 STA. 558+50 TO STA. 571+50, LT MEDIAN 13 EA  
 STA. 563+64 TO STA. 571+50, LT OUTSIDE 8 EA

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-2, TS-3, TS-7
GEOMETRIC LAYOUT	GS-1
SUPERELEVATION TABLE	SE-1, SE-4, SE-6
TRAFFIC CONTROL	MT-6, MT-26
STRUCTURAL SHEETS	S2-1 TO S5-25
DRAINAGE SCHEDULE	DD-1
SIGNING PLAN	SN-2.03, SN-2.04
LIGHTING PLAN	LT-05, LT-06
ITS PLAN	ITS-04, ITS-05
SEDIMENT CONTROL PLAN	ES-3
SOIL BORING SHEETS	SB-1



**LEGEND**

	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY		PROPOSED INLET/SCUPPER
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT		PROPOSED MOD. TYPE 'S' INLET, 8 L.F. RCP AND PIPE CONNECTION
	GRIND AND RESURFACE		SOIL BORING AND BORING NUMBER
	WEDGE AND LEVEL		

**RK&K**  
 81 HOSHER STREET | BALTIMORE, MD 21217  
 PH: (410) 728-2500 FAX: (410) 728-3160  
 Engineers Construction Managers Planners Scientists  
 www.rk&k.com

**MARYLAND TRANSPORTATION AUTHORITY**  
 Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
 I-95 (BALTIMORE CITY)  
 ROADWAY PLAN

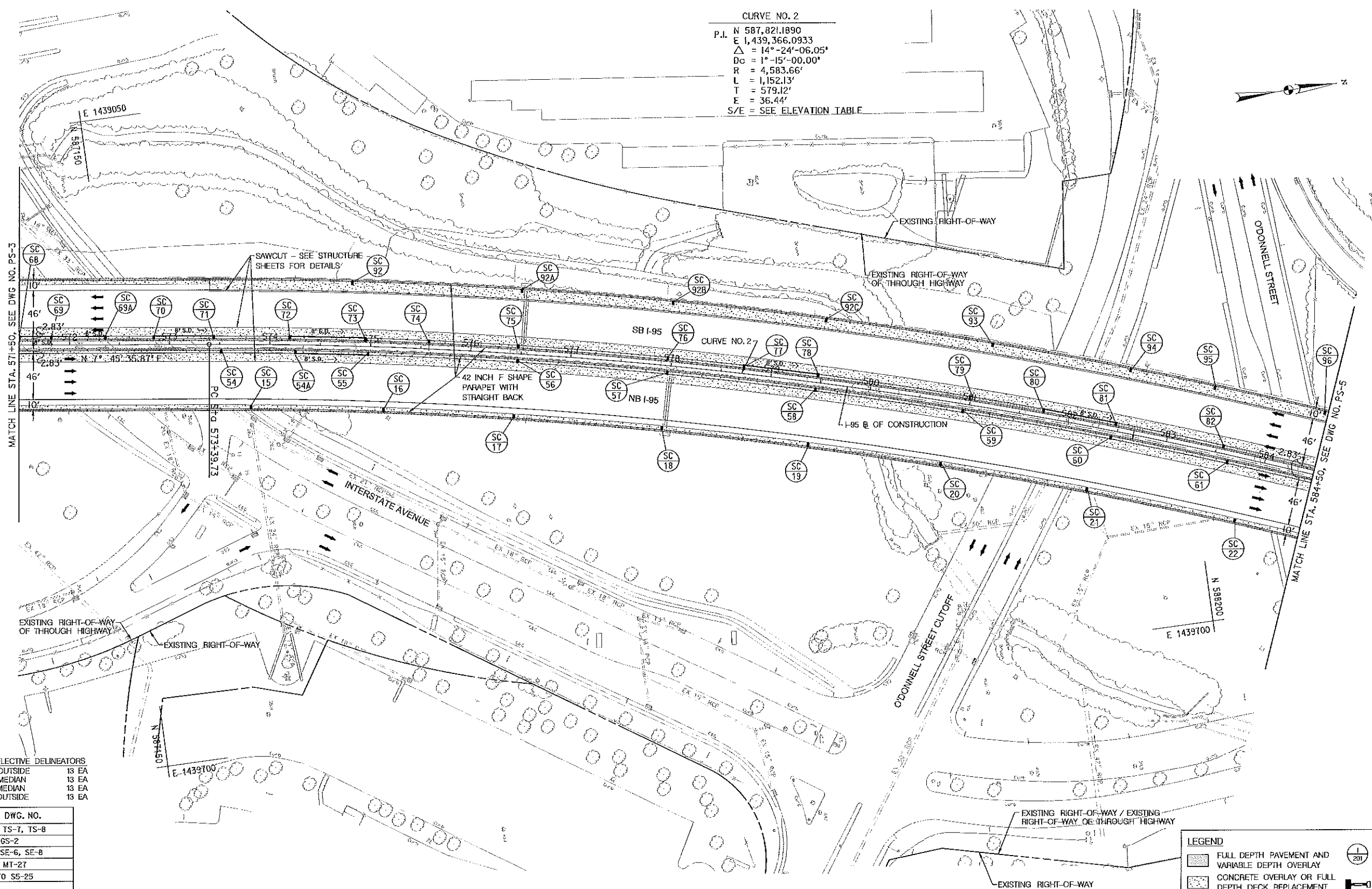
DESIGNED BY D.J.R. DRAWN BY A.W.C. CHECKED BY J.M.R.  
 CONST. REVIEW BY   DATE MAY 2016 SCALE AS SHOWN

CONTRACT NO. FT-3003  
 DRAWING NO. **PS-3 of 16**  
 SHEET NO. 26 OF 488

TO FORT McHENRY TUNNEL

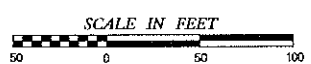
TO WHITE MARSH

CURVE NO. 2  
 P.I. N 587,821.1890  
 E 1,439,366.0933  
 $\Delta = 14^\circ - 24' - 06.05''$   
 $Dc = 1^\circ - 15' - 00.00''$   
 $R = 4,583.66'$   
 $L = 1,152.13'$   
 $T = 579.12'$   
 $E = 36.44'$   
 S/E = SEE ELEVATION TABLE



CONCRETE TRAFFIC BARRIER REFLECTIVE DELINEATORS  
 STA. 571+50 TO STA. 584+50, RT OUTSIDE 13 EA  
 STA. 571+50 TO STA. 584+50, RT MEDIAN 13 EA  
 STA. 571+50 TO STA. 584+50, LT MEDIAN 13 EA  
 STA. 571+50 TO STA. 584+50, LT OUTSIDE 13 EA

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-3, TS-7, TS-8
GEOMETRIC LAYOUT	GS-1, GS-2
SUPERELEVATION TABLE	SE-1, SE-6, SE-8
TRAFFIC CONTROL	MT-7, MT-27
STRUCTURAL SHEETS	S4-1 TO S5-25
DRAINAGE SCHEDULE	DD-1
SIGNING PLAN	SN-2.04, SN-2.05
LIGHTING PLAN	LT-06, LT-07
ITS PLAN	ITS-05, ITS-06
SEDIMENT CONTROL PLAN	ES-4



LEGEND	
	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT
	GRIND AND RESURFACE
	WEDGE AND LEVEL
	PROPOSED INLET/SCUPPER
	PROPOSED MOD. TYP 'S' INLET, 8 L.F. RCP AND PIPE CONNECTION
	SOIL BORING AND BORING NUMBER

**RK&K**  
 81 MOSHER STREET | BALTIMORE, MD 21217  
 PH: (410) 728-2900 FAX: (410) 728-2160  
 Engineers Construction Managers Planners Scientists  
 www.rkandk.com

**MARYLAND TRANSPORTATION AUTHORITY**  
 Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
 I-95 (BALTIMORE CITY)  
 ROADWAY PLAN

DESIGNED BY D.L.R. DRAWN BY A.W.G. CHECKED BY J.M.R.  
 CONST. REVIEW BY   DATE MAY 2016 SCALE AS SHOWN

CONTRACT NO. FT-3003  
 DRAWING NO. **PS-4 of 16**  
 SHEET NO. 27 OF 488

TO FORT McHENRY TUNNEL

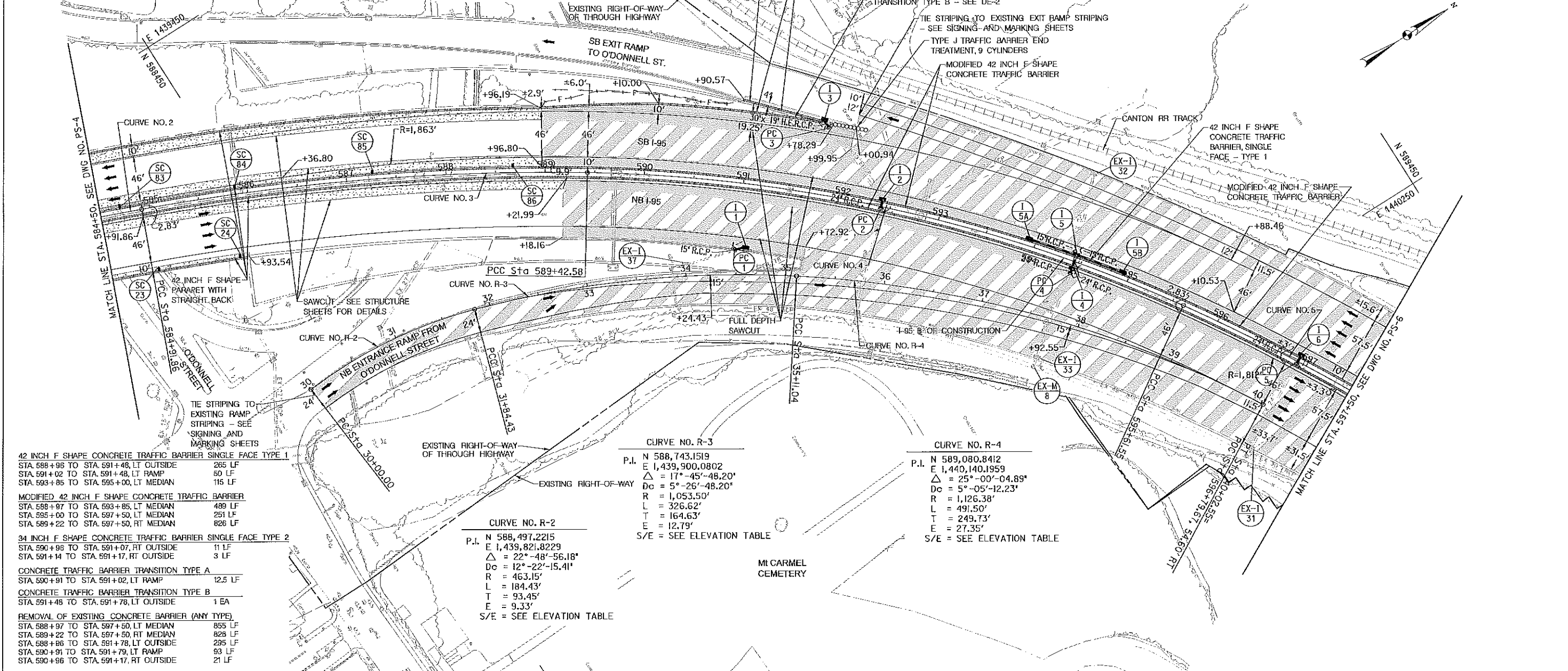
TO WHITE MARSH

**CURVE NO. 2**  
 P.I. N 587,821.1890  
 E 1,439,366.0933  
 $\Delta = 14^\circ-24'-06.05''$   
 $Dc = 1^\circ-15'-00.00''$   
 $R = 4,583.66'$   
 $L = 1,152.13'$   
 $T = 579.12'$   
 $E = 36.44'$   
 S/E = SEE ELEVATION TABLE

**CURVE NO. 3**  
 P.I. N 588,566.9113  
 E 1,439,669.8347  
 $\Delta = 11^\circ-16'-36.99''$   
 $Dc = 2^\circ-30'-07.20''$   
 $R = 2,290.00'$   
 $L = 450.72'$   
 $T = 226.09'$   
 $E = 11.13'$   
 S/E = SEE ELEVATION TABLE

**CURVE NO. 4**  
 P.I. N 589,017.4429  
 E 1,439,967.3411  
 $\Delta = 23^\circ-15'-19.95''$   
 $Dc = 3^\circ-45'-25.56''$   
 $R = 1,525.00'$   
 $L = 618.98'$   
 $T = 313.81'$   
 $E = 31.95'$   
 S/E = SEE ELEVATION TABLE

**CURVE NO. 5**  
 P.I. N 589,428.4035  
 E 1,440,592.8292  
 $\Delta = 25^\circ-38'-23.16''$   
 $Dc = 3^\circ-00'-00.00''$   
 $R = 1,909.86'$   
 $L = 854.66'$   
 $T = 434.61'$   
 $E = 48.83'$   
 S/E = SEE ELEVATION TABLE



- 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1  
 STA 588+96 TO STA. 591+48, LT OUTSIDE 265 LF  
 STA 591+02 TO STA. 591+48, LT RAMP 50 LF  
 STA 593+85 TO STA. 595+00, LT MEDIAN 115 LF
- MODIFIED 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER  
 STA 588+97 TO STA. 593+85, LT MEDIAN 489 LF  
 STA 595+00 TO STA. 597+50, LT MEDIAN 281 LF  
 STA 589+22 TO STA. 597+50, RT MEDIAN 826 LF
- 34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 2  
 STA 590+96 TO STA. 591+07, RT OUTSIDE 11 LF  
 STA 591+14 TO STA. 591+17, RT OUTSIDE 3 LF
- CONCRETE TRAFFIC BARRIER TRANSITION TYPE A  
 STA 590+91 TO STA. 591+02, LT RAMP 12.5 LF
- CONCRETE TRAFFIC BARRIER TRANSITION TYPE B  
 STA 591+48 TO STA. 591+78, LT OUTSIDE 1 EA
- REMOVAL OF EXISTING CONCRETE BARRIER (ANY TYPE)  
 STA 588+97 TO STA. 597+50, LT MEDIAN 855 LF  
 STA 589+22 TO STA. 597+50, RT MEDIAN 826 LF  
 STA 588+86 TO STA. 591+78, LT OUTSIDE 295 LF  
 STA 590+91 TO STA. 591+79, LT RAMP 93 LF  
 STA 590+96 TO STA. 591+17, RT OUTSIDE 21 LF

**CURVE NO. R-2**  
 P.I. N 588,497.2215  
 E 1,439,821.8229  
 $\Delta = 22^\circ-48'-56.18''$   
 $Dc = 12^\circ-22'-15.41''$   
 $R = 463.15'$   
 $L = 184.43'$   
 $T = 93.45'$   
 $E = 9.33'$   
 S/E = SEE ELEVATION TABLE

**CURVE NO. R-3**  
 P.I. N 588,743.1519  
 E 1,439,900.0802  
 $\Delta = 17^\circ-45'-48.20''$   
 $Dc = 5^\circ-26'-48.20''$   
 $R = 1,053.50'$   
 $L = 326.62'$   
 $T = 164.63'$   
 $E = 12.79'$   
 S/E = SEE ELEVATION TABLE

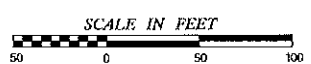
**CURVE NO. R-4**  
 P.I. N 589,080.8412  
 E 1,440,140.1959  
 $\Delta = 25^\circ-00'-04.89''$   
 $Dc = 5^\circ-05'-12.23''$   
 $R = 1,126.38'$   
 $L = 491.50'$   
 $T = 249.73'$   
 $E = 27.35'$   
 S/E = SEE ELEVATION TABLE

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-3, TS-8, TS-9
GEOMETRIC LAYOUT	GS-2
SUPERELEVATION TABLE	SE-1, SE-6, SE-7, SE-8
TRAFFIC CONTROL	MT-8, MT-28
STRUCTURAL SHEETS	S4-1 TO S5-25
DRAINAGE SCHEDULE	DD-1, DD-2
SIGNING PLAN	SN-2.05, SN-2.06
LIGHTING PLAN	LT-07, LT-08
ITS PLAN	ITS-06, ITS-07
SEDIMENT CONTROL PLAN	ES-5

CONCRETE TRAFFIC BARRIER REFLECTIVE DELINEATORS  
 STA 584+50 TO STA. 597+50, LT MEDIAN 13 EA  
 STA 584+50 TO STA. 597+50, RT MEDIAN 13 EA  
 STA 584+50 TO STA. 591+78, LT OUTSIDE 8 EA  
 STA 584+50 TO STA. 585+94, RT OUTSIDE 1 EA  
 STA 590+91 TO STA. 591+79, LT RAMP 1 EA

TYPE J TRAFFIC BARRIER END TREATMENT, 9 CYLINDERS  
 STA 591+96, LT GORE 1 EA

GRINDING ASPHALT PAVEMENT 0 INCH TO 2 INCHES  
 STA 588+97 TO STA. 597+50, LT 7,085 SY  
 STA 589+18 TO STA. 597+50, RT 9,119 SY



LEGEND	
	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT
	GRIND AND RESURFACE
	WEDGE AND LEVEL
	PROPOSED INLET/SCUPPER
	PROPOSED MOD. TYPE 'S' INLET, 8 L.F. RCP AND PIPE CONNECTION
	SOIL BORING AND BORING NUMBER

**RK&K**  
 81 MOSHER STREET | BALTIMORE, MD 21217  
 PH: (410) 728-2500 FAX: (410) 728-1100  
 Engineers Construction Managers Planners Scientists  
 www.rk.com

**MARYLAND TRANSPORTATION AUTHORITY**  
 Engineering Division

ADDENDUMS & REVISIONS		
NO.	DESCRIPTION	BY DATE

**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
 I-95 (BALTIMORE CITY)  
 ROADWAY PLAN

DESIGNED BY D.I.R. DRAWN BY A.W.G. CHECKED BY J.M.R. SHEET NO. 28 OF 488  
 CONST. REVIEW BY   DATE MAY 2016 SCALE AS SHOWN

CONTRACT NO. FT-3003  
 DRAWING NO. **PS-5 of 16**  
 Monday, May 23, 2016 AT 10:46 AM

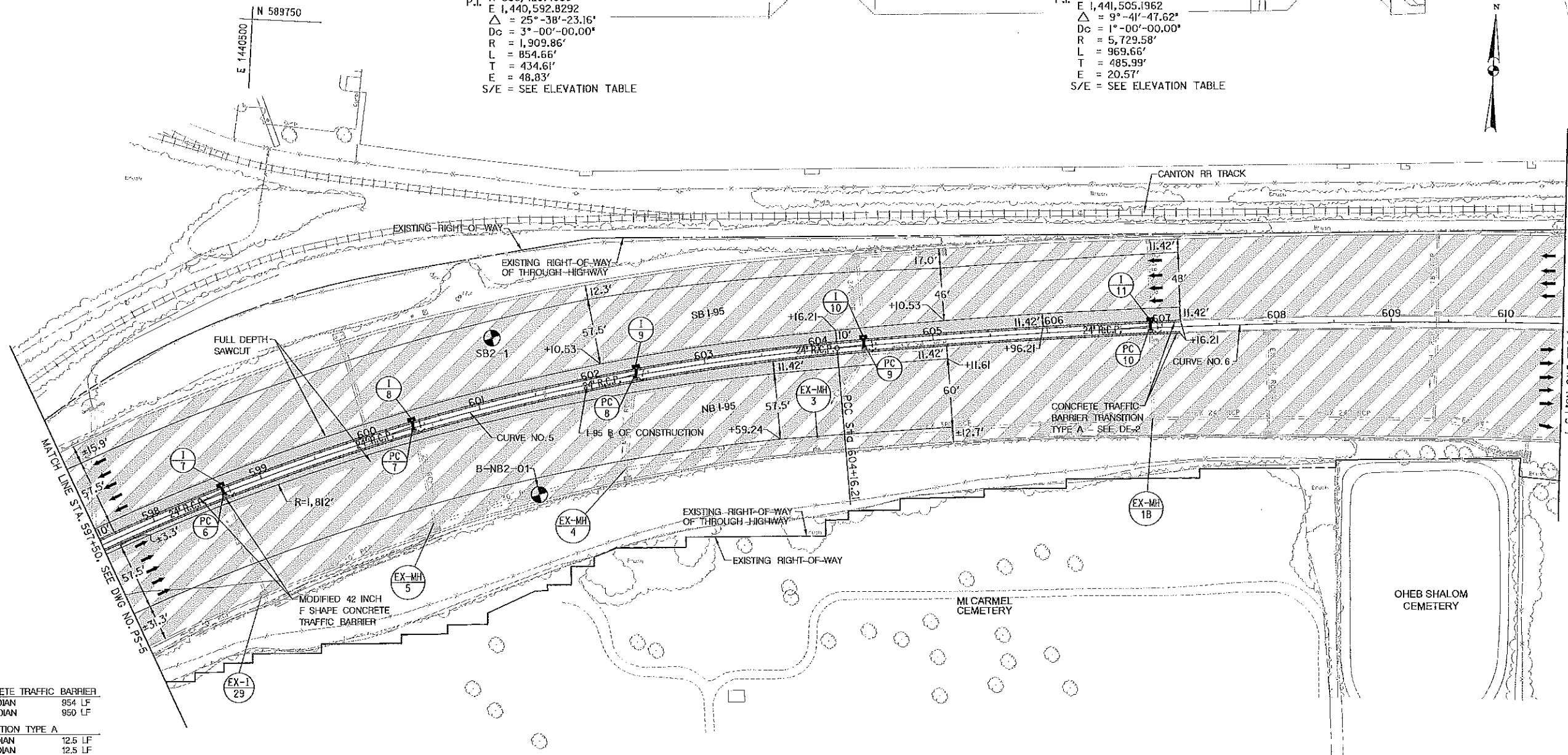


TO FORT McHENRY TUNNEL

TO WHITE MARSH

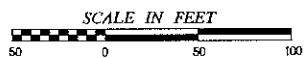
**CURVE NO. 5**  
 P.I. N 589,428.4035  
 E 1,440,592.8292  
 $\Delta = 25^\circ-38'-23.16''$   
 $Dc = 3^\circ-00'-00.00''$   
 $R = 1,909.86'$   
 $L = 854.66'$   
 $T = 434.61'$   
 $E = 48.83'$   
 S/E = SEE ELEVATION TABLE

**CURVE NO. 6**  
 P.I. N 589,551.2108  
 E 1,441,505.1962  
 $\Delta = 9^\circ-41'-47.62''$   
 $Dc = 1^\circ-00'-00.00''$   
 $R = 5,729.58'$   
 $L = 969.66'$   
 $T = 485.99'$   
 $E = 20.57'$   
 S/E = SEE ELEVATION TABLE



- MODIFIED 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER**  
 STA. 597+50 TO STA. 607+04, LT MEDIAN 854 LF  
 STA. 597+50 TO STA. 607+04, RT MEDIAN 950 LF
- CONCRETE TRAFFIC BARRIER TRANSITION TYPE A**  
 STA. 607+04 TO STA. 607+16, LT MEDIAN 12.5 LF  
 STA. 607+04 TO STA. 607+16, RT MEDIAN 12.5 LF
- REMOVAL OF EXISTING CONCRETE BARRIER (ANY TYPE)**  
 STA. 597+50 TO STA. 607+16, LT MEDIAN 987 LF  
 STA. 597+50 TO STA. 607+16, RT MEDIAN 983 LF
- CONCRETE TRAFFIC BARRIER REFLECTIVE DELINEATORS**  
 STA. 597+50 TO STA. 607+16, LT MEDIAN 10 EA  
 STA. 597+50 TO STA. 607+16, RT MEDIAN 10 EA
- GRINDING ASPHALT PAVEMENT 0 INCH TO 2 INCHES**  
 STA. 597+50 TO STA. 610+50, LT 11,207 SY  
 STA. 597+50 TO STA. 610+50, RT 12,441 SY

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-3, TS-9
GEOMETRIC LAYOUT	GS-2, GS-3
SUPERELEVATION TABLE	SE-1, SE-2, SE-7
TRAFFIC CONTROL	MT-9, MT-29
DRAINAGE SCHEDULE	DD-2
SIGNING PLAN	SN-2.05, SN-2.07
LIGHTING PLAN	LT-08, LT-09
ITS PLAN	ITS-07, ITS-08
SEDIMENT CONTROL PLAN	ES-6
SOIL BORING SHEETS	SB-2



**LEGEND**

	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY		PROPOSED INLET/SCUPPER
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT		PROPOSED MOD. TYPE 'S' INLET, 8 L.F. RCP AND PIPE CONNECTION
	GRIND AND RESURFACE		SOIL BORING AND BORING NUMBER
	WEDGE AND LEVEL		

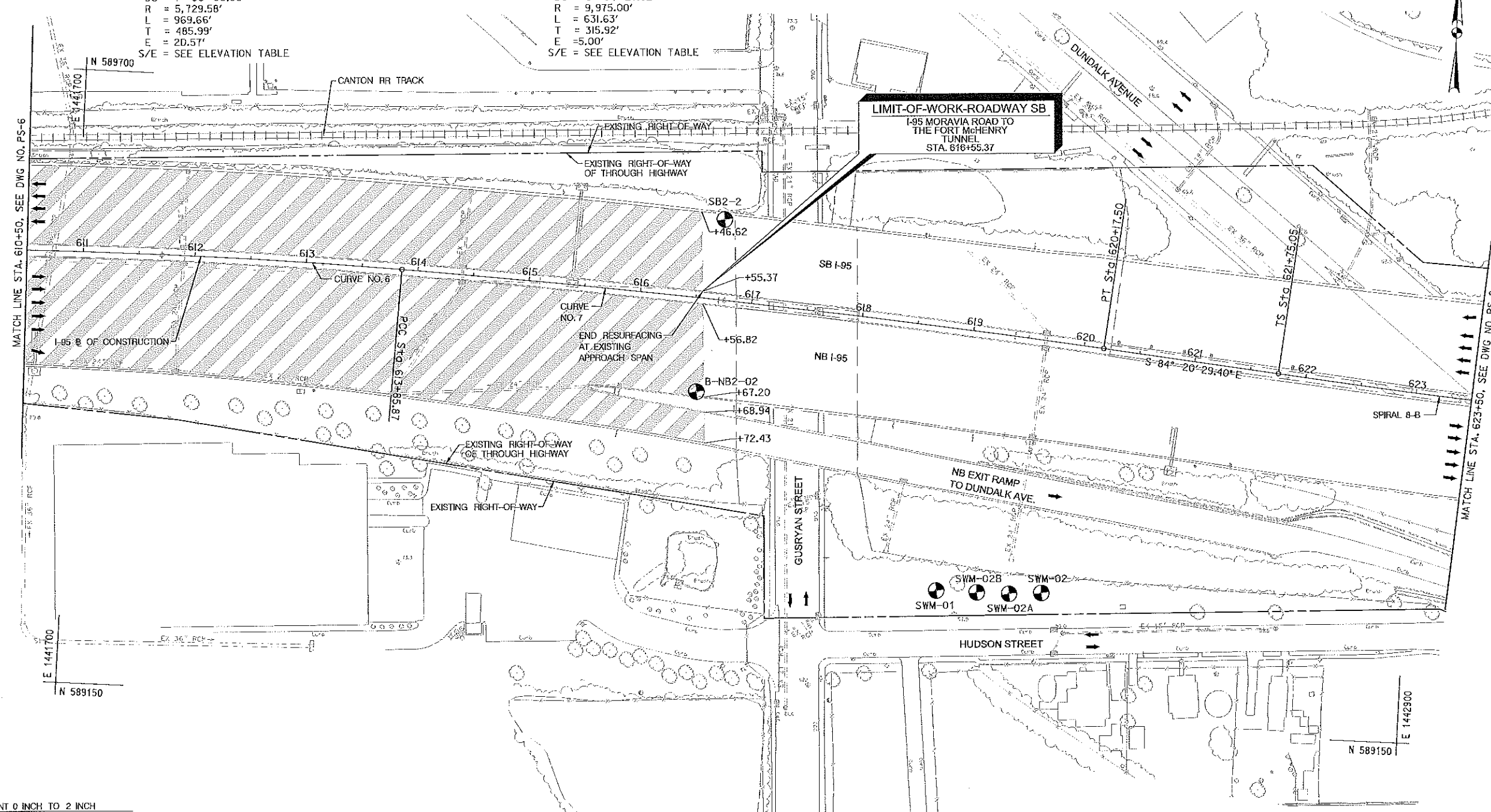


ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

<b>I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL</b>			CONTRACT NO. FT-3003
I-95 (BALTIMORE CITY) ROADWAY PLAN			DRAWING NO. <b>PS-6 of 16</b>
DESIGNED BY D.J.R.	DRAWN BY A.W.G.	CHECKED BY J.M.R.	SHEET NO. 29 OF 488
CONST. REVIEW BY	DATE MAY 2016	SCALE AS SHOWN	

**CURVE NO. 6**  
 P.I. N 589,551.2108  
 E 1,441,505.1962  
 $\Delta = 9^{\circ}-41'-47.62''$   
 $D_c = 1^{\circ}-00'-00.00''$   
 $R = 5,729.58'$   
 $L = 969.66'$   
 $T = 485.99'$   
 $E = 20.57'$   
 S/E = SEE ELEVATION TABLE

**CURVE NO. 7**  
 P.I. N 589,522.7986  
 E 1,442,306.6017  
 $\Delta = 3^{\circ}-37'-40.95''$   
 $D_c = 0^{\circ}-34'-27.82''$   
 $R = 9,975.00'$   
 $L = 631.63'$   
 $T = 315.92'$   
 $E = 5.00'$   
 S/E = SEE ELEVATION TABLE



GRINDING ASPHALT PAVEMENT 0 INCH TO 2 INCH  
 STA. 610+50 TO STA. 618+55, LT 4,724 SY  
 STA. 610+50 TO STA. 618+57, RT 7,118 SY

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-9
GEOMETRIC LAYOUT	GS-3
TRAFFIC CONTROL	MT-10, MT-30
SIGNING PLAN	SN-2.07
LIGHTING PLAN	LT-09, LT-10
ITS PLAN	ITS-08
SEDIMENT CONTROL PLAN	ES-7
SOIL BORING SHEETS	SB-3, SB-4



**LEGEND**

	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY		PROPOSED INLET/SCUPPER
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT		PROPOSED MOD. TYPE 'S' INLET, 8 L.F. RCP AND PIPE CONNECTION
	GRIND AND RESURFACE		SOIL BORING AND BORING NUMBER
	WEDGE AND LEVEL		

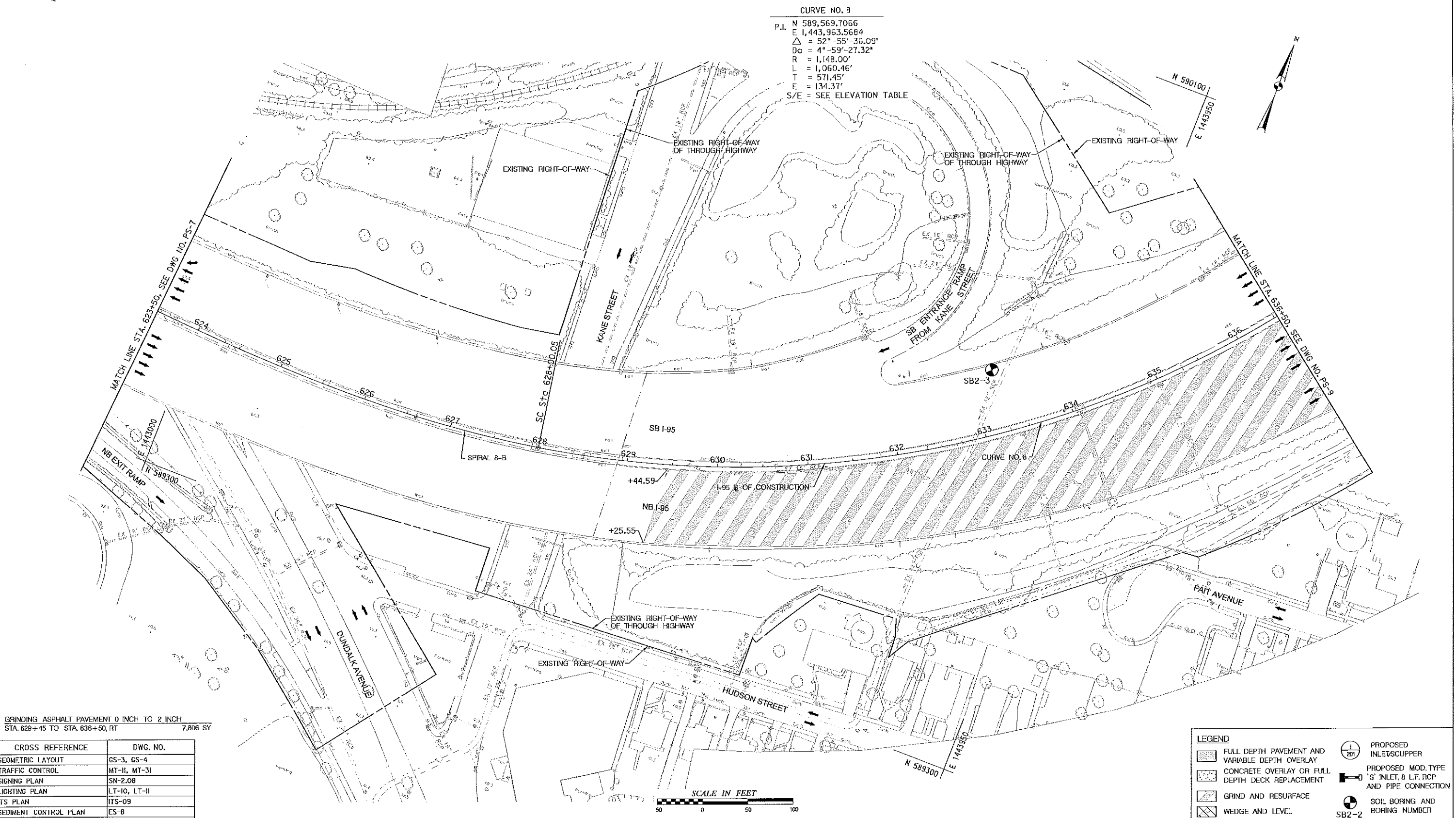
**RK&K**  
 81 MOSHER STREET | BALTIMORE, MD 21217  
 PH: (410) 728-2900 FAX: (410) 728-3192  
 Engineers Construction Managers Planners Scientists  
 www.rk.com

**MARYLAND TRANSPORTATION AUTHORITY**  
 Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
 I-95 (BALTIMORE CITY)  
 ROADWAY PLAN

DESIGNED BY <u>D.J.R.</u>	DRAWN BY <u>A.W.G.</u>	CHECKED BY <u>J.M.R.</u>	CONTRACT NO. FT-3003
CONST. REVIEW BY	DATE <u>MAY 2016</u>	SCALE <u>AS SHOWN</u>	DRAWING NO. <b>PS-7 of 16</b>
			SHEET NO. 30 OF 488

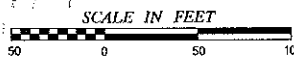


CURVE NO. 8  
 P.I. N 589,569.7066  
 E 1,443,963.5684  
 $\Delta = 52^\circ - 55' - 36.09''$   
 $D_c = 4^\circ - 59' - 27.32''$   
 $R = 1,148.00'$   
 $L = 1,060.46'$   
 $T = 571.45'$   
 $E = 134.37'$   
 S/E = SEE ELEVATION TABLE

GRINDING ASPHALT PAVEMENT 0 INCH TO 2 INCH  
 STA. 629+45 TO STA. 636+50, RT 7,806 SY

CROSS REFERENCE	DWG. NO.
GEOMETRIC LAYOUT	GS-3, GS-4
TRAFFIC CONTROL	MT-II, MT-3I
SIGNING PLAN	SN-2.08
LIGHTING PLAN	LT-10, LT-11
ITS PLAN	ITS-09
SEDIMENT CONTROL PLAN	ES-8
SOIL BORING SHEETS	SB-5

LEGEND	
	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT
	GRIND AND RESURFACE
	WEDGE AND LEVEL
	PROPOSED INLET/SCUPPER
	PROPOSED MOD. TYPE 'S' INLET, 8 L.F. RCP AND PIPE CONNECTION
	SOIL BORING AND BORING NUMBER



**RK&K**  
 81 MOSHER STREET | BALTIMORE, MD 21217  
 PH: (410) 728-2900 FAX: (410) 728-3100  
 Engineers Construction Managers Planners Scientists  
 www.rk.com

**MARYLAND TRANSPORTATION AUTHORITY**  
 Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
 I-95 (BALTIMORE CITY)  
 ROADWAY PLAN

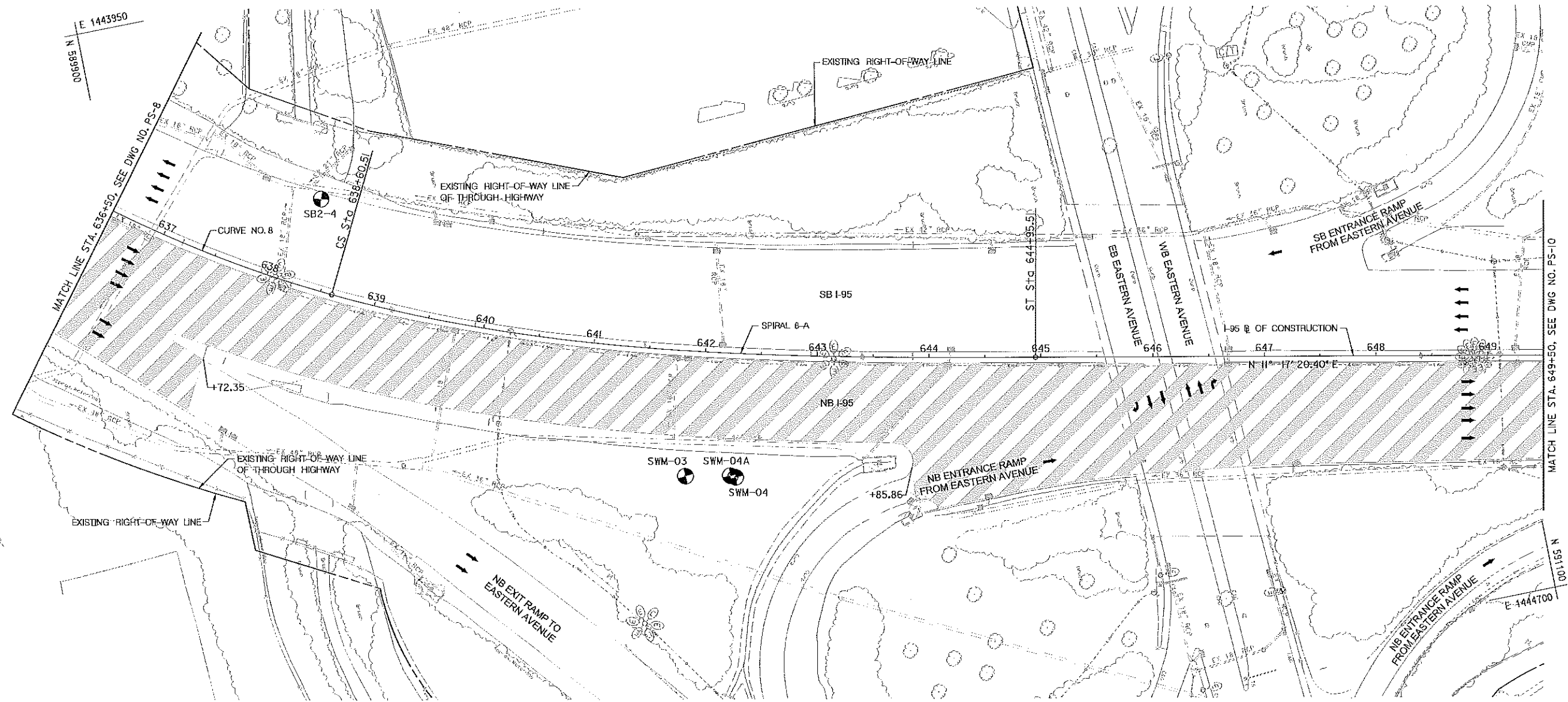
DESIGNED BY D.L.R. DRAWN BY A.W.G. CHECKED BY J.M.R.  
 CONST. REVIEW BY   DATE MAY 2016 SCALE AS SHOWN

CONTRACT NO. FT-3003  
 DRAWING NO. **PS-8 of 16**  
 SHEET NO. 31 OF 488



TO FORT McHENRY TUNNEL

TO WHITE MARSH



GRINDING ASPHALT PAVEMENT 0 INCH TO 2 INCHES  
 STA. 636+50 TO STA. 649+50, RT 12,862 SY

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-4
GEOMETRIC LAYOUT	GS-4
TRAFFIC CONTROL	MT-12, MT-22
SIGNING PLAN	SN-2,09
LIGHTING PLAN	LT-11, LT-12
ITS PLAN	ITS-10
SEDIMENT CONTROL PLAN	ES-9
STORMWATER MANAGEMENT PLAN	SW-5
SOIL BORING SHEETS	SB-6

N 589300  
 E 1444700



LEGEND	
	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT
	GRIND AND RESURFACE
	WEDGE AND LEVEL
	PROPOSED INLET/SCUPPER
	PROPOSED MOD. TYPE 'S' INLET, 8 L.F. RCP AND PIPE CONNECTION
	SOIL BORING AND BORING NUMBER

81 MOSHER STREET | BALTIMORE, MD 21217  
 PH: (410) 728-2300 FAX: (410) 728-0160  
 Engineers Construction Managers Planners Scientists  
 www.rk.com

**MARYLAND TRANSPORTATION AUTHORITY**  
 Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

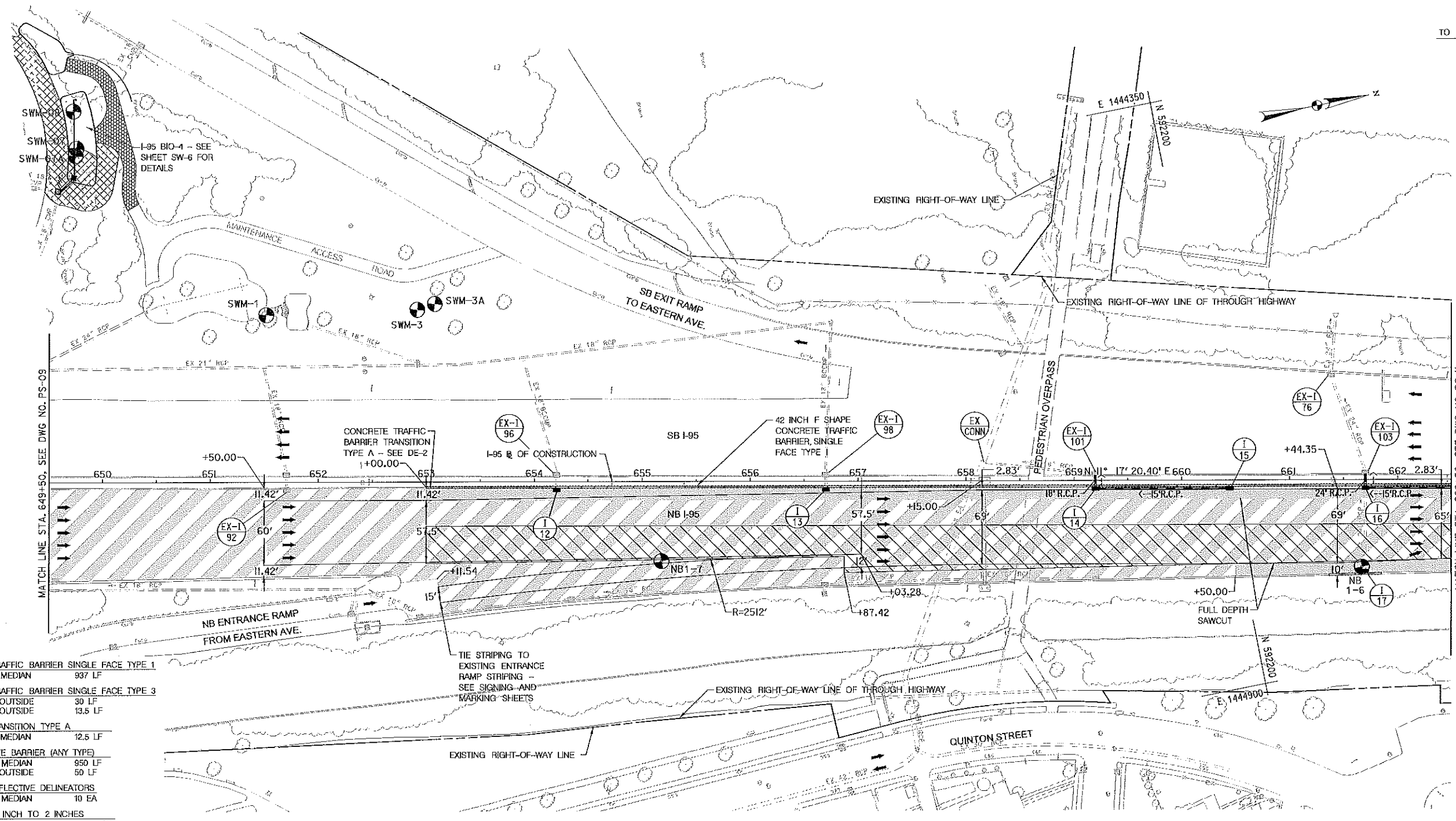
**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
 I-95 (BALTIMORE CITY)  
 ROADWAY PLAN

DESIGNED BY D.L.R. DRAWN BY A.W.G. CHECKED BY J.M.R.  
 CONST. REVIEW BY   DATE MAY 2016 SCALE AS SHOWN

CONTRACT NO. FT-3003  
 DRAWING NO. **PS-9 of 16**  
 SHEET NO. 32 OF 488

TO FORT McHENRY TUNNEL

TO WHITE MARSH



- 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1  
STA. 653+13 TO STA. 662+50, RT MEDIAN 937 LF
- 34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3  
STA. 661+37 TO STA. 661+67, RT OUTSIDE 30 LF  
STA. 661+78 TO STA. 661+87, RT OUTSIDE 13.5 LF
- CONCRETE TRAFFIC BARRIER TRANSITION TYPE A  
STA. 653+00 TO STA. 653+13, RT MEDIAN 12.5 LF
- REMOVAL OF EXISTING CONCRETE BARRIER (ANY TYPE)  
STA. 653+00 TO STA. 662+50, RT MEDIAN 950 LF  
STA. 661+37 TO STA. 661+87, RT OUTSIDE 50 LF
- CONCRETE TRAFFIC BARRIER REFLECTIVE DELINEATORS  
STA. 653+00 TO STA. 662+50, RT MEDIAN 10 EA
- GRINDING ASPHALT PAVEMENT 0 INCH TO 2 INCHES  
STA. 649+50 TO STA. 662+50, RT 12,653 SY

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-4
GEOMETRIC LAYOUT	GS-4
SUPERELEVATION TABLE	SE-2, SE-5
TRAFFIC CONTROL	MT-13, MT-33
DRAINAGE SCHEDULE	DD-2
SIGNING PLAN	SN-2,09, SN-2,10
LIGHTING PLAN	LT-12, LT-13
ITS PLAN	ITS-10, ITS-11
SEDIMENT CONTROL PLAN	ES-10
STORMWATER MANAGEMENT PLAN	SW-05
SOIL BORING SHEETS	SB-7, SB-8



LEGEND	
	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT
	GRIND AND RESURFACE
	WEDGE AND LEVEL
	PROPOSED INLET/SCUPPER
	PROPOSED MOD. TYPE 'S' INLET, 8 L.F. RCP AND PIPE CONNECTION
	SOIL BORING AND BORING NUMBER

**RK&K**  
 81 MOSHER STREET | BALTIMORE, MD 21217  
 PH: (410) 728-2900 FAX: (410) 728-2180  
 Engineers Construction Managers Planners Scientists  
 www.rk.com

**MARYLAND TRANSPORTATION AUTHORITY**  
 Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

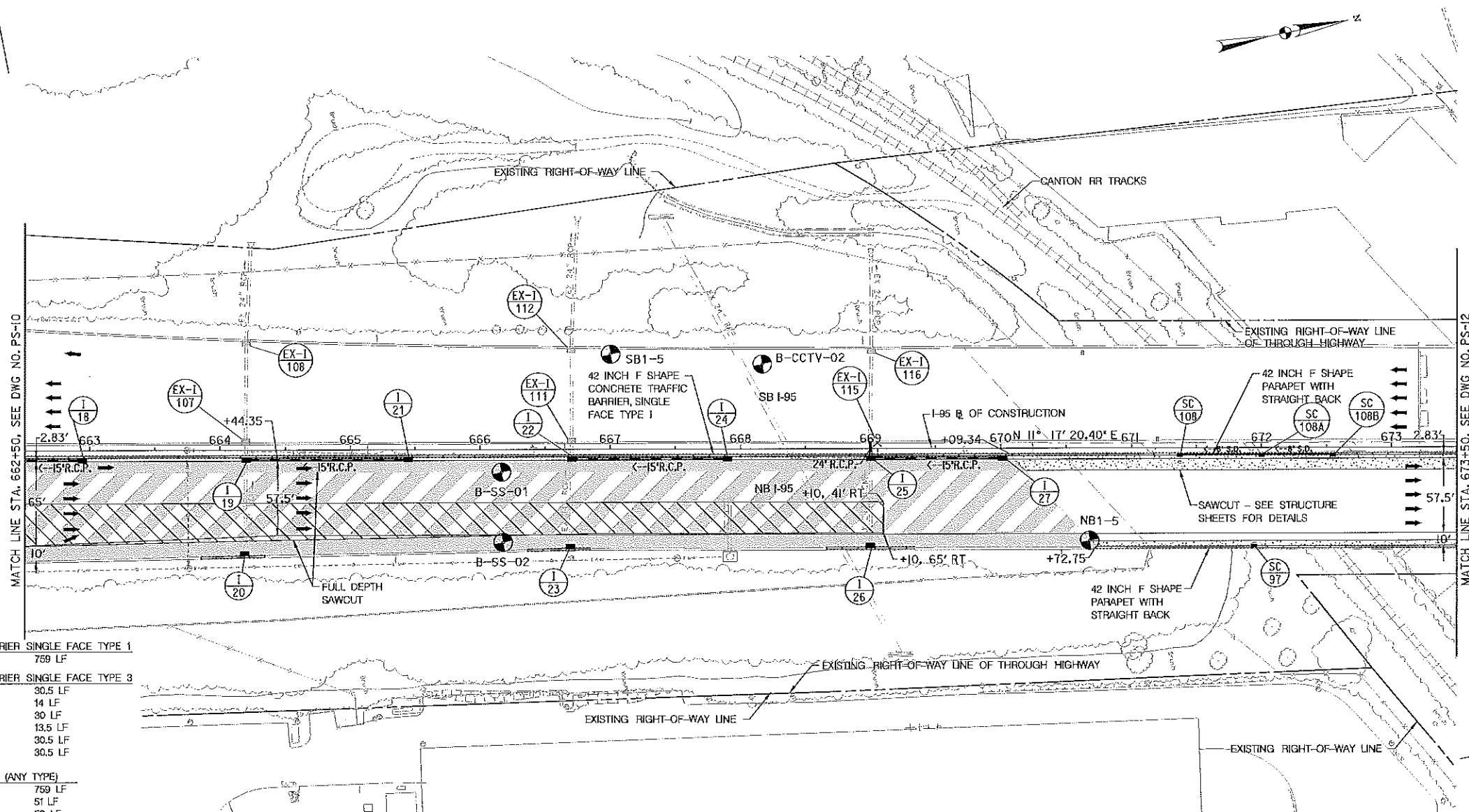
**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
 I-95 (BALTIMORE CITY)  
 ROADWAY PLAN

DESIGNED BY <u>D.L.R.</u>	DRAWN BY <u>A.W.G.</u>	CHECKED BY <u>J.M.B.</u>	CONTRACT NO. FT-3003
CONST. REVIEW BY <u> </u>	DATE <u>MAY 2016</u>	SCALE <u>AS SHOWN</u>	DRAWING NO. <b>PS-10 of 16</b>
SHEET NO. 33 OF 488			SHEET NO. 33 OF 488

TO FORT McHENRY TUNNEL

TO WHITE MARSH

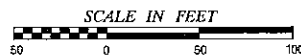
E 1444400  
N 592450



- 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1  
STA. 662+50 TO STA. 670+09, RT MEDIAN 759 LF
- 34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 3  
STA. 663+86 TO STA. 664+16, RT OUTSIDE 30.5 LF  
STA. 664+23 TO STA. 664+37, RT OUTSIDE 14 LF  
STA. 666+36 TO STA. 666+66, RT OUTSIDE 30 LF  
STA. 666+73 TO STA. 666+86, RT OUTSIDE 13.5 LF  
STA. 668+66 TO STA. 668+97, RT OUTSIDE 30.5 LF  
STA. 669+03 TO STA. 669+34, RT OUTSIDE 30.5 LF
- REMOVAL OF EXISTING CONCRETE BARRIER (ANY TYPE)  
STA. 662+50 TO STA. 670+09, RT MEDIAN 759 LF  
STA. 663+86 TO STA. 664+37, RT OUTSIDE 51 LF  
STA. 666+36 TO STA. 666+86, RT OUTSIDE 50 LF  
STA. 668+66 TO STA. 669+34, RT OUTSIDE 68 LF
- CONCRETE TRAFFIC BARRIER REFLECTIVE DELINEATORS  
STA. 662+50 TO STA. 673+50, RT MEDIAN 11 EA  
STA. 670+73 TO STA. 673+50, RT OUTSIDE 3 EA
- GRINDING ASPHALT PAVEMENT 0 INCH TO 2 INCHES  
STA. 662+50 TO STA. 670+73, RT 5,402 SY

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-4
GEOMETRIC LAYOUT	GS-4
SUPERELEVATION TABLE	SE-2, SE-5
TRAFFIC CONTROL	MT-14, MT-34
STRUCTURAL SHEETS	S6-1 TO S6-27
DRAINAGE SCHEDULE	DD-1, DD-2
SIGNING PLAN	SN-2.10, SN-2.11
LIGHTING PLAN	LT-13, LT-14
ITS PLAN	ITS-11, ITS-12
SEDIMENT CONTROL PLAN	ES-11
SOIL BORING SHEETS	SB-9, SB-10

N 592450  
E 1445200



LEGEND	
	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT
	GRIND AND RESURFACE
	WEDGE AND LEVEL
	PROPOSED INLET/CULVERT
	PROPOSED MOD. TYPE 'S' INLET, B.L.F., RCP AND PIPE CONNECTION
	SOIL BORING AND BORING NUMBER

**RK&K**  
81 MOSHER STREET | BALTIMORE, MD 21217  
PH: (410) 723-2200 FAX: (410) 723-9150  
Engineers Construction Managers Planners Scientists  
www.rk.com

**MARYLAND TRANSPORTATION AUTHORITY**  
Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
I-95 (BALTIMORE CITY)  
ROADWAY PLAN

DESIGNED BY D.J.R. DRAWN BY A.W.G. CHECKED BY J.M.R.  
CONST. REVIEW BY   DATE MAY 2016 SCALE AS SHOWN

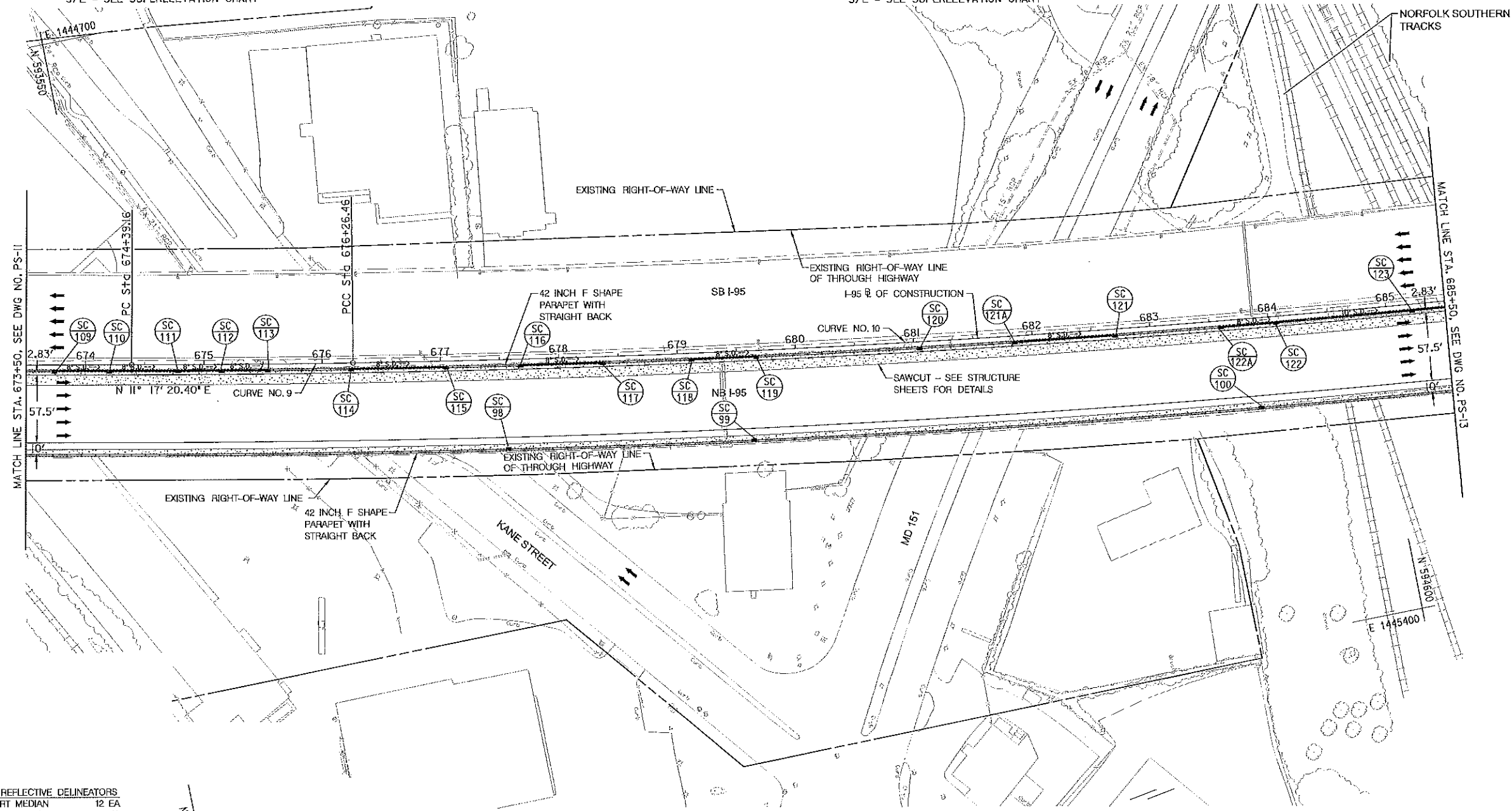
CONTRACT NO. FT-3003  
DRAWING NO. **PS-11 of 16**  
SHEET NO. 34 OF 488

TO FORT McHENRY TUNNEL

**CURVE NO. 9**  
 P.I. N 593,663.3670  
 E 1,444,999.2327  
 $\Delta = 0^\circ - 45' - 59.51''$   
 $Dc = 0^\circ - 24' - 33.32''$   
 $R = 14,000.00'$   
 $L = 187.30'$   
 $T = 93.65'$   
 $E = 0.31'$   
 S/E = SEE SUPERELEVATION CHART

TO WHITE MARSH

**CURVE NO. 10**  
 P.I. N 596,152.9143  
 E 1,445,461.6530  
 $\Delta = 24^\circ - 02' - 05.52''$   
 $Dc = 0^\circ - 30' - 00.65''$   
 $R = 11,455.00'$   
 $L = 4,805.23'$   
 $T = 2,438.48'$   
 $E = 256.67'$   
 S/E = SEE SUPERELEVATION CHART



CONCRETE TRAFFIC BARRIER REFLECTIVE DELINEATORS  
 STA. 673+50 TO STA. 685+50, RT MEDIAN 12 EA  
 STA. 673+50 TO STA. 685+50, RT OUTSIDE 12 EA

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-4
GEOMETRIC LAYOUT	GS-4
SUPERELEVATION TABLE	SE-2
TRAFFIC CONTROL	MT-15, MT-35
STRUCTURAL SHEETS	S6-1 TO S6-27
DRAINAGE SCHEDULE	DD-1
SIGNING PLAN	SN-2.11, SN-2.12
LIGHTING PLAN	LT-14, LT-15
ITS PLAN	ITS-12, ITS-13
SEDIMENT CONTROL PLAN	ES-12



**LEGEND**

	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY		PROPOSED INLET/SCUPPER
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT		PROPOSED MOD. TYPE 'S' INLET, 8 L.F. RCP AND PIPE CONNECTION
	GRIND AND RESURFACE		SOIL BORING AND BORING NUMBER
	WEDGE AND LEVEL		

**RK&K**  
 81 MOSHER STREET | BALTIMORE, MD 21217  
 PH: (410) 728-2200 FAX: (410) 728-3100  
 Engineers Construction Managers Planners Scientists  
 www.rk.com

**MARYLAND TRANSPORTATION AUTHORITY**  
 Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
 I-95 (BALTIMORE CITY)  
 ROADWAY PLAN

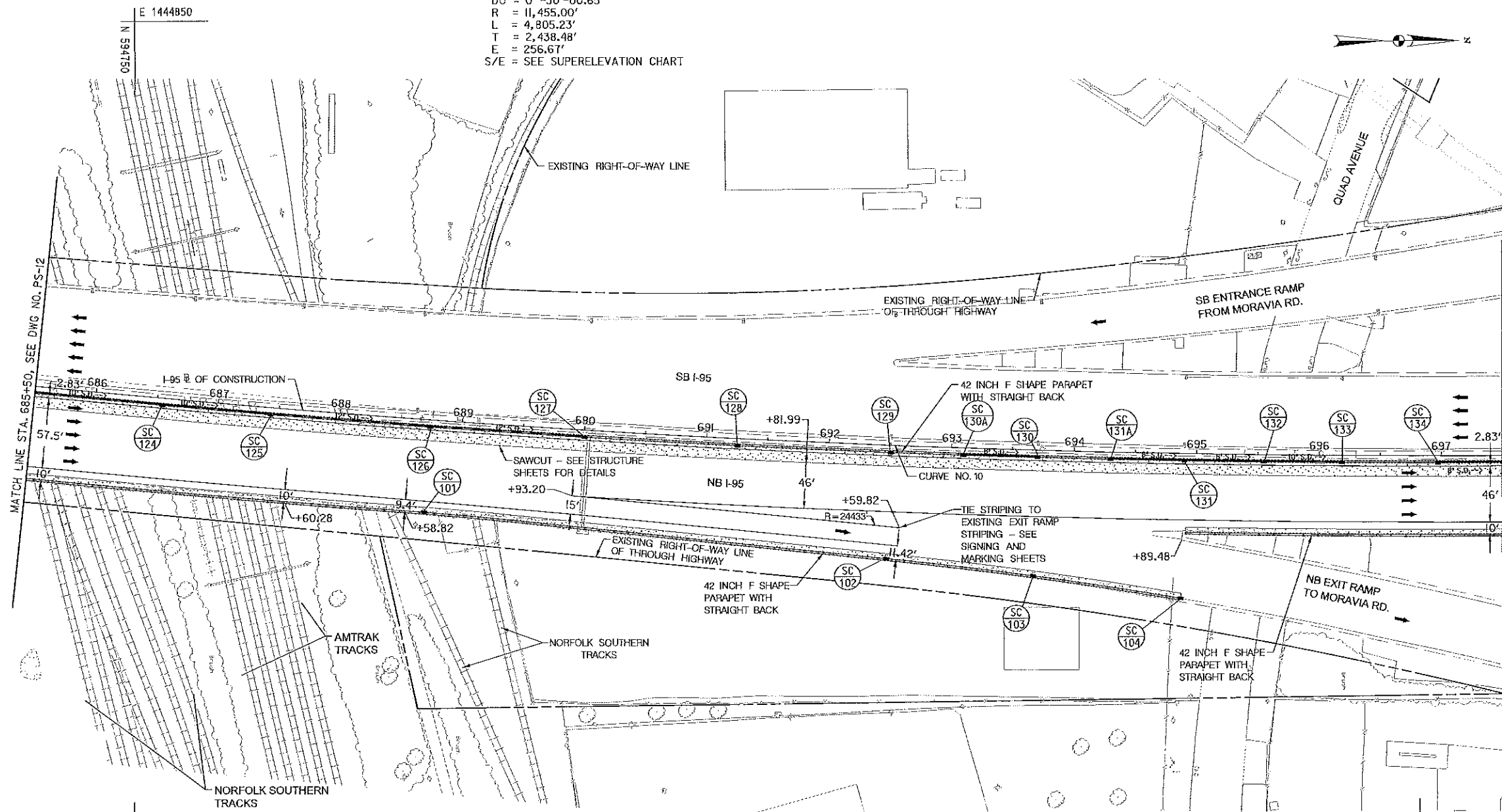
DESIGNED BY D.I.R. DRAWN BY A.W.G. CHECKED BY J.M.R.  
 CONST. REVIEW BY   DATE MAY 2016 SCALE AS SHOWN

CONTRACT NO.  
FT-3003

DRAWING NO.  
**PS-12 of 16**

SHEET NO.  
35 OF 488

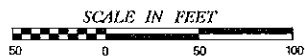
CURVE NO. 10  
 P.I. N 596,152.9143  
 E 1,445,461.6530  
 $\Delta = 24^{\circ} - 02' - 05.52''$   
 $D_c = 0^{\circ} - 30' - 00.65''$   
 $R = 11,455.00'$   
 $L = 4,805.23'$   
 $T = 2,438.48'$   
 $E = 256.67'$   
 S/E = SEE SUPERELEVATION CHART



CONCRETE TRAFFIC BARRIER REFLECTIVE DELINEATORS  
 STA. 685+50 TO STA. 697+50, RT MEDIAN 12 EA  
 STA. 685+50 TO STA. 694+89, RT OUTSIDE 9 EA  
 STA. 694+92 TO STA. 697+50, RT OUTSIDE 3 EA

REMOVE AND RESET TRAFFIC BARRIER END TREATMENT - ANY TYPE  
 STA. 694+65 TO STA. 694+90, RT 1 EA

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-4, TS-5
GEOMETRIC LAYOUT	GS-4, GS-5
SUPERELEVATION TABLE	SE-2, SE-3
TRAFFIC CONTROL	MT-16 MT-36
STRUCTURAL SHEETS	S6-1 TO S6-27
DRAINAGE SCHEDULE	DD-1
SIGNING PLAN	SN-2.12, SN-2.13
LIGHTING PLAN	LT-15, LT-16
ITS PLAN	ITS-13, ITS-14
SEDIMENT CONTROL PLAN	ES-13



**LEGEND**

	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY		PROPOSED INLET/CULPER
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT		PROPOSED MOD. TYPE 'S' INLET, 8 L.F. RCP AND PIPE CONNECTION
	GRIND AND RESURFACE		SOIL BORING AND BORING NUMBER
	WEDGE AND LEVEL		

**RK&K**  
 81 MOSHER STREET | BALTIMORE, MD 21217  
 PH: (410) 728-2900 FAX: (410) 728-9100  
 Engineers Construction Managers Planners Scientists  
 www.rkk.com

**MARYLAND TRANSPORTATION AUTHORITY**  
 Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
 I-95 (BALTIMORE CITY)  
 ROADWAY PLAN

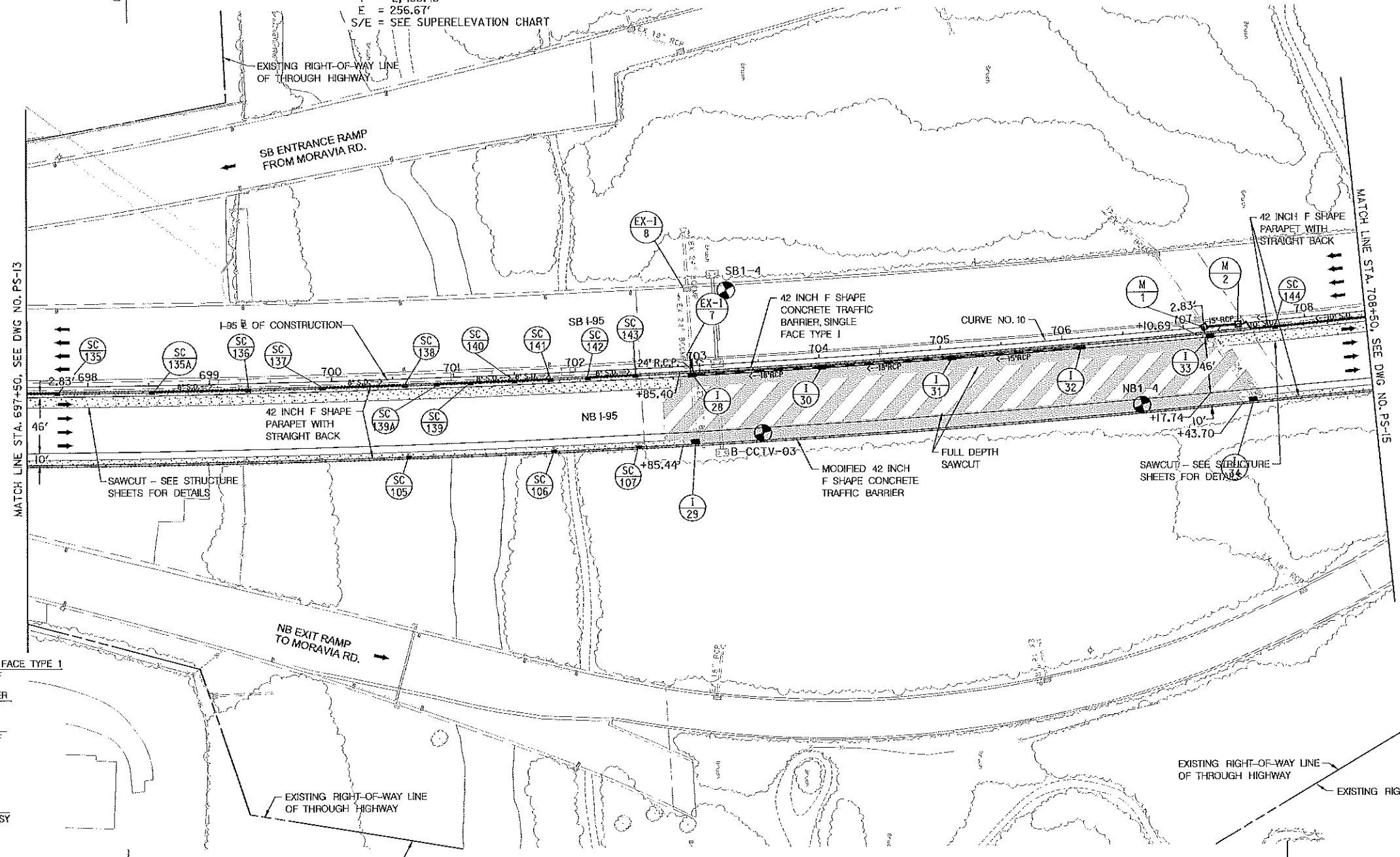
DESIGNED BY D.L.B. DRAWN BY A.W.G. CHECKED BY J.M.R.  
 CONST. REVIEW BY \_\_\_\_\_ DATE MAY 2016 SCALE AS SHOWN

CONTRACT NO. FT-3003  
 DRAWING NO. **PS-13 of 16**  
 SHEET NO. 36 OF 488

TO FORT McHENRY TUNNEL

TO WHITE MARSH

CURVE NO. 10  
 P.I. N 596,152.9143  
 E 1,445,461.6530  
 $\Delta = 24^\circ - 02' - 05.52''$   
 $Dc = 0^\circ - 30' - 00.65''$   
 $R = 11,455.00'$   
 $L = 4,805.23'$   
 $T = 2,438.48'$   
 $E = 256.67'$   
 S/E = SEE SUPERELEVATION CHART



- 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1  
STA. 702+85 TO STA. 707+11, RT. MEDIAN 425 LF
- MODIFIED 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER  
STA. 702+85 TO STA. 707+44, RT. OUTSIDE 461 LF
- REMOVAL OF EXISTING CONCRETE BARRIER (ANY TYPE)  
STA. 702+85 TO STA. 707+11, RT. MEDIAN 425 LF  
STA. 702+85 TO STA. 707+44, RT. OUTSIDE 461 LF
- CONCRETE TRAFFIC BARRIER REFLECTIVE DELINEATORS  
STA. 697+50 TO STA. 708+50, RT. MEDIAN 11 EA  
STA. 697+50 TO STA. 708+50, RT. OUTSIDE 11 EA
- GRINDING ASPHALT PAVEMENT 0 INCH TO 2 INCHES  
STA. 702+70 TO STA. 707+61, RT. 2,484 SY

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-5
GEOMETRIC LAYOUT	GS-5
SUPERELEVATION TABLE	SE-3
TRAFFIC CONTROL	MT-17 MT-37
STRUCTURAL SHEETS	S6-1 TO S7-19
DRAINAGE SCHEDULE	DD-1, DD-2
SIGNING PLAN	SN-2.13, SN-2.14
LIGHTING PLAN	LT-16, LT-17
ITS PLAN	ITS-14, ITS-15
SEDIMENT CONTROL PLAN	ES-14
SOIL BORING SHEETS	SB-11



LEGEND	
	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT
	GRIND AND RESURFACE
	WEDGE AND LEVEL
	PROPOSED INLET/SCUPPER
	PROPOSED MOD. TYPE 'S' INLET, 8 L.F. RCP AND PIPE CONNECTION
	SOIL BORING AND BORING NUMBER SB2-2



ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
 I-95 (BALTIMORE CITY)  
 ROADWAY PLAN

DESIGNED BY D.J.B.    DRAWN BY A.W.G.    CHECKED BY J.M.R.  
 CONST. REVIEW BY \_\_\_\_\_    DATE MAY 2016    SCALE AS SHOWN

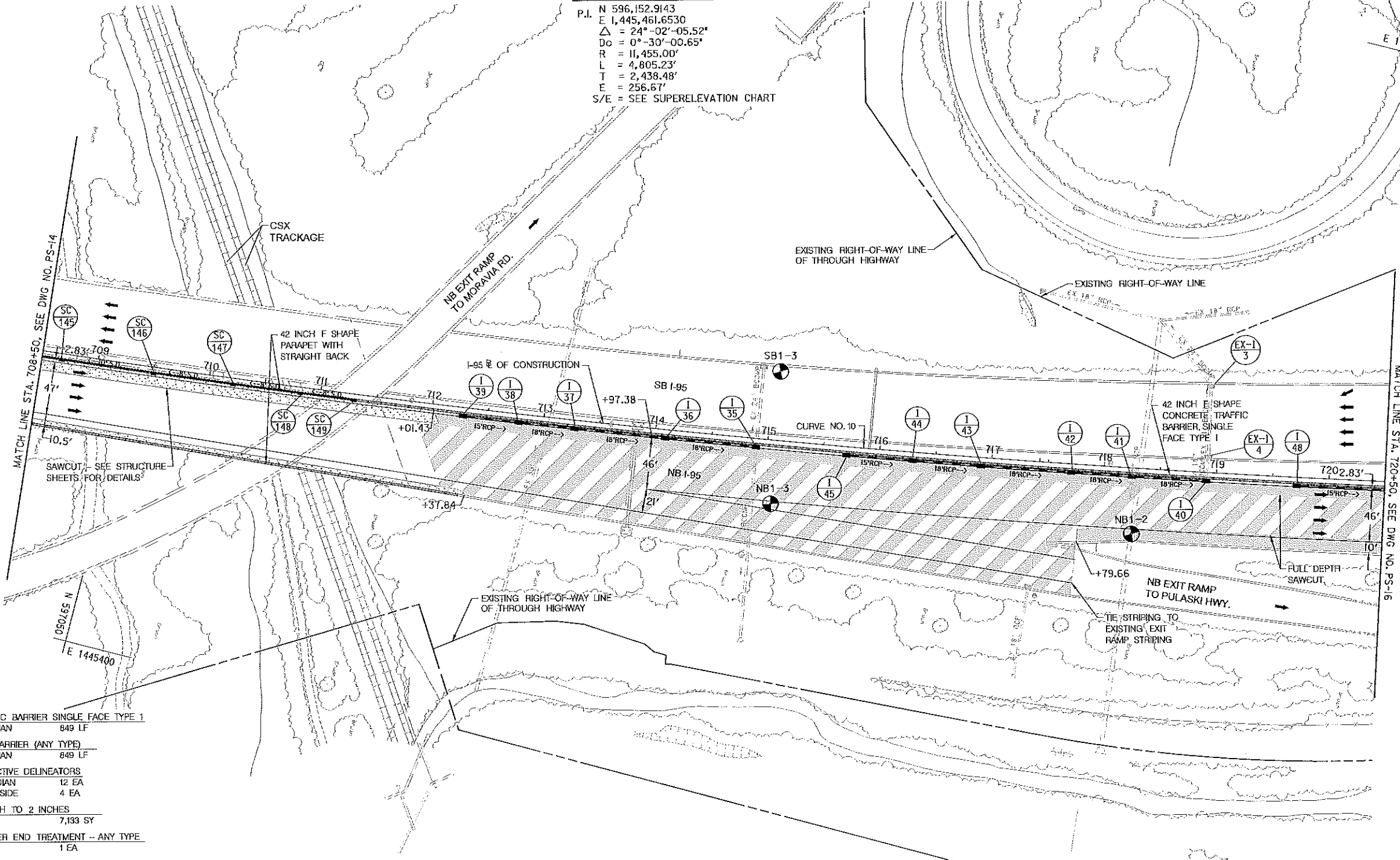
CONTRACT NO. FT-3003  
 DRAWING NO. **PS-14 of 16**  
 SHEET NO. 37 OF 488



TO FORT McHENRY TUNNEL

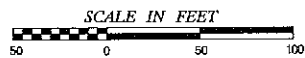
TO WHITE MARSH

CURVE NO. 10  
 P.I. N 596,152.9143  
 E 1,445,461.6530  
 $\Delta = 24^{\circ} - 02' - 05.52''$   
 $DC = 0^{\circ} - 30' - 00.65''$   
 $R = 11,455.00'$   
 $L = 4,805.23'$   
 $T = 2,438.48'$   
 $E = 256.67'$   
 S/E = SEE SUPERELEVATION CHART



- 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1  
 STA. 712+01 TO STA. 720+50, RT MEDIAN 849 LF
- REMOVAL OF EXISTING CONCRETE BARRIER (ANY TYPE)  
 STA. 712+01 TO STA. 720+50, RT MEDIAN 849 LF
- CONCRETE TRAFFIC BARRIER REFLECTIVE DELINEATORS  
 STA. 708+50 TO STA. 720+50, RT MEDIAN 12 EA  
 STA. 708+50 TO STA. 712+38, RT OUTSIDE 4 EA
- GRINDING ASPHALT PAVEMENT 0 INCH TO 2 INCHES  
 STA. 711+87 TO STA. 720+50, RT 7,193 SY
- REMOVE AND RESET TRAFFIC BARRIER END TREATMENT - ANY TYPE  
 STA. 717+54 TO STA. 717+79, RT 1 EA

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-5
GEOMETRIC LAYOUT	GS-5
SUPERELEVATION TABLE	SE-3
TRAFFIC CONTROL	MT-18 MT-38
STRUCTURAL SHEETS	S7-1 TO S7-19
DRAINAGE SCHEDULE	DD-2
SIGNING PLAN	SN-2,14
LIGHTING PLAN	LT-17, LT-18
ITS PLAN	ITS-15
SEDIMENT CONTROL PLAN	ES-15
SOIL BORING SHEETS	SB-12



LEGEND	
	FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY
	CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT
	GRIND AND RESURFACE
	WEDGE AND LEVEL
	PROPOSED INLET/SCUPPER
	PROPOSED MOD. TYPE 'S' INLET, 8 L.F. RCP AND PIPE CONNECTION
	SOIL BORING AND BORING NUMBER

**RK&K**  
 81 MOSHER STREET | BALTIMORE, MD 21217  
 PH: (410) 728-1900 FAX: (410) 728-3100  
 Engineers Construction Managers Planners Scientists  
 www.rk&k.com

**MARYLAND TRANSPORTATION AUTHORITY**  
 Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
 I-95 (BALTIMORE CITY)  
 ROADWAY PLAN

DESIGNED BY D.J.R. DRAWN BY A.W.G. CHECKED BY J.M.R.  
 CONST. REVIEW BY   DATE MAY 2016 SCALE AS SHOWN

CONTRACT NO.  
 FT-3003  
 DRAWING NO.  
**PS-15 of 16**  
 SHEET NO.  
 38 OF 488

TO FORT McHENRY TUNNEL

TO WHITE MARSH

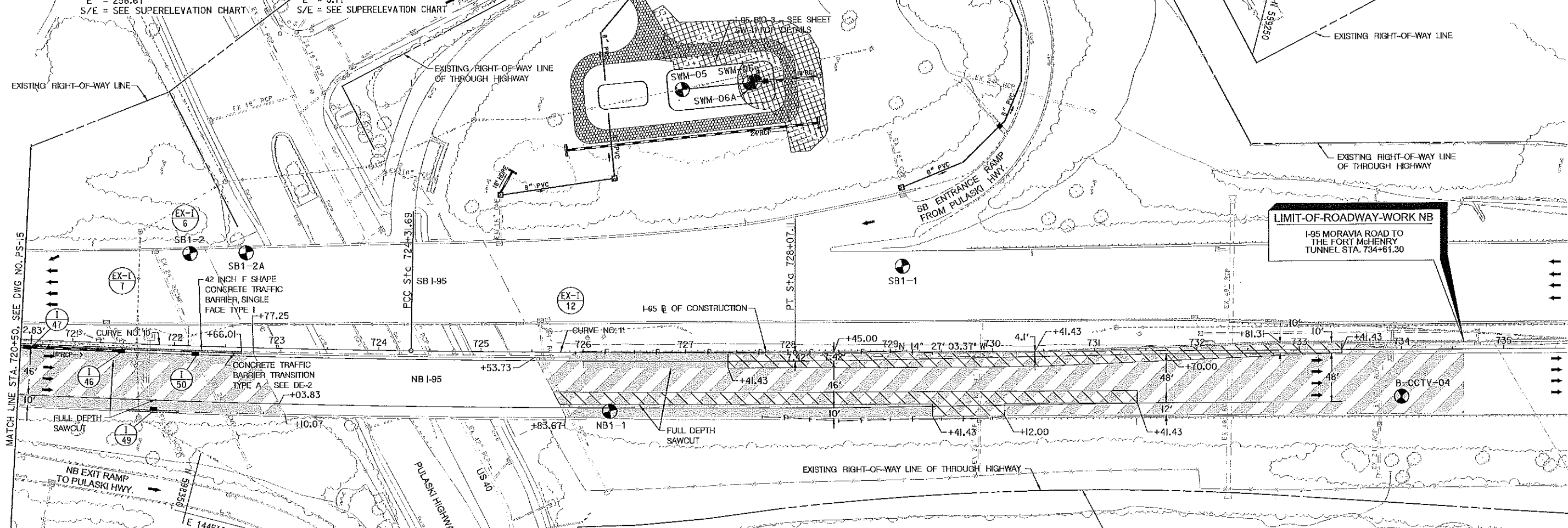
CURVE NO. 10

P.I. N 596,152.9143  
 E 1,445,461.6530  
 $\Delta = 24^{\circ}-02'-05.52''$   
 $Dc = 0^{\circ}-30'-00.65''$   
 $R = 11,455.00'$   
 $L = 4,805.23'$   
 $T = 2,438.48'$   
 $E = 256.61'$   
 S/E = SEE SUPERELEVATION CHART

CURVE NO. 11

P.I. N 598,706.4107  
 E 1,444,848.0284  
 $\Delta = 0^{\circ}-56'-18.75''$   
 $Dc = 0^{\circ}-15'-00.00''$   
 $R = 22,918.3118'$   
 $L = 375.42'$   
 $T = 187.71'$   
 $E = 0.77'$   
 S/E = SEE SUPERELEVATION CHART

DRIVEWAY FOR MAINTENANCE ROAD, SEE STANDARD NO. MD 630.03  
 MORAVIA PARK DRIVE



**LIMIT-OF-ROADWAY-WORK NB**  
 I-95 MORAVIA ROAD TO THE FORT McHENRY TUNNEL STA. 734+61.30

- 42 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1 STA. 720+50 TO STA. 722+54, RT MEDIAN 204 LF
- 34 INCH F SHAPE CONCRETE TRAFFIC BARRIER SINGLE FACE TYPE 1 STA. 721+56 TO STA. 721+79, RT OUTSIDE 23 LF
- STA. 721+85 TO STA. 722+07, RT OUTSIDE 21.5 LF
- CONCRETE TRAFFIC BARRIER TRANSITION TYPE A STA. 722+54 TO STA. 722+68, RT MEDIAN 12.5 LF
- REMOVAL OF EXISTING CONCRETE BARRIER (ANY TYPE) STA. 720+50 TO STA. 722+78, RT MEDIAN 228 LF
- STA. 721+56 TO STA. 722+07, RT OUTSIDE 51 LF
- REMOVE AND RESET EXISTING TRAFFIC BARRIER W BEAM STA. 725+92 TO STA. 729+41, RT MEDIAN 349 LF
- STA. 726+07 TO STA. 730+12, RT OUTSIDE 405 LF

CROSS REFERENCE	DWG. NO.
TYPICAL SECTION	TS-5, TS-6
GEOMETRIC LAYOUT	GS-5
SUPERELEVATION TABLE	SE-3, SE-5
TRAFFIC CONTROL	MT-19, MT-39
DRAINAGE SCHEDULE	DD-2
SIGNING PLAN	SN-2.14 TO SN-2.16
LIGHTING PLAN	LT-18, LT-19
ITS PLAN	ITS-15 TO ITS-17
SEDIMENT CONTROL PLAN	ES-16
STORMWATER MANAGEMENT PLAN	SW-10
SOIL BORING SHEETS	SB-13 TO SB-15

- CONCRETE TRAFFIC BARRIER REFLECTIVE DELINEATORS STA. 720+50 TO STA. 722+78, RT MEDIAN 2 EA
- GRINDING ASPHALT PAVEMENT 0 INCH TO 2 INCHES STA. 720+50 TO STA. 722+10, RT 1,291 SY
- STA. 725+54 TO STA. 734+61, RT 5,957 SY
- STANDARD TYPE A CURB 8 INCH X 16 INCH LEFT RAMP 36 LF
- 8 INCH PORTLAND CEMENT CONCRETE PAVEMENT FOR DRIVEWAY, MIX 6 LEFT RAMP 25 SY



**RK&K**  
 81 MOSHER STREET | BALTIMORE, MD 21217  
 PH: (410) 728-2900 FAX: (410) 728-3100  
 Engineers Construction Managers Planners Scientists  
 www.rk.com

**MARYLAND TRANSPORTATION AUTHORITY**  
 Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE

**I-95 FROM MORAVIA ROAD TO THE FORT McHENRY TUNNEL**  
 I-95 (BALTIMORE CITY)  
 ROADWAY PLAN

DESIGNED BY D.I.R. DRAWN BY A.W.G. CHECKED BY J.M.R.  
 CONST. REVIEW BY   DATE MAY 2016 SCALE AS SHOWN

CONTRACT NO. FT-3003  
 DRAWING NO. **PS-16 of 16**  
 SHEET NO. 39 OF 488

**LEGEND**

- FULL DEPTH PAVEMENT AND VARIABLE DEPTH OVERLAY
- CONCRETE OVERLAY OR FULL DEPTH DECK REPLACEMENT
- GRIND AND RESURFACE
- WEDGE AND LEVEL
- PROPOSED INLET/SCUPPER
- PROPOSED MOD. TYPE 'S' INLET, B.L.F. RCP AND PIPE CONNECTION
- SOIL BORING AND BORING NUMBER



**APPENDIX B - MONITORED AMBIENT AIR QUALITY DATA 2013-2015**

## Monitor Values Report

**Geographic Area:** Maryland

**Pollutant:** PM2.5

**Year:** 2015

**Exceptional Events:** Included (if any)

Note: The \* indicates the mean does not satisfy minimum data completeness criteria.

Obs	First Max	Second Max	Third Max	Fourth Max	98th Percentile	Weighted Annual Mean	Exc Events	Monitor Number	Site ID	Address	City	County	State	EPA Region
118	28.4	26.2	23.5	23.2	24	9.7	None	1	240031003	Anne Arundel Co. Public Works Bldg. 7409 Baltimore Annapolis Blvd.	Glen Burnie	Anne Arundel	MD	03
123	29.4	24.8	22.8	21.3	23	9.1	None	1	240051007	Padonia Elementary School, 9834 Greenside Drive	Cockeysville	Baltimore	MD	03
69	28.6	21.2	19.7	18.3	21	8.3	None	2	240051007	Padonia Elementary School, 9834 Greenside Drive	Cockeysville	Baltimore	MD	03
126	28.5	27.9	26.2	24.3	26	10.1	None	1	240053001	600 Dorsey Avenue	Essex	Baltimore	MD	03
350	30.7	30	27.5	27.2	26	9.8	None	3	240150003	Fair Hill Natural Resource Mgmt Area, 4600 Telegraph Road	Not in a City	Cecil	MD	03
341	21.1	20.9	20.8	20.6	20	7.9	None	3	240190004	University Of Maryland For Environmental And Estuarine Studies	Not in a City	Dorchester	MD	03
343	20.3	18	17.7	16.6	15	5.1	None	3	240230002	Piney Run, Frostburg Reservoir, Finzel	Grantsville	Garrett	MD	03
354	29.1	27	24.8	23.7	22	8.3	None	3	240251001	Edgewood Chemical Biological Center (Apg), Waehli Road	Edgewood	Harford	MD	03
300	31.8	26	25.3	23.7	23	9.2*	None	3	240270006	Interstate 95 South Welocme Center	North Laurel	Howard	MD	03
337	24.5	24.5	24.2	23.9	22	9.3	Included	3	240290002	Millington Wildlife Management Area, Massey - Maryland Line Road (Route 330)	Not in a City	Kent	MD	03
338	30.8	24.6	24.4	22.8	22	9.7	None	3	240313001	Lathrop E. Smith Environmental Education Center, 5110 Meadows Lane	Not in a City	Montgomery	MD	03
120	28.4	19.9	19.6	19.4	20	8.1	None	1	240330030	Howard University'S Beltsville Laboratory, 12003 Old Baltimore Pike	Beltsville	Prince George's	MD	03
32	28.1	18.1	15.4	14.4	28	8.9	None	2	240330030	Howard University'S Beltsville Laboratory, 12003 Old Baltimore Pike	Beltsville	Prince George's	MD	03

Get detailed information about this report, including column descriptions, at [http://www.epa.gov/airquality/airdata/ad\\_about\\_reports.html#mon](http://www.epa.gov/airquality/airdata/ad_about_reports.html#mon)

AirData reports are produced from a direct query of the AQS Data Mart. The data represent the best and most recent information available to EPA from state agencies. However, some values may be absent due to incomplete reporting, and some values may change due to quality assurance activities. The AQS database is updated daily by state, local, and tribal organizations who own and submit the data. Please contact the appropriate air quality monitoring agency to report any data problems.  
<[http://www.epa.gov/airquality/airdata/ad\\_contacts.html](http://www.epa.gov/airquality/airdata/ad_contacts.html)>

Readers are cautioned not to rank order geographic areas based on AirData reports. Air pollution levels measured at a particular monitoring site are not necessarily representative of the air quality for an entire county or urban area.

This report is based on monitor-level summary statistics. Air quality standards for some pollutants (PM2.5 and Pb) allow for combining data from multiple monitors into a site-level summary statistic that can be compared to the standard. In those cases, the site-level statistics may differ from the monitor-level statistics upon which this report is based.

Source: U.S. EPA AirData <<http://www.epa.gov/airdata>>  
Generated: May 24, 2016

## Monitor Values Report

**Geographic Area:** Maryland

**Pollutant:** PM2.5

**Year:** 2015

**Exceptional Events:** Included (if any)

Note: The \* indicates the mean does not satisfy minimum data completeness criteria.

Obs	First Max	Second Max	Third Max	Fourth Max	98th Percentile	Weighted Annual Mean	Exc Events	Monitor Number	Site ID	Address	City	County	State	EPA Region
345	32.5	27.7	26.7	26.1	24	11.2	None	3	240330030	Howard University'S Beltsville Laboratory, 12003 Old Baltimore Pike	Beltsville	Prince George's	MD	03
123	23.8	18.7	18.3	17.8	18	7.9	None	1	240338003	Pg County Equestrian Center, 14900 Pennsylvania Ave.	Greater Upper Marlboro	Prince George's	MD	03
59	23.9	19.3	15.8	14.4	19	7.5	None	2	240338003	Pg County Equestrian Center, 14900 Pennsylvania Ave.	Greater Upper Marlboro	Prince George's	MD	03
319	32.7	28.9	28.4	28.3	25	10.2	None	3	240430009	Md Correctional Institution 18530 Roxbury Road	Not in a City	Washington	MD	03
119	28.9	25.8	25.6	24.5	26	9.3	None	1	245100007	Northwest Police Station, 5271 Reistertown Road	Baltimore	Baltimore (City)	MD	03
125	29.5	26.5	25.9	21.9	26	9.9	None	1	245100008	Baltimore City Fire Dept.-Truck Company 20; 5714 Eastern Avenue	Baltimore	Baltimore (City)	MD	03
348	33.8	31.2	30.7	30.3	30	9.7	None	1	245100040	Oldtown Fire Station, 1100 Hillen Street	Baltimore	Baltimore (City)	MD	03
328	35.2	33	32.7	32.5	30	11.1*	None	3	245100040	Oldtown Fire Station, 1100 Hillen Street	Baltimore	Baltimore (City)	MD	03

Get detailed information about this report, including column descriptions, at [http://www.epa.gov/airquality/airdata/ad\\_about\\_reports.html#mon](http://www.epa.gov/airquality/airdata/ad_about_reports.html#mon)

AirData reports are produced from a direct query of the AQS Data Mart. The data represent the best and most recent information available to EPA from state agencies. However, some values may be absent due to incomplete reporting, and some values may change due to quality assurance activities. The AQS database is updated daily by state, local, and tribal organizations who own and submit the data. Please contact the appropriate air quality monitoring agency to report any data problems.  
<[http://www.epa.gov/airquality/airdata/ad\\_contacts.html](http://www.epa.gov/airquality/airdata/ad_contacts.html)>

Readers are cautioned not to rank order geographic areas based on AirData reports. Air pollution levels measured at a particular monitoring site are not necessarily representative of the air quality for an entire county or urban area.

This report is based on monitor-level summary statistics. Air quality standards for some pollutants (PM2.5 and Pb) allow for combining data from multiple monitors into a site-level summary statistic that can be compared to the standard. In those cases, the site-level statistics may differ from the monitor-level statistics upon which this report is based.

Source: U.S. EPA AirData <<http://www.epa.gov/airdata>>  
Generated: May 24, 2016

## Monitor Values Report

**Geographic Area:** Maryland

**Pollutant:** PM2.5

**Year:** 2014

**Exceptional Events:** Included (if any)

Note: The \* indicates the mean does not satisfy minimum data completeness criteria.

Obs	First Max	Second Max	Third Max	Fourth Max	98th Percentile	Weighted Annual Mean	Exc Events	Monitor Number	Site ID	Address	City	County	State	EPA Region
120	24.1	23	22.9	22.5	23	9.1	None	1	240031003	Anne Arundel Co. Public Works Bldg. 7409 Baltimore Annapolis Blvd.	Glen Burnie	Anne Arundel	MD	03
115	23	21.4	20.8	20.6	21	8.9	None	1	240051007	Padonia Elementary School, 9834 Greenside Drive	Cockeysville	Baltimore	MD	03
58	21.4	21.2	19	16.2	21	7.7	None	2	240051007	Padonia Elementary School, 9834 Greenside Drive	Cockeysville	Baltimore	MD	03
110	25.9	23.3	21.6	21.3	22	9.7	None	1	240053001	600 Dorsey Avenue	Essex	Baltimore	MD	03
335	28.8	28.4	28.1	27.6	24	8.6	None	3	240150003	Fair Hill Natural Resource Mgmt Area, 4600 Telegraph Road	Not in a City	Cecil	MD	03
346	24.5	22.1	21.5	21.5	19	8.6	None	3	240190004	University Of Maryland For Environmental And Estuarine Studies	Not in a City	Dorchester	MD	03
324	22.4	20.9	18.9	17.5	16	6.4*	None	3	240230002	Piney Run, Frostburg Reservoir, Finzel	Grantsville	Garrett	MD	03
351	30.8	30.5	29.4	26.8	21	10.3	None	3	240251001	Edgewood Chemical Biological Center (Apg), Waehli Road	Edgewood	Harford	MD	03
261	25.9	23	22.8	22.2	21	12.0*	None	3	240270006	Interstate 95 South Welocme Center	North Laurel	Howard	MD	03
339	29.2	24.7	21.9	21.7	20	8.2	None	3	240290002	Millington Wildlife Management Area, Massey - Maryland Line Road (Route 330)	Not in a City	Kent	MD	03
340	27.7	23.2	23	21.9	20	9	None	3	240313001	Lathrop E. Smith Environmental Education Center, 5110 Meadowside Lane	Not in a City	Montgomery	MD	03
119	22	18.1	17.4	16.2	17	7.8	None	1	240330030	Howard University'S Beltsville Laboratory, 12003 Old Baltimore Pike	Beltsville	Prince George's	MD	03
29	13.9	13	12.9	10.7	14	6.7	None	2	240330030	Howard University'S Beltsville Laboratory, 12003 Old Baltimore Pike	Beltsville	Prince George's	MD	03
341	26.7	26.1	26	24.8	23	9.9	None	3	240330030	Howard University'S Beltsville Laboratory, 12003 Old Baltimore Pike	Beltsville	Prince George's	MD	03

Get detailed information about this report, including column descriptions, at [http://www.epa.gov/airquality/airdata/ad\\_about\\_reports.html#mon](http://www.epa.gov/airquality/airdata/ad_about_reports.html#mon)

AirData reports are produced from a direct query of the AQS Data Mart. The data represent the best and most recent information available to EPA from state agencies. However, some values may be absent due to incomplete reporting, and some values may change due to quality assurance activities. The AQS database is updated daily by state, local, and tribal organizations who own and submit the data. Please contact the appropriate air quality monitoring agency to report any data problems.  
<[http://www.epa.gov/airquality/airdata/ad\\_contacts.html](http://www.epa.gov/airquality/airdata/ad_contacts.html)>

Readers are cautioned not to rank order geographic areas based on AirData reports. Air pollution levels measured at a particular monitoring site are not necessarily representative of the air quality for an entire county or urban area.

This report is based on monitor-level summary statistics. Air quality standards for some pollutants (PM2.5 and Pb) allow for combining data from multiple monitors into a site-level summary statistic that can be compared to the standard. In those cases, the site-level statistics may differ from the monitor-level statistics upon which this report is based.

Source: U.S. EPA AirData <<http://www.epa.gov/airdata>>  
Generated: May 24, 2016

## Monitor Values Report

**Geographic Area:** Maryland

**Pollutant:** PM2.5

**Year:** 2014

**Exceptional Events:** Included (if any)

Note: The \* indicates the mean does not satisfy minimum data completeness criteria.

Obs	First Max	Second Max	Third Max	Fourth Max	98th Percentile	Weighted Annual Mean	Exc Events	Monitor Number	Site ID	Address	City	County	State	EPA Region
115	20.4	17.1	15.4	14	15	7.8	None	1	240338003	Pg County Equestrian Center, 14900 Pennsylvania Ave.	Greater Upper Marlboro	Prince George's	MD	03
57	17.3	15.9	13.2	13.1	16	7.1*	None	2	240338003	Pg County Equestrian Center, 14900 Pennsylvania Ave.	Greater Upper Marlboro	Prince George's	MD	03
344	35.3	31.4	29.7	27.9	27	8.8	None	3	240430009	Md Correctional Institution 18530 Roxbury Road	Not in a City	Washington	MD	03
122	22.4	20.9	20.3	19.7	20	8.5	None	1	245100007	Northwest Police Station, 5271 Reistertown Road	Baltimore	Baltimore (City)	MD	03
110	23.7	22.1	22	21.2	22	9.3	None	1	245100008	Baltimore City Fire Dept.-Truck Company 20; 5714 Eastern Avenue	Baltimore	Baltimore (City)	MD	03
322	30.4	27.4	26.4	26.1	21	9.2*	None	1	245100040	Oldtown Fire Station, 1100 Hillen Street	Baltimore	Baltimore (City)	MD	03
348	32.9	30.5	29.9	29.1	23	11.1	None	3	245100040	Oldtown Fire Station, 1100 Hillen Street	Baltimore	Baltimore (City)	MD	03

Get detailed information about this report, including column descriptions, at [http://www.epa.gov/airquality/airdata/ad\\_about\\_reports.html#mon](http://www.epa.gov/airquality/airdata/ad_about_reports.html#mon)

AirData reports are produced from a direct query of the AQS Data Mart. The data represent the best and most recent information available to EPA from state agencies. However, some values may be absent due to incomplete reporting, and some values may change due to quality assurance activities. The AQS database is updated daily by state, local, and tribal organizations who own and submit the data. Please contact the appropriate air quality monitoring agency to report any data problems. <[http://www.epa.gov/airquality/airdata/ad\\_contacts.html](http://www.epa.gov/airquality/airdata/ad_contacts.html)>

Readers are cautioned not to rank order geographic areas based on AirData reports. Air pollution levels measured at a particular monitoring site are not necessarily representative of the air quality for an entire county or urban area.

This report is based on monitor-level summary statistics. Air quality standards for some pollutants (PM2.5 and Pb) allow for combining data from multiple monitors into a site-level summary statistic that can be compared to the standard. In those cases, the site-level statistics may differ from the monitor-level statistics upon which this report is based.

Source: U.S. EPA AirData <<http://www.epa.gov/airdata>>  
Generated: May 24, 2016

## Monitor Values Report

**Geographic Area:** Maryland

**Pollutant:** PM2.5

**Year:** 2013

**Exceptional Events:** Included (if any)

**Duration Description=24 HOUR**

Duration Description	Obs	First Max	Second Max	Third Max	Fourth Max	98th Percentile	Weighted Annual Mean	Exc Events	Monitor Number	Site ID	Address	City	County	State	EPA Region
24 HOUR	116	30.4	26.3	22.1	20.2	22	9.1	None	1	240031003	Anne Arundel Co. Public Works Bldg, 7409 Baltimore Annapolis Blvd.	Glen Burnie	Anne Arundel	MD	03
24 HOUR	111	26.5	24.7	19.9	19.7	20	8.5	None	1	240051007	Padonia Elementary School, 9834 Greenside Drive	Cockeysville	Baltimore	MD	03
24 HOUR	53	26.9	20	17.9	17.8	20	8.5	None	2	240051007	Padonia Elementary School, 9834 Greenside Drive	Cockeysville	Baltimore	MD	03
24 HOUR	113	35.2	29.4	26.8	23.4	27	9.5	None	1	240053001	600 Dorsey Avenue	Essex	Baltimore	MD	03
24 HOUR	121	22.2	20.1	18.6	17.5	19	7.8	None	1	240330030	Howard University'S Beltsville Laboratory, 12003 Old Baltimore Pike	Beltsville	Prince George's	MD	03
24 HOUR	32	21.7	18.5	16.4	12.7	22	8.2	None	2	240330030	Howard University'S Beltsville Laboratory, 12003 Old Baltimore Pike	Beltsville	Prince George's	MD	03
24 HOUR	106	23.5	20.4	17.2	15.5	17	7.5	None	1	240338003	Pg County Equestrian Center, 14900 Pennsylvania Ave.	Greater Upper Marlboro	Prince George's	MD	03
24 HOUR	50	16.6	15	15	14.7	17	7.9	None	2	240338003	Pg County Equestrian Center, 14900 Pennsylvania Ave.	Greater Upper Marlboro	Prince George's	MD	03
24 HOUR	116	28.6	27	20.4	18.8	20	8.6	None	1	245100007	Northwest Police Station, 5271 Reistertown Road	Baltimore	Baltimore (City)	MD	03
24 HOUR	114	32	28.7	24.3	22.8	24	9.4	None	1	245100008	Baltimore City Fire Dept.-Truck Company 20; 5714 Eastern Avenue	Baltimore	Baltimore (City)	MD	03
24 HOUR	303	34.6	29.8	29.7	27.7	23	9.1	None	1	245100040	Oldtown Fire Station, 1100 Hillen Street	Baltimore	Baltimore (City)	MD	03

Get detailed information about this report, including column descriptions, at [http://www.epa.gov/airquality/airdata/ad\\_about\\_reports.html#mon](http://www.epa.gov/airquality/airdata/ad_about_reports.html#mon)

AirData reports are produced from a direct query of the AQS Data Mart. The data represent the best and most recent information available to EPA from state agencies. However, some values may be absent due to incomplete reporting, and some values may change due to quality assurance activities. The AQS database is updated daily by state, local, and tribal organizations who own and submit the data. Please contact the appropriate air quality monitoring agency to report any data problems.  
<[http://www.epa.gov/airquality/airdata/ad\\_contacts.html](http://www.epa.gov/airquality/airdata/ad_contacts.html)>

Readers are cautioned not to rank order geographic areas based on AirData reports. Air pollution levels measured at a particular monitoring site are not necessarily representative of the air quality for an entire county or urban area.

This report is based on monitor-level summary statistics. Air quality standards for some pollutants (PM2.5 and Pb) allow for combining data from multiple monitors into a site-level summary statistic that can be compared to the standard. In those cases, the site-level statistics may differ from the monitor-level statistics upon which this report is based.

Source: U.S. EPA AirData <<http://www.epa.gov/airdata>>  
Generated: July 17, 2015

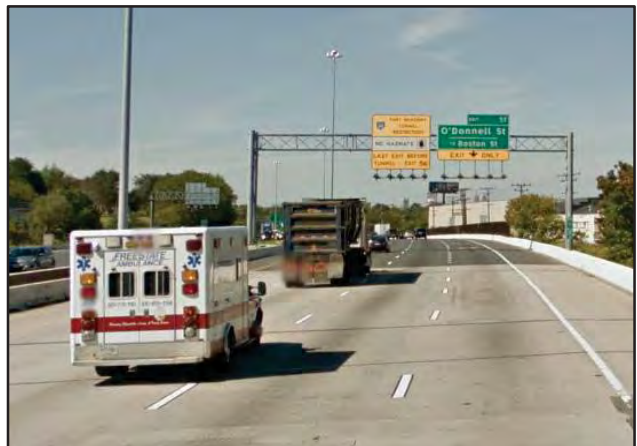
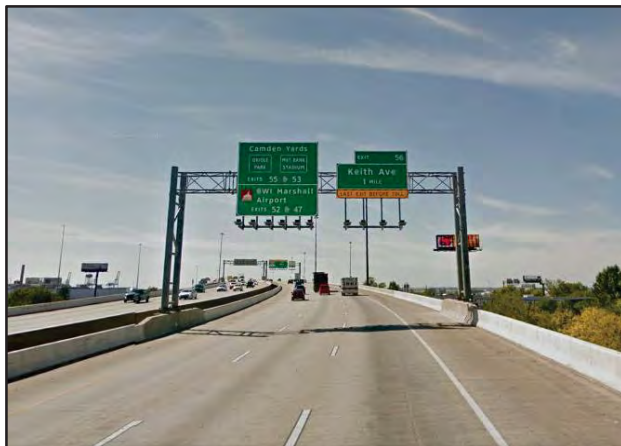
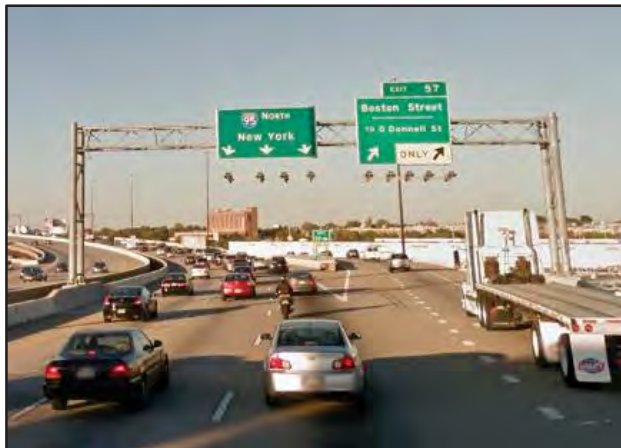
## **APPENDIX C - TRAFFIC DATA**



Maryland  
Transportation  
Authority

# I-95 from Moravia Road to the Fort McHenry Tunnel

## Traffic Data & Analyses Technical Report



January 2016



# Table of Contents

INTRODUCTION .....	1
EXISTING CONDITIONS.....	2
Existing Roadway Geometry .....	2
Traffic Volumes .....	8
Traffic Operations .....	8
FUTURE NO-BUILD CONDITIONS.....	12
Construction Year / Year of Opening (2018).....	12
I. Traffic Volumes .....	12
II. Traffic Operations .....	12
2040 No-Build Conditions .....	15
I. Traffic Volumes .....	15
II. Traffic Operations .....	15
PROPOSED BUILD CONDITIONS .....	18
Original Proposed Concept .....	18
Alternatives Proposed By MDTA.....	18
2018 Build Conditions .....	23
I. Traffic Volumes .....	23
II. Traffic Operations .....	27
Capacity Sensitivity Analysis .....	28
2040 Build Conditions .....	29
I. Traffic Volumes .....	29
II. Traffic Operations .....	29
SUPPLEMENTAL TRAFFIC DATA .....	32
Noise Analysis .....	32
Maintenance of Traffic Alternatives Analysis (MOTAA) .....	33
SUMMARY AND NEXT STEPS.....	33

## List of Figures

Figure 1.	Location Map .....	3
Figure 2.	I-95 Lane Diagram Key Map .....	4
Figure 3A.	I-95 Lane Diagram: Area A – Existing .....	5
Figure 3B.	I-95 Lane Diagram: Area B – Existing .....	6
Figure 3C.	I-95 Lane Diagram: Area C – Existing .....	7
Figure 4.	Existing (2015) Traffic Volumes and Truck Percentages .....	9
Figure 5.	Highway Segment Location Reference for HCS Analysis .....	10
Figure 6.	Projected Year 2018 Traffic Volumes and Truck Percentages .....	13
Figure 7.	2040 No-Build Traffic Volumes and Truck Percentages .....	16
Figure 8A.	I-95 Lane Diagram: Area A - Original Proposed .....	19
Figure 8B.	I-95 Lane Diagram: Area B - Original Proposed .....	20
Figure 8C.	I-95 Lane Diagram: Area C - Original Proposed .....	21
Figure 9A.	I-95 Lane Diagram: Area A – Final Proposed .....	24
Figure 9B.	I-95 Lane Diagram: Area B – Final Proposed .....	25
Figure 9C.	I-95 Lane Diagram: Area C – Final Proposed .....	26
Figure 10.	2040 Build Traffic Volumes and Truck Percentages .....	30

## List of Tables

Table 1.	2015 Existing Conditions - HCS Analyses Results.....	11
Table 2.	2018 No-Build Conditions - HCS Analyses Results .....	14
Table 3.	2040 No-Build Conditions - HCS Analyses Results .....	17
Table 4.	Alternative 1 - HCS Analysis Results (I-95 SB from Kane Street to O'Donnell Street) .....	22
Table 5.	Alternative 2 - HCS Analysis Results (I-95 NB from Keith Avenue to Boston Street).....	23
Table 6.	2018 Build Conditions - HCS Analyses Results.....	27
Table 7.	2018 Build Conditions – Capacity Sensitivity Analysis.....	28
Table 8.	2040 Build Conditions - HCS Analyses Results.....	31
Table 9.	2040 No-Build vs 2040 Build - HCS Analysis Results .....	32

## INTRODUCTION

As part of an ongoing project for the Maryland Transportation Authority (MDTA), Rummel, Klepper, & Kahl (RK&K) has compiled traffic data and performed operational analyses to evaluate the projected impacts of providing four (4) continuous through lanes along I-95 in each direction from Moravia Road to the Fort McHenry Tunnel. MDTA requested that RK&K update the traffic volumes, traffic forecasts, and traffic analyses for the project to evaluate potential design changes and to confirm that the proposed design would operate acceptably, since it had been several years since the previous traffic analysis was completed (during the planning phase of the project in 2007). The purpose of this report is to present the latest traffic data and to present the results of the updated traffic analysis.

The project is located in Baltimore City and the study area for this traffic report extends from the I-95 Express Toll Lanes (ETLs) in the north to just north of the Fort McHenry Tunnel (FMT) toll plaza in the south. The improvements along I-95 have been split into four phases:

- “Phase 1 Southbound” includes modifications to I-95 southbound from the I-95 ETL project to north of Eastern Avenue.
- “Phase 2 Southbound” includes modifications to I-95 southbound from Kane Street to the entrance ramp from Boston Street.
- “Phase 1 Northbound” includes modifications to I-95 northbound from Eastern Avenue to the I-95 ETL.
- “Phase 2 Northbound” includes modifications to I-95 from the Fort McHenry toll plaza to the entrance ramp from O’Donnell Street.

Construction of “Phase 1 Southbound” was previously completed in 2012, while the other three phases have been combined into a single design contract (MDTA Project FT-3003). Construction of the remaining improvements along I-95 is projected to begin in January 2017 and be completed by October 2018. This schedule will allow the project to be completed prior to construction of the I-895 Canton Viaduct project. The Canton Viaduct project is scheduled to start in late 2018 and is expected to disrupt the traffic along I-895. It is anticipated that the additional capacity provided along I-95 from Moravia Road to the FMT as part of this project would help to compensate for the temporary loss of capacity along I-895.

This report presents the traffic data and operational analyses results for the I-95 project from Moravia Road to the Fort McHenry Tunnel. The analyses were performed for existing conditions (year 2015), as well as for No-Build and Build conditions for the construction year / year of opening (2018). Analyses were also performed for the future design year of 2040 to assess the long-term operational impacts. However, it should be noted that this project is a relatively low-cost, short-term improvement that was not designed to accommodate long-term traffic demand.

Traffic data presented includes peak hour volumes and the average daily traffic (ADT) for all freeway segments and ramps within the study area, as well as truck percentages. This report also discusses the analysis methodology and summarizes the results of all operational analyses.

## EXISTING CONDITIONS

The project is located in the southeast part of Baltimore City and extends along I-95 in the north-south direction. The study area extends from the I-95 Express Toll Lanes (ETLs) in the north to just north of the Fort McHenry Tunnel (FMT) toll plaza in the south. There are five interchanges within the study area that create merge, diverge and weave areas within the study limits. **Figure 1** shows the study area map. The existing roadway and traffic characteristics are discussed in the following sections.

### Existing Roadway Geometry

Under existing conditions, I-95 carries three (3) or four (4) through lanes in each direction within the study limits. **Figure 3A-3C** shows detailed lane diagrams of existing conditions along the project corridor (refer to **Figure 2** for a key map of the lane diagram). The 3-lane segments that will need to be re-stripped and widened to four lanes as part of this project include:

Segment 1 - Northbound I-95 between Boston Street and the entrance from Interstate Ave.

Segment 2 - Southbound I-95 between O'Donnell Street and Boston Street

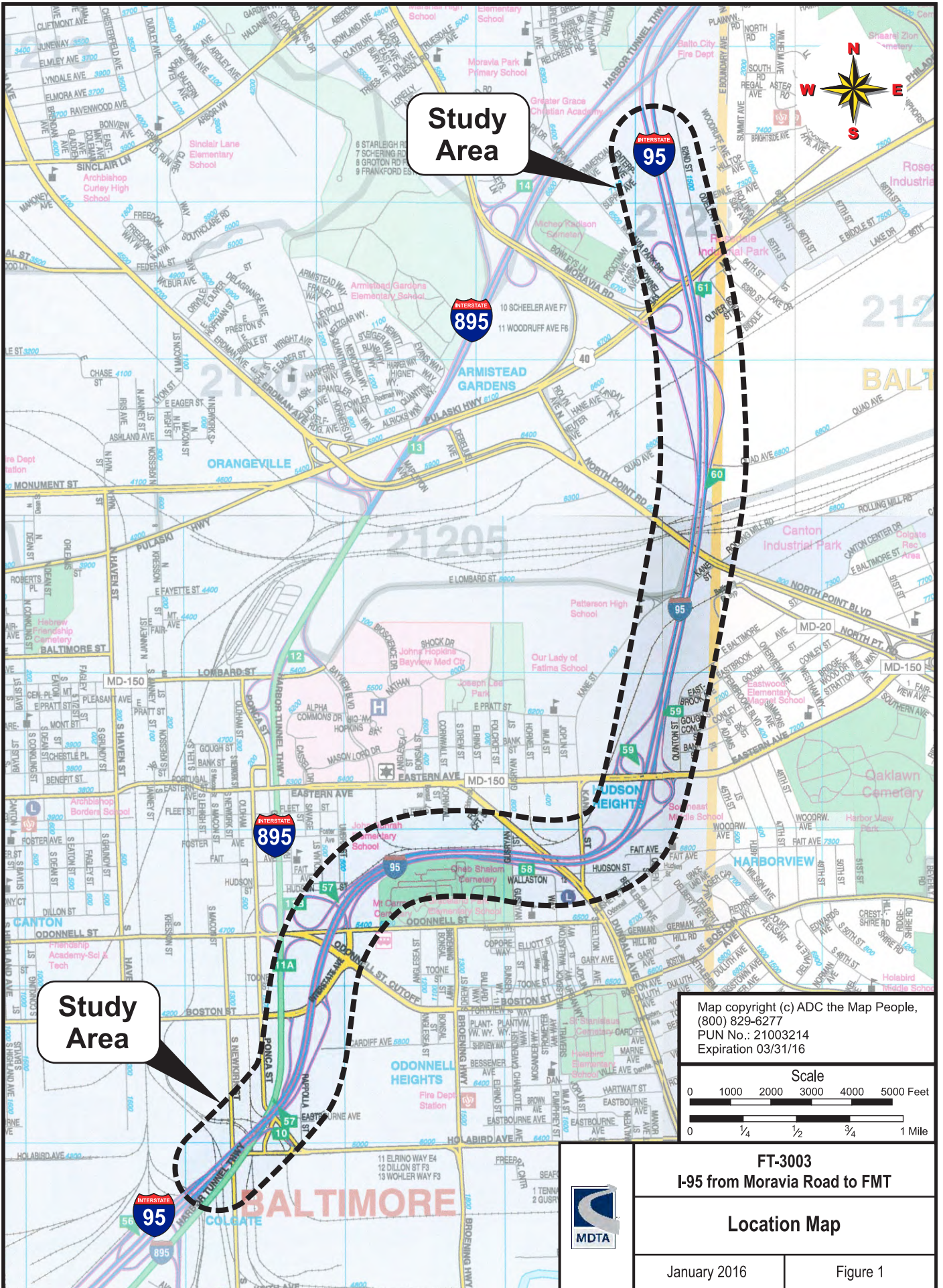
Segment 3 - Northbound I-95 from Moravia Road to the I-95 ETLs

Segment 1 starts with four northbound lanes north of the FMT toll plaza and a merge from the entrance ramp from Keith Avenue, followed immediately by a diverge for the exit ramp to Boston Street, which results in a lane drop. Because the merge and diverge between Keith Avenue and Boston Street are closely spaced, the traffic operates like a weave. I-95 then carries three lanes northbound between the exit ramp to Boston Street and the entrance ramp from Interstate Avenue.

Segment 2 starts with four southbound lanes and a merge at the entrance ramp from Kane Street, followed immediately by a diverge with a lane-drop at the exit ramp to O'Donnell Street. Similar to Segment 1, the merge and diverge between Kane Street and O'Donnell Street are closely spaced and the segment operates like a weaving segment. I-95 then carries three lanes southbound between the exit ramp to O'Donnell Street and a mainline lane-add, located just prior to the Boston Street entrance ramp.

Segment 3 starts with four northbound lanes north of the entrance ramp from Eastern Avenue and a diverge at the exit ramp to Moravia Road, which results in a lane drop. This diverge is located almost immediately after the merge for the entrance ramp from Eastern Avenue, which creates a weaving behavior between the two ramps. I-95 then carries three lanes northbound beyond the exit ramp to the US 40 (Pulaski Highway) until the ramp to the I-95 ETLs forms on the left side.

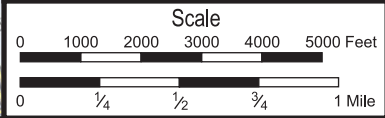




**Study Area**

**Study Area**

Map copyright (c) ADC the Map People,  
 (800) 829-6277  
 PUN No. : 21003214  
 Expiration 03/31/16

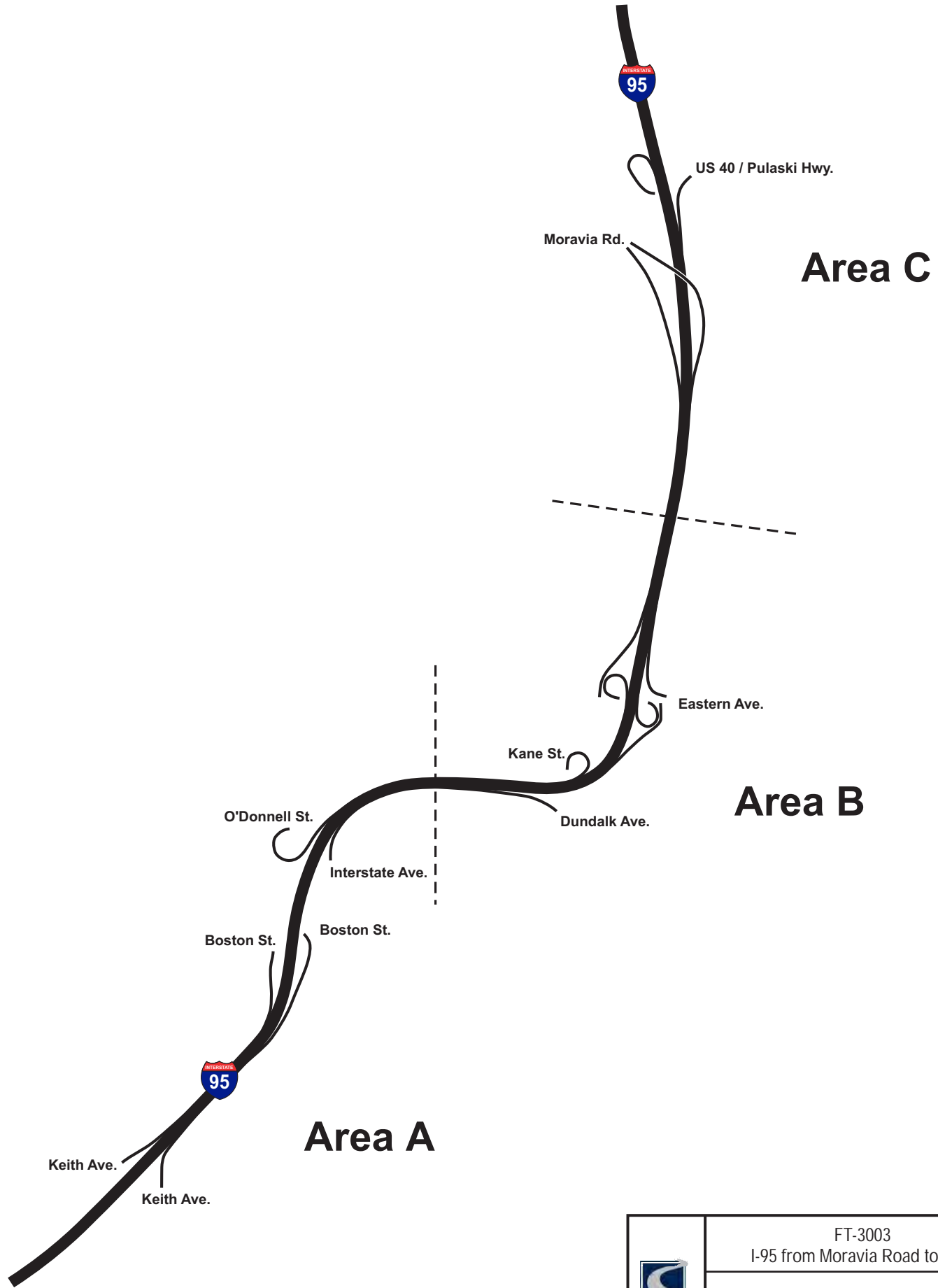



**FT-3003**  
**I-95 from Moravia Road to FMT**

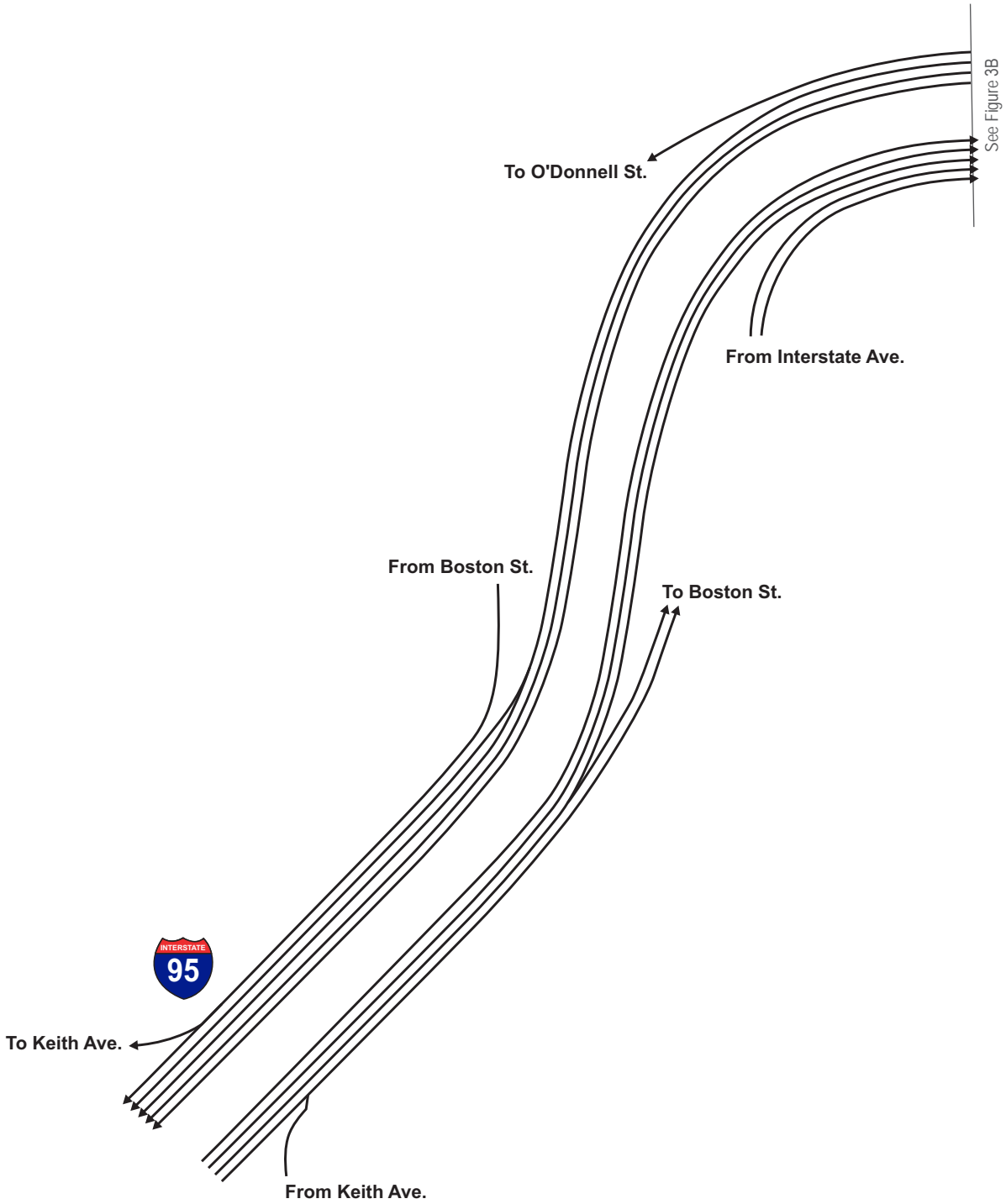
**Location Map**

January 2016 Figure 1






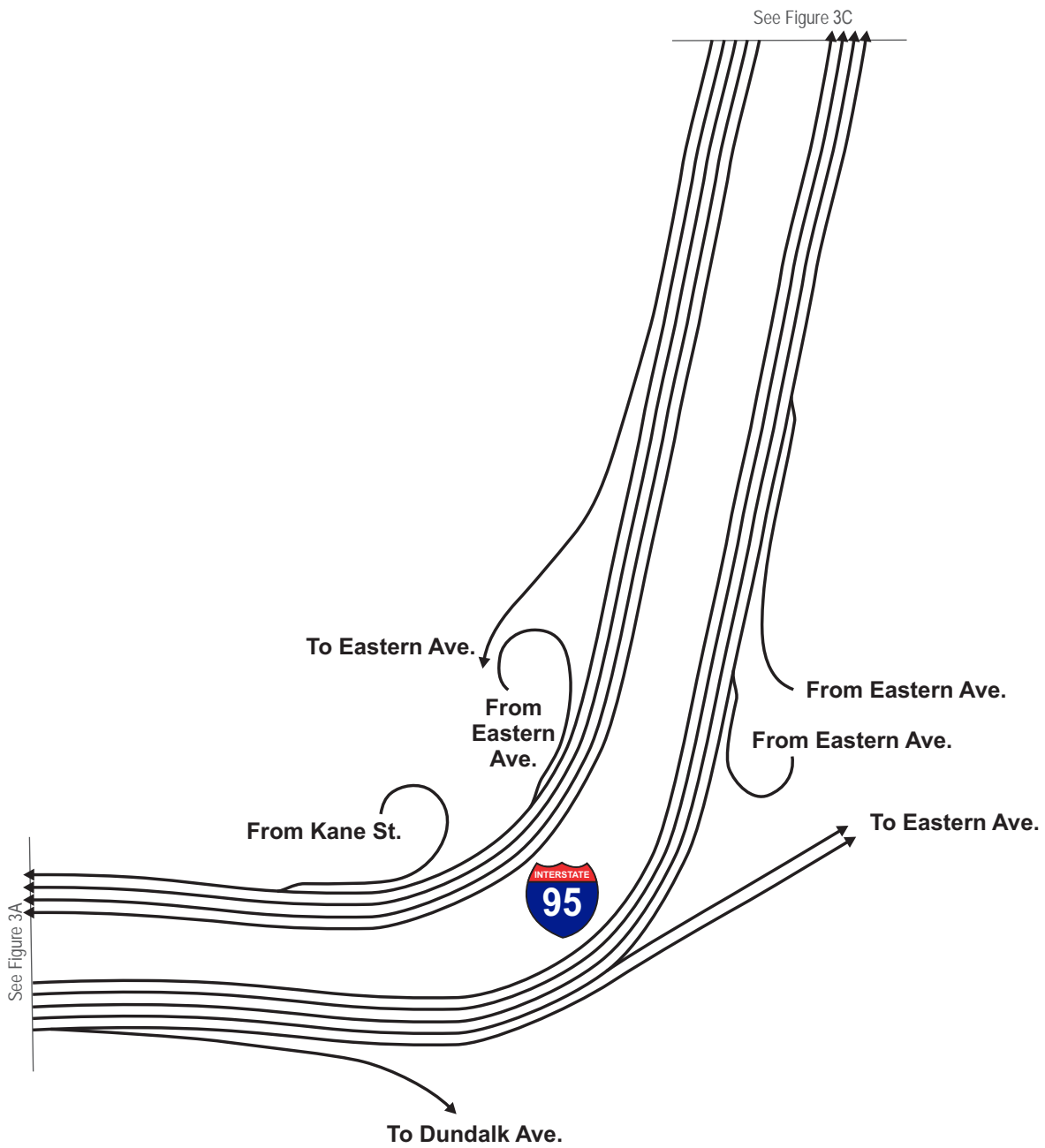
	FT-3003	
	I-95 from Moravia Road to FMT	
	I-95 Lane Diagram Key Map	
	January 2016	Figure 2




Not to Scale

	FT-3003 I-95 from Moravia Road to FMT	
	<b>I-95 Lane Diagram Area A - Existing</b>	
	January 2016	Figure 3A





Not to Scale

	FT-3003 I-95 from Moravia Road to FMT	
	<b>I-95 Lane Diagram          Area B - Existing</b>	
	January 2016	Figure 3B

I-95 ETL Lanes  
I-95 GP Lanes



I-95 GP Lanes




From US 40

To US 40

From Moravia Rd.

To Moravia Rd.

See Figure 3B

	FT-3003 I-95 from Moravia Road to FMT	
	<b>I-95 Lane Diagram Area C - Existing</b>	
	January 2016	Figure 3C

Not to Scale

## Traffic Volumes

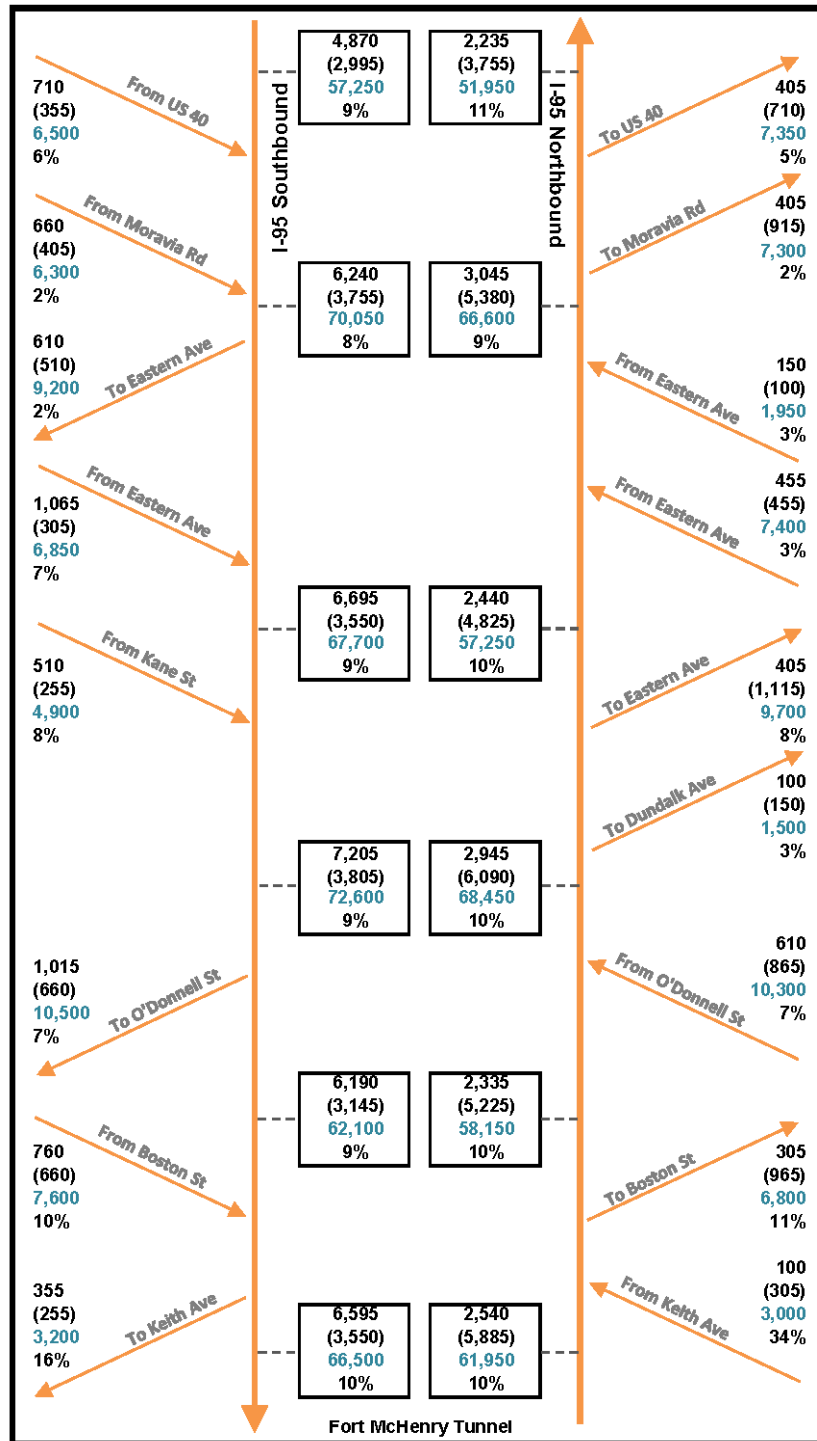
Volume networks representing existing conditions were developed for the study area, using recent count data from the Fort McHenry toll plaza and from tube counts performed on mainline segments and ramps within the last three years. Count volumes were projected to the current year (2015) by applying an annual growth rate of 0.5% per year based on historical trends and were balanced between interchange ramps. The data indicates that the peak direction of travel within the study area is in the southbound direction during the AM peak hour and in the northbound direction during the PM peak hour. **Figure 4** shows the resulting 2015 balanced volume network and includes AM and PM peak hour volumes, ADT, and truck percentages for the study corridor.

## Traffic Operations

Operational analyses of existing conditions were performed using Highway Capacity Software (HCS) 2010, Version 6.60. Level of Service (LOS) was determined for all freeway sections and ramp junctions along I-95 within the study limits. HCS 2010 is a software package that implements the procedures for analyzing freeway segments, as well as the merge, diverge and weave areas based on the methodologies presented in the 2010 [Highway Capacity Manual](#) (HCM). **Table 1** summarizes the results from the HCS analyses for the 2015 existing conditions. The highway segment location numbers that are referenced in Table 1 are shown in **Figure 5**.

The HCS analyses results indicate that I-95 northbound currently operates at LOS B or better during the AM peak hour and LOS D or better during the PM peak hour, except for the weaving area between Keith Avenue and Boston Street, which operates at LOS E during the PM peak hour. The HCS analyses results also indicate that I-95 southbound operates at LOS C or better during the PM peak hour and most segments along I-95 southbound operate at LOS D or better during the AM peak hour. However, the segments between the entrance ramps from Kane Street and Boston Street, as well as the weave between Boston Street and Keith Avenue operate at LOS E during the AM peak hour.

Figure 4. Existing (2015) Traffic Volumes and Truck Percentages



Legend

- X,XXX AM Peak Hour Volume
- (X,XXX) PM Peak Hour Volume
- XX,XXX ADT
- XX% Truck Percentage

Figure 5. Highway Segment Location Reference for HCS Analysis

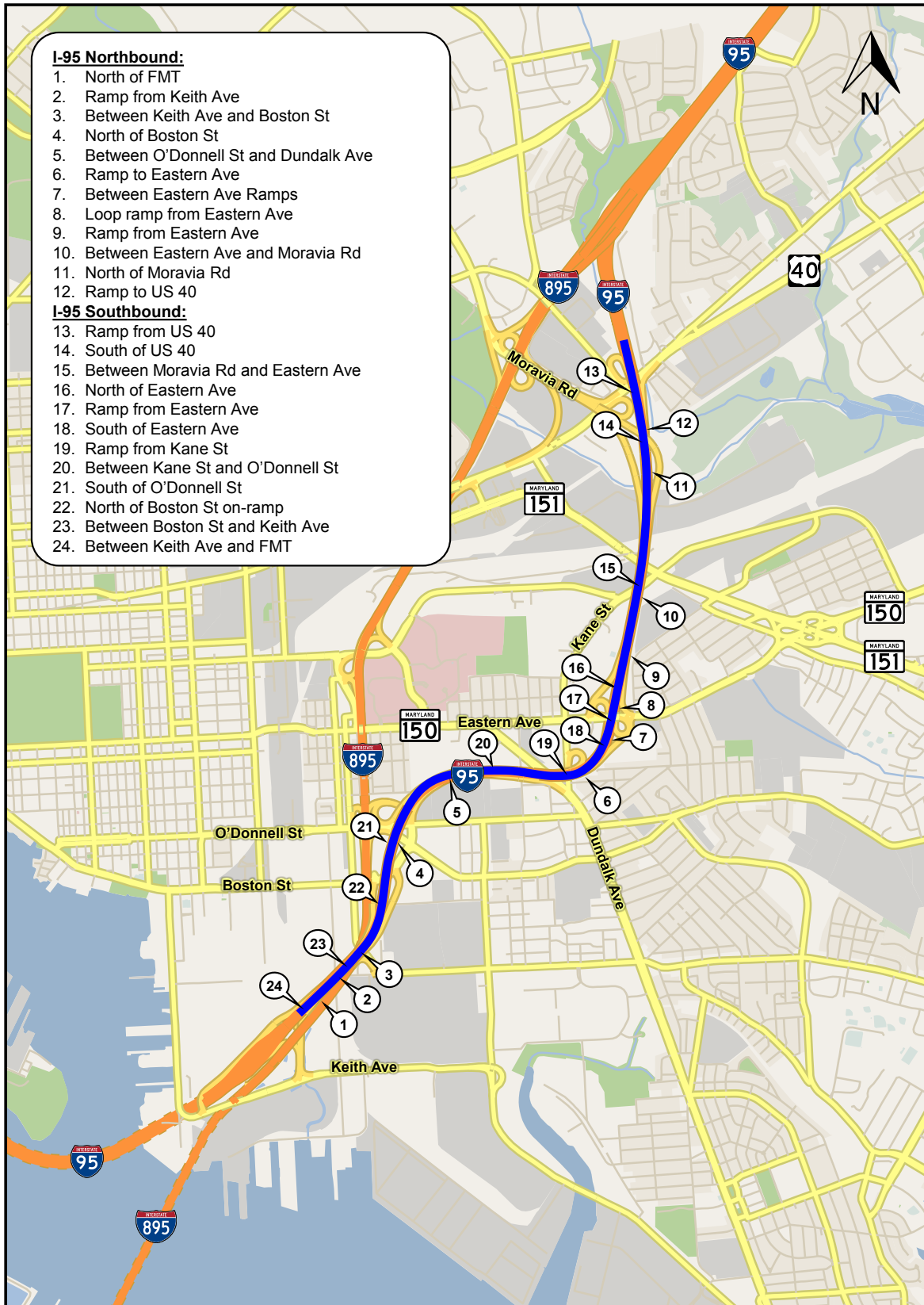


Table 1. 2015 Existing Conditions - HCS Analyses Results

Dir.	No.	Highway Segment	Analysis Type	LOS (Density)	
				AM	PM
I-95 Northbound	1	North of FMT	Freeway	B (11.8)	D (27.4)
	2	Ramp from Keith Ave	Merge	A (9.9)	C (23.4)
	3	Between Keith Ave and Boston St	Weaving	B (13.4)	E (35.0)
	4	North of Boston St	Freeway	B (14.5)	D (33.6)
	5	Between O'Donnell St and Dundalk Ave	Weaving	B (11.9)	C (26.6)
	6	Ramp to Eastern Ave	Major Diverge	A (10.0)	C (20.8)
	7	Between Eastern Ave Ramps	Freeway	B (11.4)	C (22.5)
	8	Loop-Ramp from Eastern Ave	Merge	B (11.9)	C (20.2)
	9	Ramp from Eastern Ave	Merge	A (9.8)	B (17.7)
	10	Between Eastern Ave and Moravia Rd	Weaving	B (15.4)	D (28.4)
	11	North of Moravia Rd	Freeway	B (16.4)	D (27.7)
	12	Ramp to US 40	Diverge	B (16.1)	C (26.3)
I-95 Southbound	13	Ramp from US 40	Merge	C (21.2)	B (11.8)
	14	South of US 40	Freeway	C (25.9)	B (15.5)
	15	Between Moravia Rd and Eastern Ave	Weaving	D (30.2)	B (16.4)
	16	North of Eastern Ave	Freeway	C (26.0)	B (15.0)
	17	Ramp from Eastern Ave	Merge	D (28.3)	B (13.9)
	18	South of Eastern Ave	Freeway	D (31.7)	B (16.5)
	19	Ramp from Kane St	Merge	C (27.5)	B (14.5)
	20	Between Kane St and O'Donnell St	Weaving	E (42.0)	B (19.8)
	21	South of O'Donnell St	Freeway	E (44.8)	C (19.4)
	22	North of Boston St On-Ramp	Freeway (Lane Add)	D (28.8)	B (14.6)
	23	Between Boston St and Keith Ave	Weaving	E (35.2)	B (17.4)
	24	Between Keith Ave and FMT	Freeway	D (31.3)	B (16.5)

## FUTURE NO-BUILD CONDITIONS

### Construction Year / Year of Opening (2018)

#### *I. Traffic Volumes*

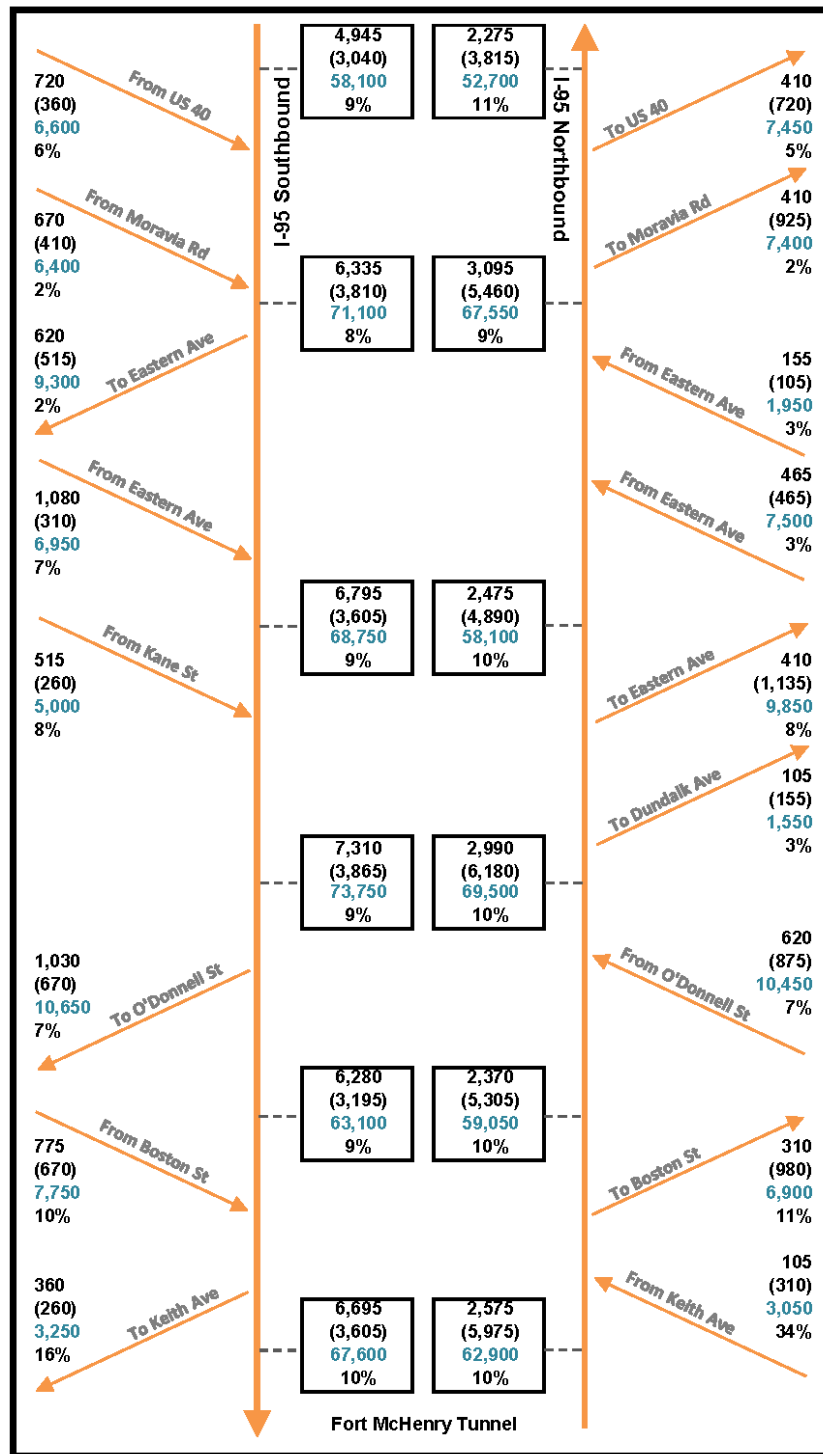
As mentioned in the introduction, the improvements along I-95 are anticipated to be completed by October 2018, prior to the initiation of the Canton Viaduct project. Several resources were consulted to develop traffic forecasts to represent the construction year / year of opening, including the 2015 FMT Toll Plaza Report provided by MDTA and the Maryland State Highway Administration (SHA) “station history” data obtained from SHA’s website. The 2015 FMT Toll Plaza Report includes traffic data at the toll plaza for the period between 2006 and 2015, and the SHA data includes ADTs along I-95 for the period between 2008 and 2014. The data suggests that there has been minimal (or even negative) growth over the last 5 to 10 years along I-95 within the study area. However, to be conservative, a 0.5% growth rate per year was applied to project the existing 2015 volumes to the construction year of 2018. **Figure 6** shows the resulting 2018 volume network, including AM and PM peak hour volumes, ADT, and truck percentages for the study corridor.

#### *II. Traffic Operations*

HCS was used to determine the Level of Service (LOS) for all freeway sections as well as all ramp merge, diverge, and weave sections along I-95 for the 2018 No-Build Conditions based on the existing geometry shown in Figure 3 and the volumes shown in Figure 6. The HCS analysis results for 2018 No-Build are summarized in **Table 2**.

The HCS analysis results indicate that 2018 No-Build conditions would be expected to be similar to the existing conditions. However, the 3-lane freeway segment south of O’Donnell Street is projected to operate at LOS F (fail) during the AM peak hour in 2018 under No-Build conditions.

Figure 6. Projected Year 2018 Traffic Volumes and Truck Percentages



Legend

- X,XXX AM Peak Hour Volume
- (X,XXX) PM Peak Hour Volume
- XX,XXX ADT
- XX% Truck Percentage



Table 2. 2018 No-Build Conditions - HCS Analyses Results

Dir.	No.	Highway Segment	Analysis Type	LOS (Density)	
				AM	PM
I-95 Northbound	1	North of FMT	Freeway	B (12.0)	D (27.9)
	2	Ramp from Keith Ave	Merge	B (10.1)	C (23.8)
	3	Between Keith Ave and Boston St	Weaving	B (13.6)	E (35.7)
	4	North of Boston St	Freeway	B (14.7)	D (34.4)
	5	Between O'Donnell St and Dundalk Ave	Weaving	B (12.1)	C (27.1)
	6	Ramp to Eastern Ave	Major Diverge	B (10.1)	C (21.1)
	7	Between Eastern Ave Ramps	Freeway	B (11.5)	C (22.8)
	8	Loop-Ramp from Eastern Ave	Merge	B (12.1)	C (20.5)
	9	Ramp from Eastern Ave	Merge	A (10.0)	B (18.3)
	10	Between Eastern Ave and Moravia Rd	Weaving	B (15.6)	D (28.9)
	11	North of Moravia Rd	Freeway	B (16.7)	D (28.2)
	12	Ramp to US 40	Diverge	B (16.4)	C (26.7)
I-95 Southbound	13	Ramp from US 40	Merge	C (21.5)	B (12.0)
	14	South of US 40	Freeway	D (26.2)	B (15.8)
	15	Between Moravia Rd and Eastern Ave	Weaving	D (30.8)	B (16.7)
	16	North of Eastern Ave	Freeway	D (26.4)	B (15.2)
	17	Ramp from Eastern Ave	Merge	D (28.7)	B (14.1)
	18	South of Eastern Ave	Freeway	D (32.3)	B (16.7)
	19	Ramp from Kane St	Merge	C (27.9)	B (14.8)
	20	Between Kane St and O'Donnell St	Weaving	E (42.7)	C (20.2)
	21	South of O'Donnell St	Freeway	F (46.2)	C (19.7)
	22	North of Boston St On-Ramp	Freeway (Lane Add)	D (29.3)	B (14.8)
	23	Between Boston St and Keith Ave	Weaving	E (35.9)	B (17.7)
	24	Between Keith Ave and FMT	Freeway	D (31.9)	B (16.8)

## 2040 No-Build Conditions

### *I. Traffic Volumes*

Outputs from two regional travel demand forecasting models - the Baltimore Metropolitan Council (BMC) model and the Maryland Statewide Transportation Model (MSTM) - were used to estimate the projected traffic volumes along I-95 within the study area in the future year of 2040 for use in long-term analyses. Both models use the latest approved land use projections to forecast future travel demand and trip generation and to estimate traffic growth rates.

Link-based outputs from the BMC and the MSTM models were reviewed by the project team for all roadway segments along I-95 within the study area. The outputs include existing ADT, projected future ADT, and the corresponding growth rate. A review of the model outputs indicated that traffic is projected to grow along I-95 at a rate of approximately 1% per year for the links at the northern end of the study area. The models also indicate that the growth rate gradually decreases until it reaches approximately 0.5% per year for the links at the southern end of the study area, just north of the FMT.

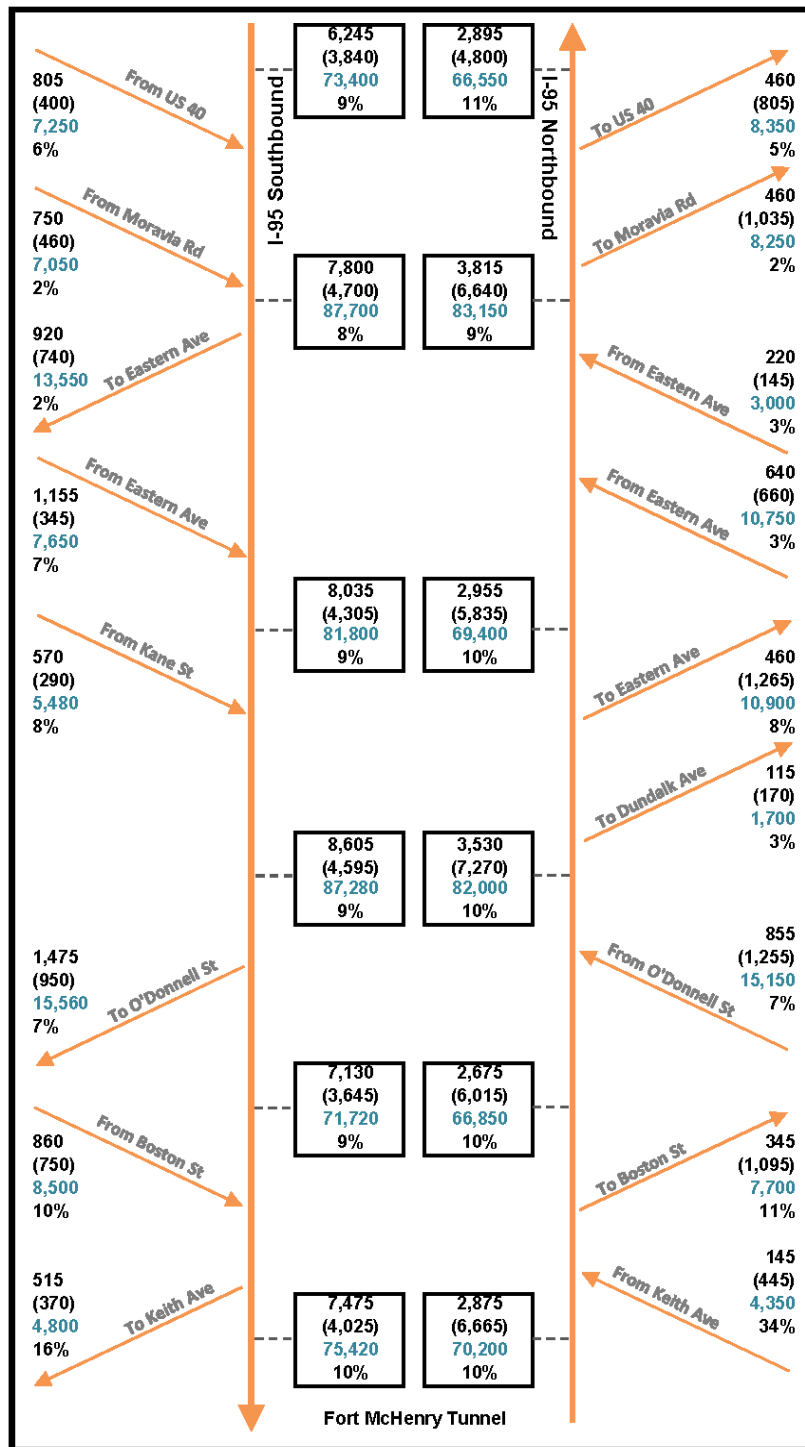
Based on these findings, the project team developed a 2040 No-Build volume network by applying a growth rate of 1% per year to the existing volumes at the north end of the study area, applying a growth rate of 0.5% per year to the existing volumes at the south end of the study area, and balancing the volumes in between. **Figure 7** shows the resulting volume network for the 2040 No-Build conditions based on these projected growth rates. It includes AM and PM peak hour volumes, ADT, and truck percentages for the study corridor.

### *II. Traffic Operations*

HCS was used to determine the Level of Service (LOS) for all freeway sections as well as all ramp merge, diverge, and weave sections along I-95 for the 2040 No-Build conditions. The HCS analysis results are summarized in **Table 3**.

As a result of 25 years of traffic growth, several additional segments within the study area are projected to operate at LOS E or LOS F under 2040 No-Build conditions. The HCS analysis results indicate that the area of I-95 northbound between the entrance ramps from Keith Avenue and O'Donnell Street and between the entrance ramp from Eastern Avenue and north of Moravia Road both are projected to operate at LOS E during the PM peak hour. In the southbound direction, four segments are projected to operate at LOS F during the AM peak hour under 2040 No-Build conditions, including the area between the entrance ramp from Kane Street through the 3-lane segment prior to the Boston Street entrance ramp, as well as the weave between Boston Street and Keith Avenue.

Figure 7. 2040 No-Build Traffic Volumes and Truck Percentages



Legend

- X,XXX AM Peak Hour Volume
- (X,XXX) PM Peak Hour Volume
- XX,XXX ADT
- XX% Truck Percentage

Table 3. 2040 No-Build Conditions - HCS Analyses Results

Dir.	No.	Highway Segment	Analysis Type	LOS (Density)	
				AM	PM
I-95 Northbound	1	North of FMT	Freeway	B (13.4)	D (31.7)
	2	Ramp from Keith Ave	Merge	B (11.5)	C (27.4)
	3	Between Keith Ave and Boston St	Weaving	B (15.5)	E (42.0)
	4	North of Boston St	Freeway	B (16.6)	E (42.6)
	5	Between O'Donnell St and Dundalk Ave	Weaving	B (14.5)	D (32.7)
	6	Ramp to Eastern Ave	Major Diverge	B (12.0)	C (24.9)
	7	Between Eastern Ave Ramps	Freeway	B (13.8)	D (27.2)
	8	Loop-Ramp from Eastern Ave	Merge	B (15.2)	C (25.3)
	9	Ramp from Eastern Ave	Merge	B (12.8)	C (22.3)
	10	Between Eastern Ave and Moravia Rd	Weaving	B (19.7)	E (36.3)
	11	North of Moravia Rd	Freeway	C (20.8)	E (37.5)
	12	Ramp to US 40	Diverge	C (20.2)	D (31.6)
I-95 Southbound	13	Ramp from US 40	Merge	C (26.7)	B (15.1)
	14	South of US 40	Freeway	D (34.0)	C (19.6)
	15	Between Moravia Rd and Eastern Ave	Weaving	E (41.3)	C (21.7)
	16	North of Eastern Ave	Freeway	D (32.6)	C (18.3)
	17	Ramp from Eastern Ave	Merge	D (33.3)	B (16.7)
	18	South of Eastern Ave	Freeway	E (42.4)	C (19.9)
	19	Ramp from Kane St	Merge	F (32.6) <sup>1</sup>	B (17.4)
	20	Between Kane St and O'Donnell St	Weaving	F (N/A) <sup>2</sup>	C (24.4)
	21	South of O'Donnell St	Freeway	F (65.6)	C (22.5)
	22	North of Boston St On-Ramp	Freeway (Lane Add)	D (34.6)	B (16.9)
	23	Between Boston St and Keith Ave	Weaving	F (43.4)	C (21.0)
	24	Between Keith Ave and FMT	Freeway	E (37.5)	C (18.7)

\* Notes: 1. Merge fails because downstream freeway exceeds capacity, not due to density.

2. No density value is given in HCS. Weaving segment exceeds capacity.

## PROPOSED BUILD CONDITIONS

### Original Proposed Concept

The Original Proposed concept was developed during project planning and is shown in **Figure 8A-8C**. The following improvements were recommended under the Original Proposed concept:

- A full auxiliary lane is introduced on I-95 northbound, between the entrance ramp from Keith Avenue and the exit ramp to Boston Street, creating a 5-lane weave between the two ramps. A new mainline lane is then added to the 3-lane segment north of the Boston Street ramp, which results in four (4) northbound lanes between Boston Street and the O'Donnell Street ramps. The proposed improvements require dropping one of the two lanes on the entrance ramp from Interstate Avenue before it merges onto the I-95 mainline.
- A full auxiliary lane is introduced on I-95 northbound, between the entrance ramp from Eastern Avenue and the exit ramp to Moravia Road, creating a 5-lane weave between the two ramps. A new lane is then added to the 3-lane segment north of the Moravia Road ramp, which results in four (4) northbound lanes through the US 40 interchange and all the way to the I-95 ETLs, where the left lane would be dropped.
- A full auxiliary lane is introduced on I-95 southbound, between the entrance ramp from Kane Street and the exit ramp to O'Donnell Street, creating a 5-lane weave between the two ramps. A new mainline lane is then added to the 3-lane segment between the O'Donnell Street ramp and entrance ramp from Boston Street, which results in four (4) continuous southbound lanes between the I-95 ETLs and the FMT.

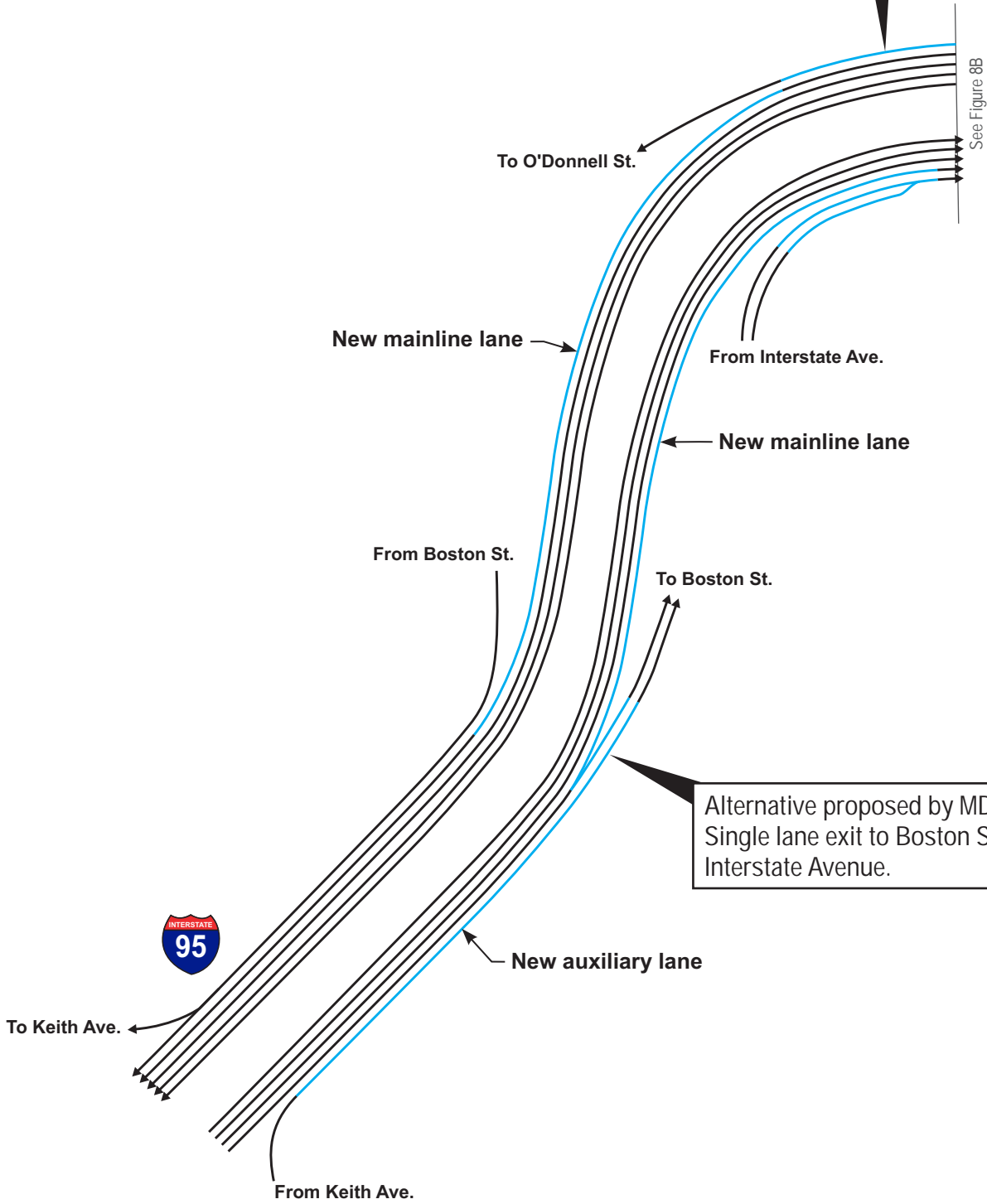
### Alternatives Proposed By MDTA

At the beginning of the design phase of the project, three different alternative lane configurations were proposed by MDTA for evaluation by RK&K. These alternatives are noted on **Figure 8A-8C** and are discussed in detail below:

1. The first MDTA Alternative studied by RK&K proposed to maintain the existing 4-lane segment on I-95 southbound between Kane Street and O'Donnell Street ramps, as well as the existing merge for the entrance ramp from Kane Street. However, the existing lane drop at the exit ramp to O'Donnell Street would be replaced with a new 900-foot deceleration lane, allowing four through lanes to continue southbound to Boston Street.


RK&K performed HCS analysis of the Original Proposed concept and the proposed MDTA Alternative to compare the projected operations in the year of opening (2018). The results are shown in **Table 4**. The HCS analysis results indicate that both alternatives significantly improve the operations south of the exit ramp to O'Donnell Street compared to existing conditions (i.e., from LOS F to LOS D during the PM peak hour), and both alternatives operate similarly to the No-Build condition between Kane Street and O'Donnell Street. However, the alternative configuration results in fewer structural impacts and yields lower construction costs. Additionally, a review of historical crash data in the study area revealed no safety issues at the existing merge condition from Kane Street. **Therefore, the alternative configuration is recommended as the proposed configuration in this segment.**

Alternative proposed by MDTA:  
 No auxiliary lane between Kane  
 Street and O'Donnell Street;  
 diverge at O'Donnell Street exit

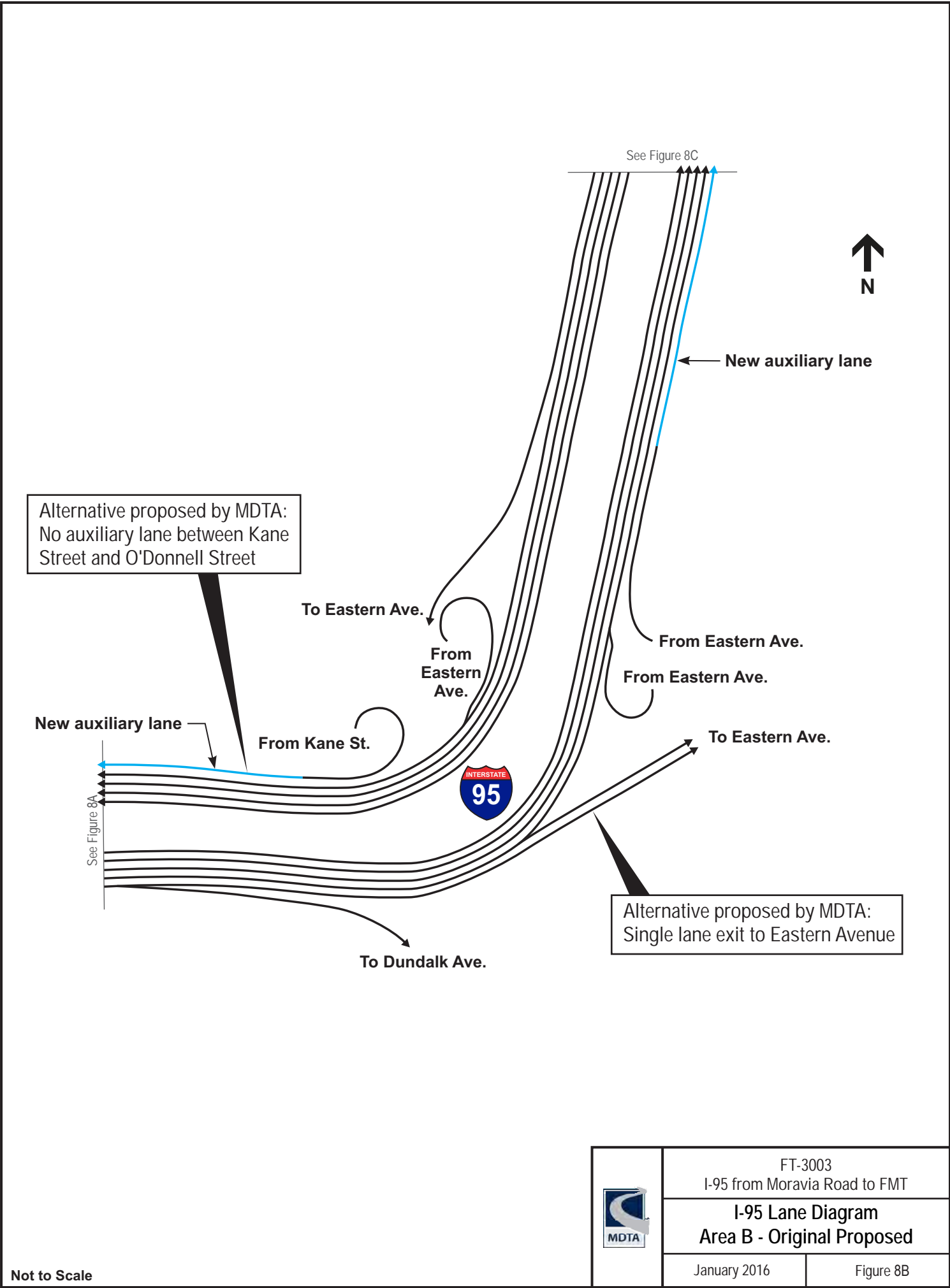


Alternative proposed by MDTA:  
 Single lane exit to Boston Street/  
 Interstate Avenue.



	FT-3003 I-95 from Moravia Road to FMT	
	<b>I-95 Lane Diagram          Area A - Original Proposed</b>	
	January 2016	Figure 8A

Not to Scale



Alternative proposed by MDTA:  
No auxiliary lane between Kane  
Street and O'Donnell Street

New auxiliary lane

See Figure 8A

From Kane St.



To Dundalk Ave.

To Eastern Ave.

From Eastern Ave.

From Eastern Ave.

To Eastern Ave.

Alternative proposed by MDTA:  
Single lane exit to Eastern Avenue

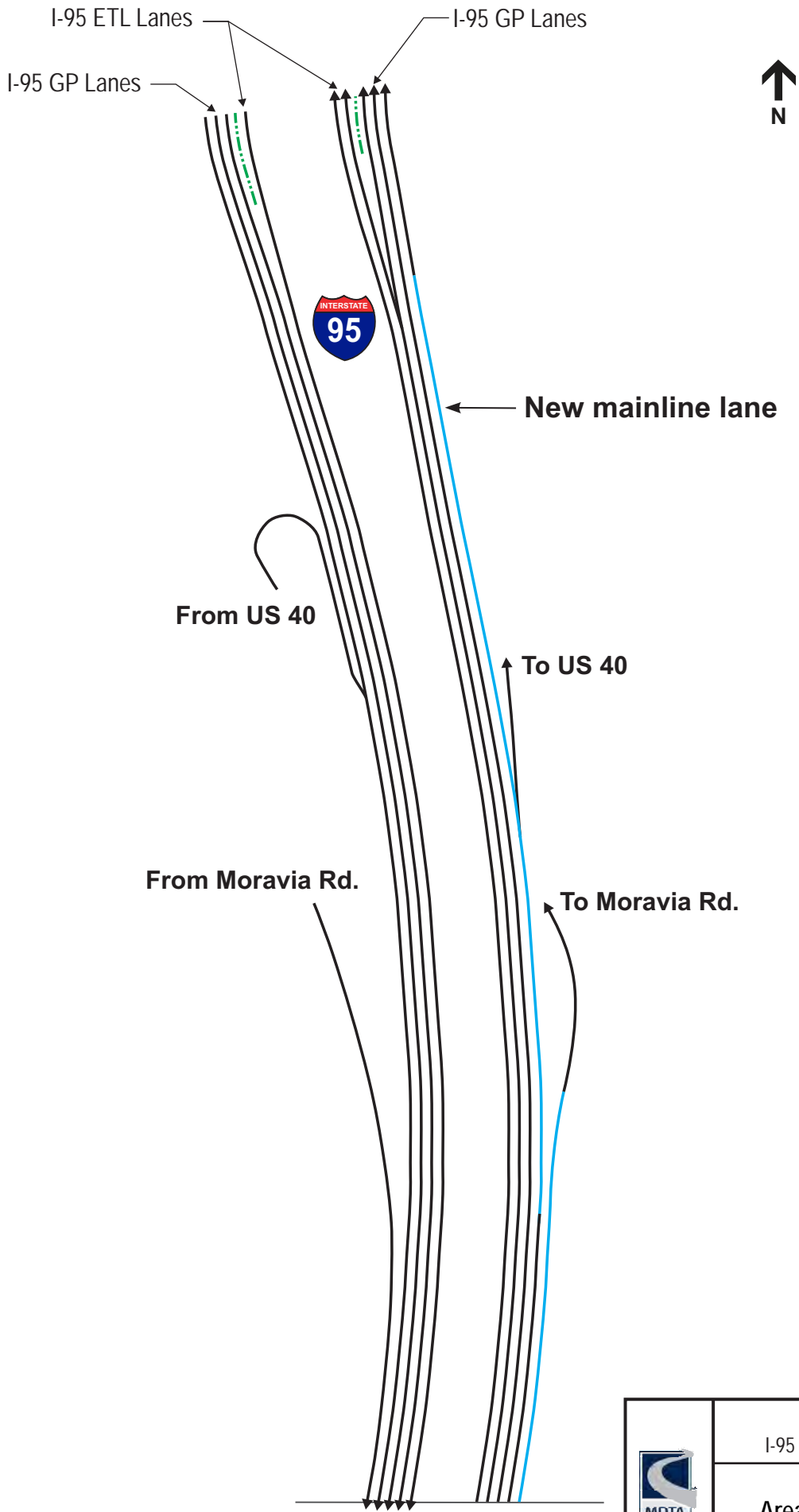
See Figure 8C



New auxiliary lane

	FT-3003 I-95 from Moravia Road to FMT	
	<b>I-95 Lane Diagram</b> <b>Area B - Original Proposed</b>	
	January 2016	Figure 8B

Not to Scale



Not to Scale

See Figure 8B


	FT-3003 I-95 from Moravia Road to FMT	
	<b>I-95 Lane Diagram</b> <b>Area C - Original Proposed</b>	
	January 2016	Figure 8C



Table 4. Alternative 1 - HCS Analysis Results (I-95 SB from Kane Street to O'Donnell Street)

I-95 Southbound	2018 No-Build			2018 Original Proposed			2018 MDTA Alternative		
	Analysis Type	LOS (Density)		Analysis Type	LOS (Density)		Analysis Type	LOS (Density)	
		AM	PM		AM	PM		AM	PM
Ramp from Kane St	Merge	C (27.9)	B (14.8)	-	-	-	Merge	C (27.9)	B (14.8)
Between Kane St and O'Donnell St	Weaving	E (42.7)	C (20.2)	Weaving	E (39.6)	B (17.6)	Freeway	E (35.9)	B (17.9)
Ramp to O'Donnell St	-	-	-	-	-	-	Diverge	D (32.1)	B (15.8)
South of O'Donnell St	Freeway	F (46.2)	C (19.7)	Freeway	D (29.3)	B (14.8)	Freeway	D (29.3)	B (14.8)

2. The second MDTA Alternative studied proposes to reconfigure the exit ramp from I-95 northbound to Boston Street by changing the existing two-lane ramp into a single-lane ramp. This alternative would eliminate the existing “choice” lane, and instead provide four (4) exclusive northbound through lanes.

To evaluate this alternative, RK&K examined the ramp capacity and also performed HCS analysis of the weave between Keith Avenue and Boston Street. According to the HCM 2010, the capacity for a single-lane ramp is approximately 2,000 passenger cars per hour, which is well above the projected traffic demand on the ramp to Boston Street (a maximum of approximately 980 vehicles per hour during the 2018 PM peak hour, as shown in Figure 6, which equates to about 1,100 passenger cars per hour).

**Table 5** summarizes the 2018 HCS analysis results under the existing lane configuration, as well as the Original Build concept and the MDTA Alternative for I-95 northbound between Keith Avenue and Boston Street. The HCS analysis results indicate that both the Original Build concept and the Alternative Build option improve the operations between the Keith Avenue and Boston Street ramps compared to the No-Build conditions, and both result in operations of LOS D or better in 2018. The alternative configuration results in several geometric benefits, including directing traffic away from the impact attenuator in the gore area, and it also simplifies the signing. **Therefore, the alternative configuration is recommended as the proposed configuration in this segment.**

Table 5. Alternative 2 - HCS Analysis Results (I-95 NB from Keith Avenue to Boston Street)

I-95 Northbound	2018 No-Build			2018 Original Proposed			2018 MDTA Alternative		
	Analysis Type	LOS (Density)		Analysis Type	LOS (Density)		Analysis Type	LOS (Density)	
		AM	PM		AM	PM		AM	PM
Ramp from Keith Ave	Merge	B (10.1)	C (23.8)	-	-	-	-	-	-
Between Keith Ave and Boston St	Weaving	B (13.6)	E (35.7)	Weaving	B (10.7)	C (27.9)	Weaving	B (11.2)	D (32.0)
North of Boston St	Freeway	B (14.7)	D (34.4)	Freeway	B (11.0)	C (24.7)	Freeway	B (11.0)	C (24.7)

3. The third MDTA Alternative studied proposes to reconfigure the exit ramp from I-95 northbound to Eastern Avenue by changing the existing two-lane ramp into a single-lane ramp. This alternative would eliminate the existing “choice” lane, and instead provide four (4) exclusive northbound through lanes.

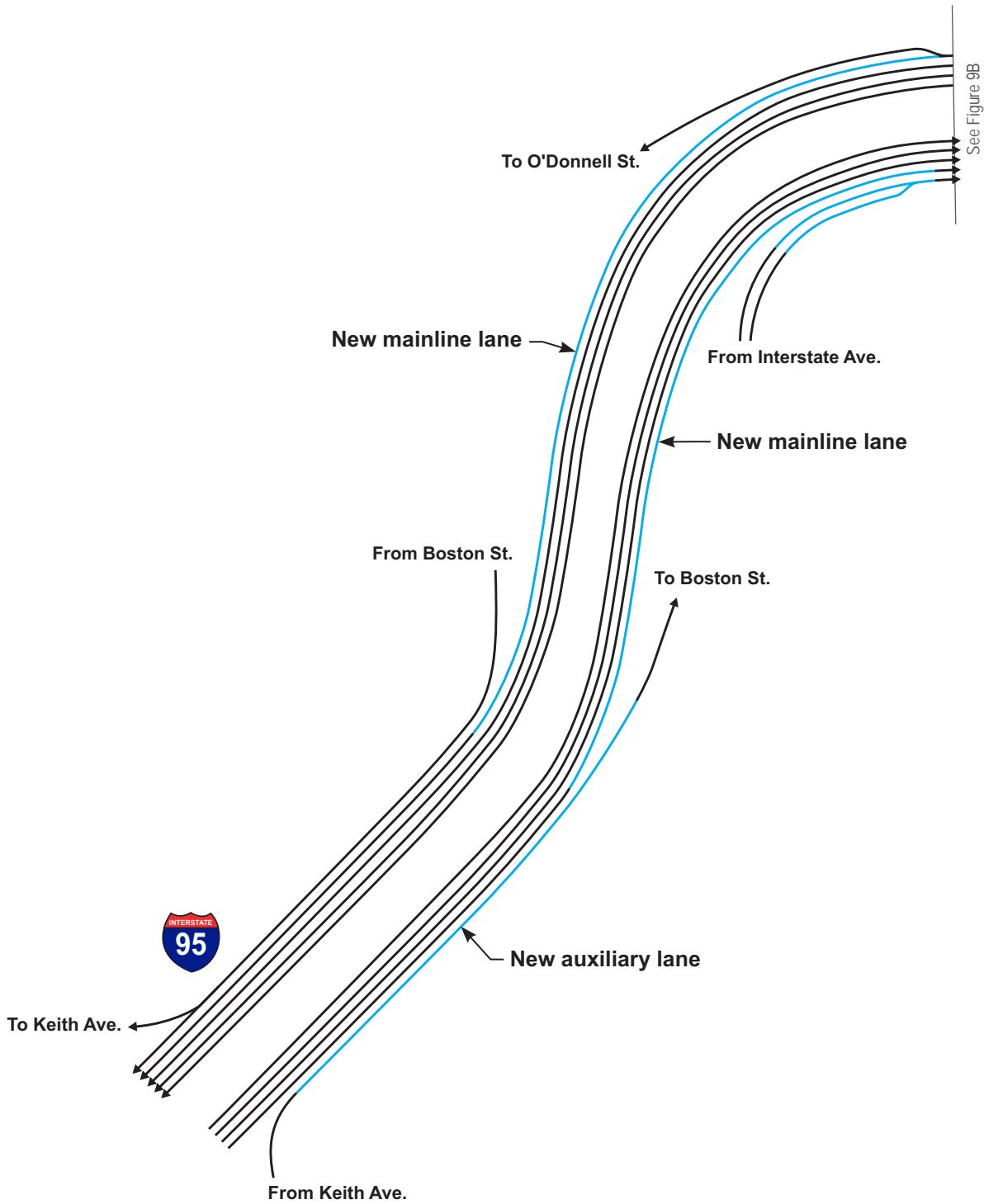
Similar to the previous alternative, RK&K evaluated this alternative by examining the ramp capacity and performing HCS analyses. The traffic volume along the ramp (a maximum of 1,135 vehicles per hour during the 2018 PM peak hour, as shown in Figure 6, which equates to about 1,250 passenger cars per hour) is well below the capacity for a single-lane ramp suggested by the HCM 2010 (approximately 2,000 passenger cars per hour). Therefore, ramp capacity would not be an issue with the proposed alternative. Additionally, the HCS analysis results indicate that the operations at the exit ramp to Eastern Avenue would remain virtually unchanged (i.e., LOS B during the AM peak hour and LOS C during the PM peak hour) between No-Build conditions, the Original Proposed concept, and the MDTA Alternative. However, since the Eastern Avenue ramp is outside of the proposed limit of work, **the project team recommends retaining the existing conditions at this location.** This recommendation was reviewed with MDTA during project meetings, and MDTA ultimately concurred with the recommendation of the project team.

### 2018 Build Conditions


Based on the results from the alternatives analyses presented in the previous section, the project team updated the design to reflect the Final Proposed conditions shown in **Figure 9A-9C**. The geometry shown in Figure 9A-9C will be referred to as the “Build” condition for the remainder of this report.

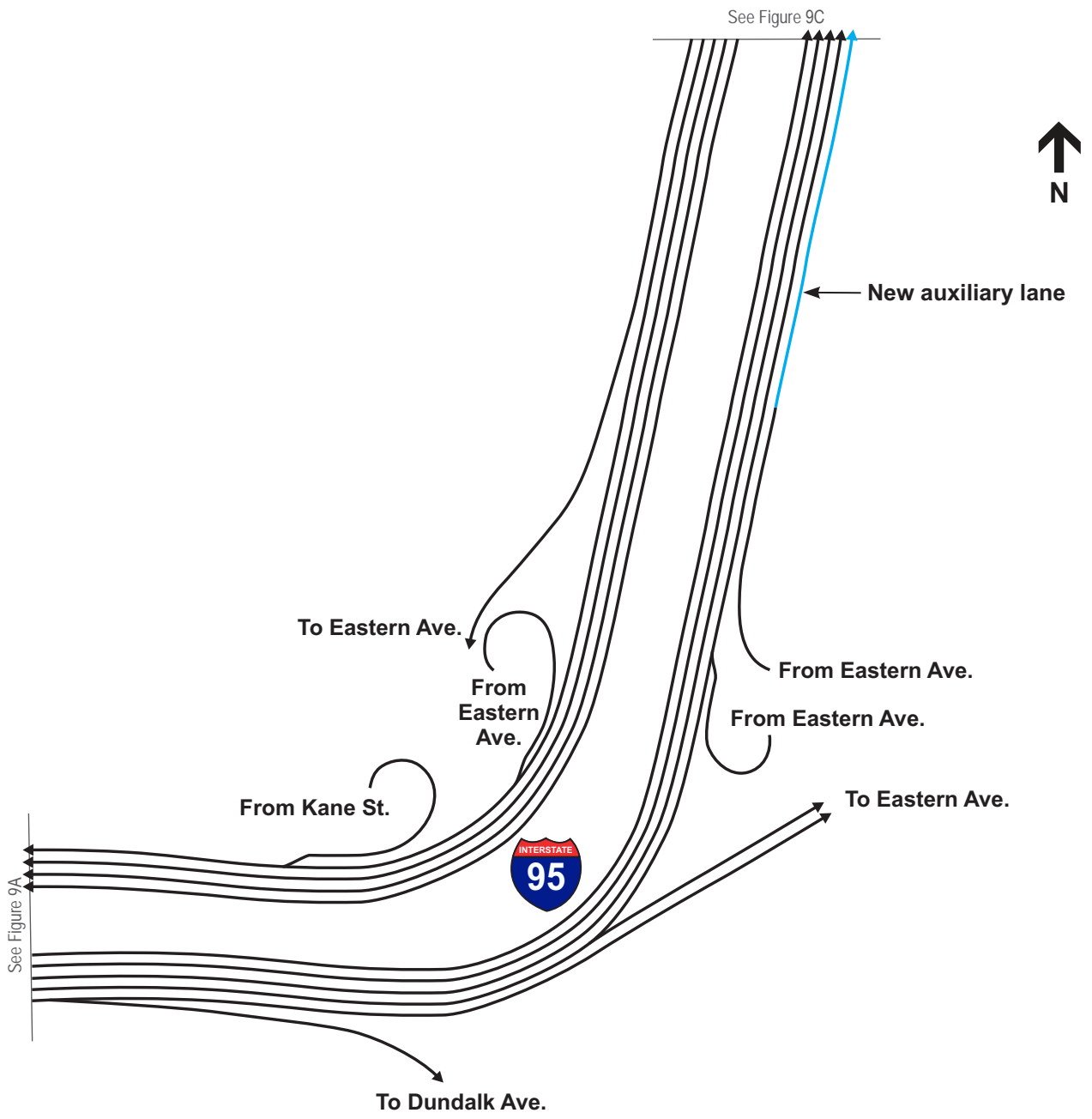
#### *1. Traffic Volumes*

For evaluating 2018 Build conditions, it was assumed that traffic demand would be unchanged from the volumes developed for 2018 No-Build conditions (shown in Figure 6) for several reasons. First, any potential induced demand would likely be a gradual trend that developed over time, and second, no near-term forecast modeling was performed during the planning stage of the project to justify the inclusion of induced demand in the 2018.




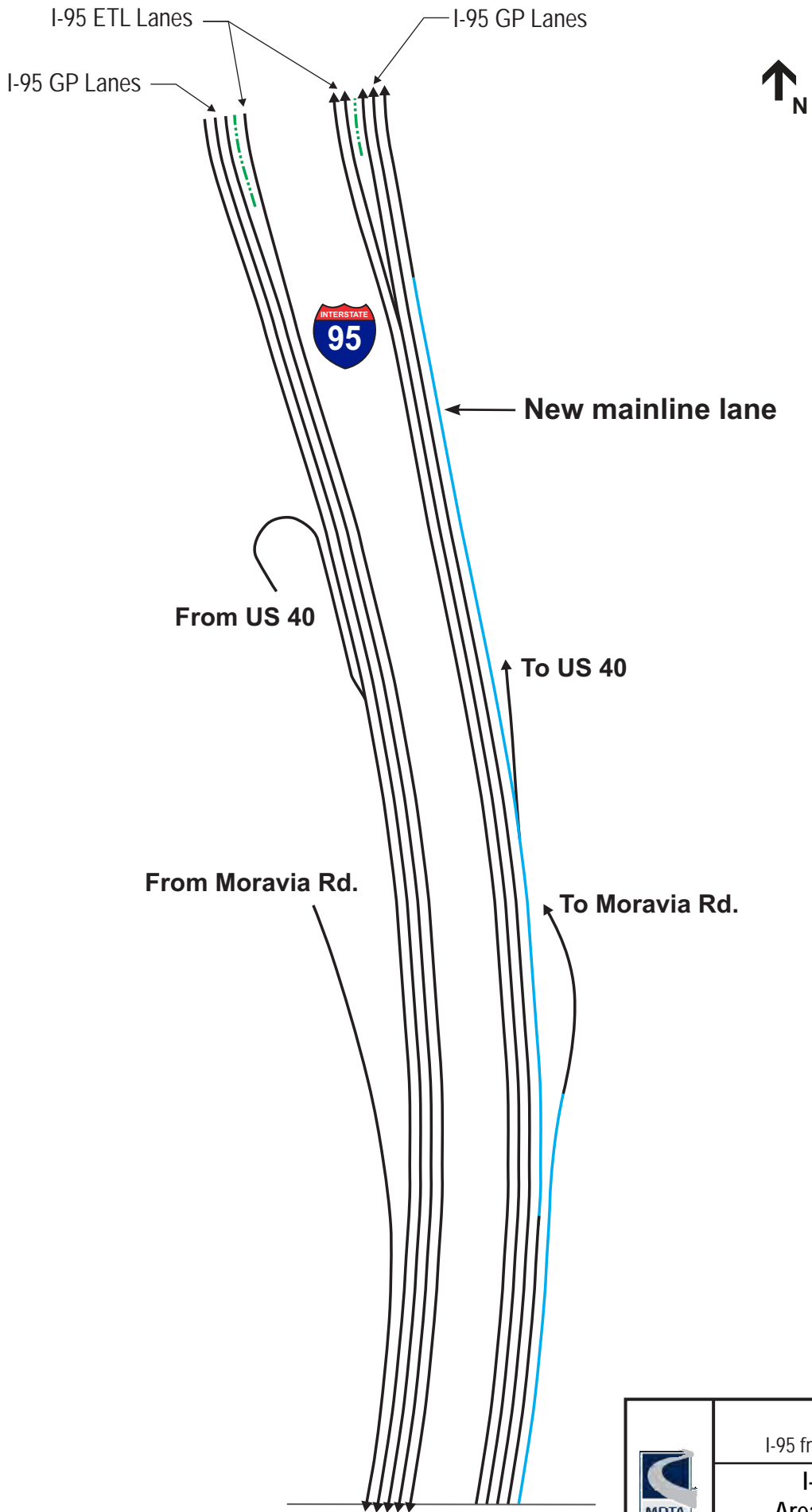
Not to Scale

	FT-3003 I-95 from Moravia Road to FMT	
	<b>I-95 Lane Diagram Area A - Final Proposed</b>	
	January 2016	Figure 9A




Not to Scale

	FT-3003 I-95 from Moravia Road to FMT	
	<b>I-95 Lane Diagram          Area B - Final Proposed</b>	
	January 2016	Figure 9B



Not to Scale

See Figure 9B

	FT-3003 I-95 from Moravia Road to FMT	
	<b>I-95 Lane Diagram</b> <b>Area C - Final Proposed</b>	
	January 2016	Figure 9C

## II. Traffic Operations

HCS was used to determine the Level of Service for all freeway sections as well as all ramp merge, diverge and weave sections along I-95 for the 2018 Build conditions based on the geometry shown in Figure 9A-9C and the volumes shown in Figure 6. The results are summarized in **Table 6**.

The HCS analysis results indicate that all segments of I-95 northbound are projected to operate at LOS D or better during all peak hours under 2018 Build conditions. In the southbound direction, the HCS analysis results indicate that most segments are projected to operate at LOS D or better during the peak hours, including the freeway segment south of O'Donnell Street, which is projected to fail under No-Build conditions in 2018. It should be noted that two segments, including the freeway segment south of Kane Street and the weave between Boston Street and Keith Avenue, would be projected to operate at LOS E during the AM peak hour in 2018.

**Table 6. 2018 Build Conditions - HCS Analyses Results**

Dir.	No.	Highway Segment	Analysis Type	LOS (Density)	
				AM	PM
I-95 Northbound	1	North of FMT	Freeway	B (12.0)	D (27.9)
	2	Between Keith Ave and Boston St	Weaving	B (11.2)	D (32.0)
	3	North of Boston St	Freeway	B (11.0)	C (24.7)
	4	Between O'Donnell St and Dundalk Ave	Weaving	B (11.9)	C (26.5)
	5	Ramp to Eastern Ave	Major Diverge	B (10.1)	C (21.1)
	6	Between Eastern Ave Ramps	Freeway	B (11.5)	C (22.8)
	7	Loop-Ramp from Eastern Ave	Merge	B (12.1)	C (20.5)
	8	Between Eastern Ave and Moravia Rd	Weaving	B (13.0)	C (25.6)
	9	North of Moravia Rd	Freeway	B (12.5)	C (21.1)
	10	Ramp to US 40	Diverge	B (11.4)	C (20.8)
I-95 Southbound	11	Ramp from US 40	Merge	C (21.5)	B (12.0)
	12	South of US 40	Freeway	D (26.2)	B (15.8)
	13	Between Moravia Rd and Eastern Ave	Weaving	D (30.8)	B (16.7)
	14	North of Eastern Ave	Freeway	D (26.4)	B (15.2)
	15	Ramp from Eastern Ave	Merge	D (28.7)	B (14.1)
	16	South of Eastern Ave	Freeway	D (32.3)	B (16.7)
	17	Ramp from Kane St	Merge	C (27.9)	B (14.8)
	18	South of Kane St	Freeway	E (35.9)	B (17.9)
	19	Ramp to O'Donnell St	Diverge	D (32.1)	B (15.8)
	20	Between O'Donnell St and Boston St	Freeway	D (29.3)	B (14.8)
	21	Between Boston St and Keith Ave	Weaving	E (35.9)	B (17.7)
	22	Between Keith Ave and FMT	Freeway	D (31.9)	B (16.8)

### Capacity Sensitivity Analysis

As mentioned earlier in this report, one of the goals of the I-95 widening is to accommodate potential diverted traffic from I-895 during construction of the Canton Viaduct project, which is expected to start in late 2018. To test the amount of “spare” capacity that would be available on I-95, the project team performed a sensitivity analysis using HCS on the Final Proposed conditions to determine the additional traffic volume that each segment could carry in the opening year of 2018 before failing (i.e., reaching LOS F). **Table 7** summarizes the findings from the capacity sensitivity analysis. It should be noted that the sensitivity analysis was only performed for the peak direction of traffic (i.e., southbound during the AM peak hour and northbound during the PM peak hour), and the “trial and error” process was terminated if LOS F was not reached after increasing the volume on a given segment by 30 percent.

The results indicate that all segments would be projected to accommodate an increase in peak hour traffic demand of at least 14 percent, with many segments having more than 30 percent spare capacity. The “chokepoints” (first segments to fail) would be between Kane Street and O’Donnell Street in the southbound direction during the AM peak, and between Keith Avenue and Boston Street in the northbound direction during the PM peak.

**Table 7. 2018 Build Conditions - Capacity Sensitivity Analysis**

Dir.	Highway Segment	Analysis Type	% Increase for LOS F	
			AM	PM
I-95 Northbound	North of FMT	Freeway	-	> 30%
	Between Keith Ave and Boston St	Weaving	-	24%
	North of Boston St	Freeway	-	> 30%
	Between O'Donnell St and Dundalk Ave	Weaving	-	> 30%
	Ramp to Eastern Ave	Major Diverge	-	> 30%
	Between Eastern Ave Ramps	Freeway	-	> 30%
	Loop-Ramp from Eastern Ave	Merge	-	> 30%
	Between Eastern Ave and Moravia Rd	Weaving	-	> 30%
	North of Moravia Rd	Freeway	-	> 30%
Ramp to US 40	Diverge	-	> 30%	
I-95 Southbound	Ramp from US 40	Merge	> 30%	-
	South of US 40	Freeway	> 30%	-
	Between Moravia Rd and Eastern Ave	Weaving	28%	-
	North of Eastern Ave	Freeway	> 30%	-
	Ramp from Eastern Ave	Merge	22%	-
	South of Eastern Ave	Freeway	22%	-
	Ramp from Kane St	Merge	14%	-
	South of Kane St	Freeway	14%	-
	Ramp to O'Donnell St	Diverge	14%	-
	Between O'Donnell St and Boston St	Freeway	> 30%	-
	Between Boston St and Keith Ave	Weaving	16%	-
	Between Keith Ave and FMT	Freeway	23%	-



## 2040 Build Conditions

To evaluate the long-term impacts of the proposed improvements, operations were evaluated under 2040 Build conditions.

### *I. Traffic Volumes*

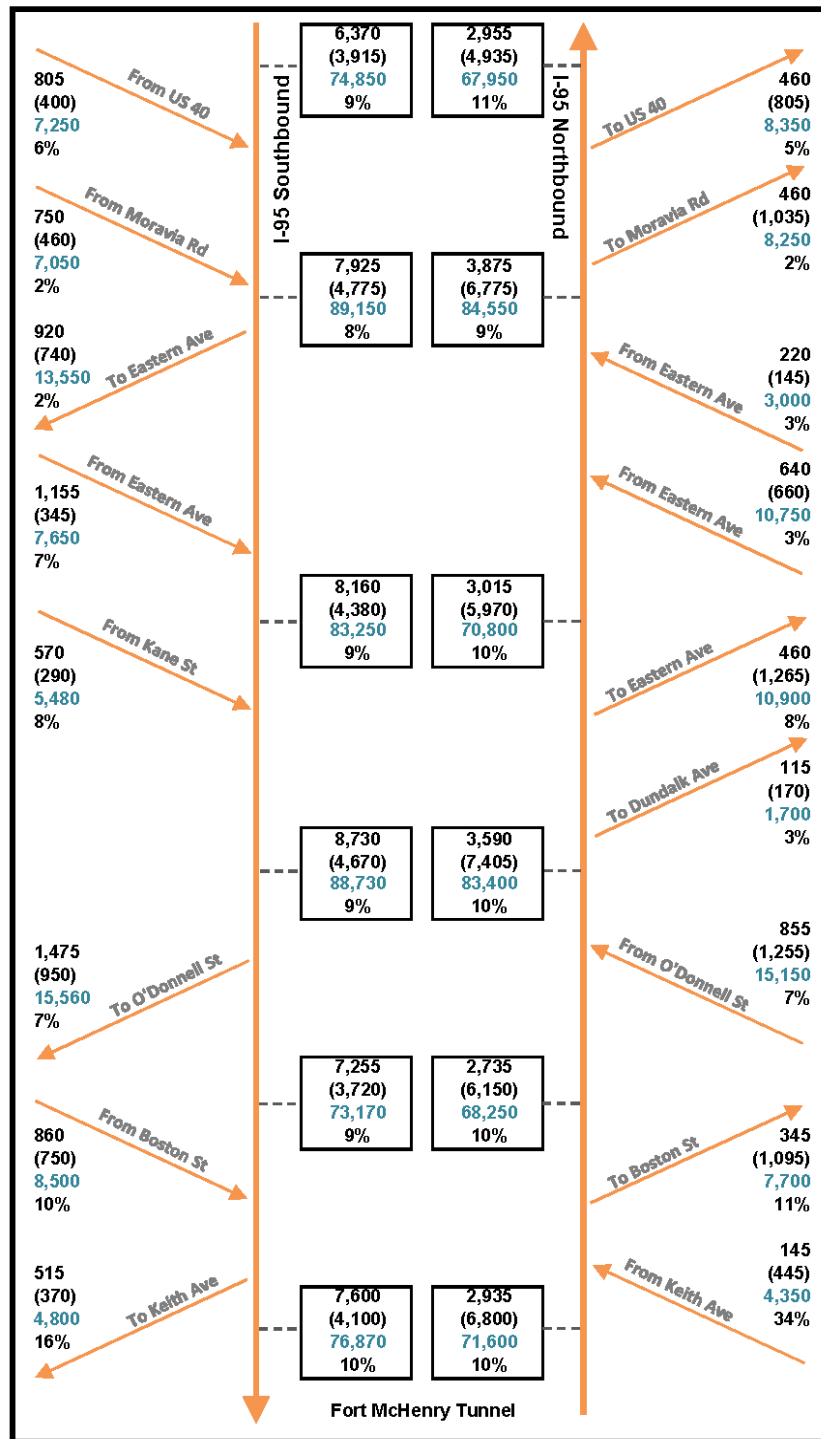
Based on modeling performed during the planning stage of the project, it is anticipated that the capacity improvements along I-95 would be projected to attract slightly more through traffic onto I-95 over the long-term (approximately 2% additional traffic compared to the No-Build). It should be noted that this shift in traffic would be expected even though some segments of I-95 are projected to fail (operate at LOS F) in the year 2040. This is because the improved I-95 corridor would still be more desirable relative to I-895 in the long-term for some travelers. This trend would primarily affect through trips, rather than local trips. Therefore, through volumes were raised by two percent (2%) in the 2040 Build forecasts compared to the 2040 No-Build volumes to account for the induced demand, while ramp volumes were unchanged. **Figure 10** shows the resulting volume network for 2040 Build conditions.

### *II. Traffic Operations*

HCS was used to determine the Level of Service for all freeway sections as well as all ramp merge, diverge, and weave sections along I-95 for the 2040 Build conditions based on the geometry shown in Figure 9A-9C and the volumes shown in Figure 10. The results are summarized in **Table 8**.

The HCS analysis results indicate that all segments of I-95 northbound are projected to operate at LOS D or better during the peak hours, except for the weave between Keith Avenue Boston Street, which is projected to operate at LOS E during the PM peak hour. In the southbound direction, the results indicate that all segments of I-95 are projected to operate at LOS C or better during the PM peak hour. During the AM peak hour, most of the segments are projected to operate at LOS D or LOS E. However, the freeway segments between Kane Street and O'Donnell Street, as well as the weave between Boston Street and Keith Avenue are projected to operate at LOS F during the AM peak hour. As noted in the introduction, this project is a relatively low-cost, short-term improvement that was not designed to accommodate long-term traffic demand. These results are being provided for informational purposes.

Figure 10. 2040 Build Traffic Volumes and Truck Percentages



Legend

- X,XXX AM Peak Hour Volume
- (X,XXX) PM Peak Hour Volume
- XX,XXX ADT
- XX% Truck Percentage

Table 8. 2040 Build Conditions - HCS Analyses Results

Dir.	No.	Highway Segment	Analysis Type	LOS (Density)	
				AM	PM
I-95 Northbound	1	North of FMT	Freeway	B (13.7)	D (32.5)
	2	Between Keith Ave and Boston St	Weaving	B (13.1)	E (39.4)
	3	North of Boston St	Freeway	B (12.7)	D (28.7)
	4	Between O'Donnell St and Dundalk Ave	Weaving	B (14.5)	D (32.6)
	5	Ramp to Eastern Ave	Major Diverge	B (12.2)	C (25.3)
	6	Between Eastern Ave Ramps	Freeway	B (14.0)	D (27.8)
	7	Loop-Ramp from Eastern Ave	Merge	B (15.4)	C (25.8)
	8	Between Eastern Ave and Moravia Rd	Weaving	B (16.7)	D (33.4)
	9	North of Moravia Rd	Freeway	B (15.9)	D (26.7)
	10	Ramp to US 40	Diverge	B (14.7)	C (26.3)
I-95 Southbound	11	Ramp from US 40	Merge	C (27.1)	B (15.4)
	12	South of US 40	Freeway	D (34.9)	C (20.0)
	13	Between Moravia Rd and Eastern Ave	Weaving	E (42.1)	C (22.1)
	14	North of Eastern Ave	Freeway	D (33.5)	C (18.6)
	15	Ramp from Eastern Ave	Merge	D (33.8)	B (16.9)
	16	South of Eastern Ave	Freeway	E (43.7)	C (20.3)
	17	Ramp from Kane St	Merge	F (33.4)	B (17.7)
	18	South of Kane St	Freeway	F (51.0)	C (21.6)
	19	Ramp to O'Donnell St	Diverge	F (40.4)	C (20.7)
	20	Between O'Donnell St and Boston St	Freeway	E (35.5)	B (17.2)
	21	Between Boston St and Keith Ave	Weaving	F (44.2)	C (21.4)
	22	Between Keith Ave and FMT	Freeway	E (38.5)	C (19.1)

**Table 9** provides a direct comparison of the 2040 for Build versus No-Build within the three segments where capacity improvements are proposed. When comparing the operational analysis results for the 2040 No-Build and the 2040 Build conditions, it is important to note that the traffic volumes are assumed to be 2% higher for the 2040 Build conditions to account for the demand that is induced by capacity improvements even along segments with no geometric changes. Therefore, some segments may appear to operate “worse” under the Build conditions. However, the comparison of the No-Build and the Build HCS results reveals that the proposed *modified* lane configurations are projected to operate better than the existing lane configurations in the year 2040, despite the fact that demand is higher.

Table 9. 2040 No-Build vs 2040 Build - HCS Analysis Results

Location	Highway Segment	2040 No-Build			2040 Build		
		Analysis Type	LOS (Density)		Analysis Type	LOS (Density)	
			AM	PM		AM	PM
<b>I-95 Southbound From Kane St to O'Donnell St</b>	Ramp from Kane St	Merge	F (32.6)	B (17.4)	Merge	F (33.4)	B (17.7)
	Between Kane St and O'Donnell St	Weaving	F (N/A) <sup>1</sup>	C (24.4)	Freeway	F (51.0)	C (21.6)
	Ramp to O'Donnell St	-	-	-	Diverge	F (40.4)	C (20.7)
	South of O'Donnell St	Freeway	F (65.6)	C (22.5)	Freeway	E (35.5)	B (17.2)
<b>I-95 Northbound from Keith Ave to Boston St</b>	Ramp from Keith Ave	Merge	B (11.5)	C (27.4)	-	-	-
	Between Keith Ave and Boston St	Weaving	B (15.5)	E (42.0)	Weaving	B (13.1)	E (39.4)
	North of Boston St	Freeway	B (16.6)	E (42.6)	Freeway	B (12.7)	D (28.7)
<b>I-95 Northbound from Eastern Ave to US 40</b>	Between Eastern Ave and Moravia Rd	Weaving	B (19.7)	E (36.3)	Weaving	B (16.7)	D (33.4)
	North of Moravia Rd	Freeway	C (20.8)	E (37.5)	Freeway	B (15.9)	D (26.7)
	Ramp to US 40	Diverge	C (20.2)	D (31.6)	Diverge	B (14.7)	C (26.3)

\* Note: 1. No density value is given in HCS. Weaving segment exceeds capacity.

## SUPPLEMENTAL TRAFFIC DATA

In addition to the traffic operational analysis presented in this memorandum, the project team will also be performing traffic noise analysis and a maintenance of traffic alternatives analysis (MOTAA). Supplemental traffic data will be prepared to support those efforts.

### Noise Analysis

Supplemental traffic data required for use in noise analysis includes highest noise hour volumes, vehicle breakdown by class, free flow speeds, and traffic volume data for nearby local roads. The supplemental data for noise analysis will be presented in the noise report that is part of the environmental documentation for the project. This document is expected to be completed in early 2016.

## Maintenance of Traffic Alternatives Analysis (MOTAA)

An MOTAA report will be prepared for the project to develop and evaluate the best combination of construction phasing and temporary traffic control strategies to reduce work zone impacts. Supplemental traffic data required for the MOTAA will include 24-hour traffic data for use in evaluating acceptable overnight lane closure periods to be implemented during construction. The MOTAA report will be completed during the final design phase of the project.

### SUMMARY AND NEXT STEPS

This report presented the traffic data and operational analyses results for the I-95 project from Moravia Road to the Fort McHenry Tunnel in Baltimore City, which will provide four (4) continuous through lanes along I-95 in each direction.

Under existing conditions, I-95 operates under capacity within the study area; however, several of the segments along I-95 currently operate at LOS E during the peak hours. By the year 2018, the segment of southbound I-95, south of O'Donnell Street, is projected to fail. The proposed Build improvements are expected to have significant near-term benefits. They will improve the failing segment to LOS D, and they will also provide spare capacity along I-95 to accommodate potential diverted traffic from I-895 during construction of the Canton Viaduct project. However, additional improvements along I-95 could be considered in the future to address anticipated long-term traffic growth along the corridor, based on the results of operational analyses conducted for projected year 2040 conditions.

The project is currently in the final design stage. The next steps include preparing an MOTAA report, conducting a noise analysis as part of the environmental documentation for the project, and completing the design plans to allow the project to be advertised in June 2016.

## **APPENDIX D - INTERAGENCY CONSULTATION GROUP COORDINATION**

## Nicole M. Hebert

---

**From:** Christina Brandt <CBrandt@sha.state.md.us>  
**Sent:** Thursday, June 02, 2016 12:26 PM  
**To:** Shawn Burnett; Nicole Hebert; Jen Rohrer  
**Subject:** FW: I-95 from Moravia Road to the Fort McHenry Tunnel - Air Quality Interagency Consultation

**From:** Alexandra Brun -MDE- [<mailto:alexandra.brun@maryland.gov>]  
**Sent:** Thursday, June 02, 2016 10:30 AM  
**To:** Christina Brandt <[CBrandt@sha.state.md.us](mailto:CBrandt@sha.state.md.us)>  
**Cc:** Brian Hug -MDE- <[brian.hug@maryland.gov](mailto:brian.hug@maryland.gov)>  
**Subject:** Re: I-95 from Moravia Road to the Fort McHenry Tunnel - Air Quality Interagency Consultation

Good morning Christina,

MDE has reviewed the technical report and concurs that this project meets the requirements of the Clean Air Act and 40 CFR 93 without an additional quantitative hot-spot analysis.

Thank you,

Alex

On Thu, May 26, 2016 at 1:48 PM, Christina Brandt <[CBrandt@sha.state.md.us](mailto:CBrandt@sha.state.md.us)> wrote:

Good Afternoon,

Attached is the Draft Air Quality Technical Report for the I-95 from Moravia Road to the Fort McHenry Tunnel project in Baltimore City, Maryland.

SHA, on behalf of the Maryland Transportation Authority, is requesting concurrence that this project meets the requirements of the Clean Air Act and 40 CFR 93 without an additional quantitative hot-spot analysis.



Due to an expedited project schedule we are requesting you please review and provide concurrence/comments by June 3, 2016 . Please let me know if you have any questions.

Thank you,

Chrissy

Chrissy Brandt

*Environmental Manager – Team Leader*

*OPPE-Environmental Planning Division*

*MD State Highway Administration*

*707 North Calvert Street, Baltimore, MD 21202*

*[410-545-2874](tel:410-545-2874) / [cbrandt@sha.state.md.us](mailto:cbrandt@sha.state.md.us)*

*[www.roads.maryland.gov](http://www.roads.maryland.gov)*



Maryland now features 511 traveler information!

Call 511 or visit: [www.md511.org](http://www.md511.org)



Please consider the environment before printing this email

LEGAL DISCLAIMER - The information contained in this communication (including any attachments) may be confidential and legally privileged. This email may not serve as a contractual agreement unless explicit written agreement for this

purpose has been made. If you are not the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication or any of its contents is strictly prohibited. If you have received this communication in error, please re-send this communication to the sender indicating that it was received in error and delete the original message and any copy of it from your computer system.



Maryland now features 511 traveler information!  
Call 511 or visit: [www.md511.org](http://www.md511.org)



Please consider the environment before printing this email

LEGAL DISCLAIMER - The information contained in this communication (including any attachments) may be confidential and legally privileged. This email may not serve as a contractual agreement unless explicit written agreement for this purpose has been made. If you are not the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication or any of its contents is strictly prohibited. If you have received this communication in error, please re-send this communication to the sender indicating that it was received in error and delete the original message and any copy of it from your computer system.

## Nicole M. Hebert

---

**From:** Christina Brandt <CBrandt@sha.state.md.us>  
**Sent:** Tuesday, June 07, 2016 7:06 AM  
**To:** Jen Rohrer; Shawn Burnett; Nicole M. Hebert  
**Subject:** FW: I-95 from Moravia Road to the Fort McHenry Tunnel - Air Quality Interagency Consultation

---

**From:** Mar, Jeanette (FHWA) [<mailto:Jeanette.Mar@dot.gov>]  
**Sent:** Monday, June 06, 2016 5:29 PM  
**To:** Christina Brandt <[CBrandt@sha.state.md.us](mailto:CBrandt@sha.state.md.us)>  
**Subject:** RE: I-95 from Moravia Road to the Fort McHenry Tunnel - Air Quality Interagency Consultation

Hi Chrissy:

FHWA concurs that the I-95 from Moravia Road to the Fort McHenry Tunnel project in Baltimore City , Maryland meets the requirements of the CAA and 40 CFR 93 and does not need an additional quantitative hot-spot analysis.

Thanks!

*Jeanette*

Jeanette Mar  
Environmental Program Manager  
FHWA - Maryland Division  
10 South Howard Street, Suite 2450  
Baltimore, MD 21201  
phone (410) 779-7152  
fax (410) 962-4054

---

**From:** Christina Brandt [<mailto:CBrandt@sha.state.md.us>]  
**Sent:** Thursday, May 26, 2016 1:49 PM  
**To:** 'Brian Hug -MDE-'; 'Rudnick.Barbara@epamail.epa.gov'; 'Becoat, gregory'; 'Khadr, Asrah'; 'Kevin Magerr'; 'Alexandra Brun -MDE-'; Mar, Jeanette (FHWA); 'Sara Tomlinson'  
**Cc:** 'Shawn Burnett'; 'Nicole M. Hebert'  
**Subject:** I-95 from Moravia Road to the Fort McHenry Tunnel - Air Quality Interagency Consultation

Good Afternoon,

## Nicole M. Hebert

---

**From:** Christina Brandt <CBrandt@sha.state.md.us>  
**Sent:** Tuesday, June 07, 2016 8:43 AM  
**To:** Jen Rohrer; Shawn Burnett; Nicole M. Hebert  
**Subject:** FW: I-95 from Moravia Road to the Fort McHenry Tunnel - Air Quality Interagency Consultation

---

**From:** Khadr, Asrah [<mailto:Khadr.Asrah@epa.gov>]  
**Sent:** Tuesday, June 07, 2016 8:38 AM  
**To:** Christina Brandt <[CBrandt@sha.state.md.us](mailto:CBrandt@sha.state.md.us)>  
**Cc:** Becoat, gregory <[becoat.gregory@epa.gov](mailto:becoat.gregory@epa.gov)>  
**Subject:** RE: I-95 from Moravia Road to the Fort McHenry Tunnel - Air Quality Interagency Consultation

Hi Chrissy,

EPA concurs with SHA's recommendation that this project does not require a quantitative hot-spot analysis.

Thanks,

Asrah Khadr, Environmental Engineer, EIT  
U.S. Environmental Protection Agency, Region III  
Air Protection Division  
Office of Air Program Planning  
1650 Arch Street  
Philadelphia, PA 19103  
Phone: 215-814-2071

---

**From:** Christina Brandt [<mailto:CBrandt@sha.state.md.us>]  
**Sent:** Tuesday, June 07, 2016 7:56 AM  
**To:** Khadr, Asrah <[Khadr.Asrah@epa.gov](mailto:Khadr.Asrah@epa.gov)>  
**Cc:** Becoat, gregory <[becoat.gregory@epa.gov](mailto:becoat.gregory@epa.gov)>  
**Subject:** FW: I-95 from Moravia Road to the Fort McHenry Tunnel - Air Quality Interagency Consultation

Good Morning Asrah,

I am following up to see if EPA had any comments on the attached analysis or if you concurred with our determination.

Thanks!

Chrissy