CASHLESS TOLLING

TA 19-1, Contract D800002

DB CONTRACT DOCUMENTS

PART 3

PROJECT REQUIREMENTS

FINAL February 14, 2019

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SECTION 1 GENERAL

1.1 PURPOSE

This Part 3 establishes the basic Requirements of the Project. The Contract Documents, Authority standard drawings, manuals and specifications, and the referenced Design Codes and Manuals shall be followed for the preparation of design and construction documents and the execution of the Work. Any proposed deviation from the Contract requirements or Authority standards shall be submitted to the Authority's Design Quality Assurance Engineer for review, and shall require the submission of a Non-conformance Report, where the Design-Builder is to identify, explain, and justify any deviation from the established criteria to the Authority's Design Quality Assurance Engineer.

All designs shall be prepared in U.S. Customary units. The Design-Builder shall be responsible for converting any mapping, plans, etc. into U.S. Customary units as necessary for the completion of the Project.

The design and construction shall be in conformance with the latest edition of the New York State Department of Transportation, Standard Specifications, with addenda, issued by the Department of Engineering, current as of the date of Proposal submission, excluding Section 100, which is superseded by Part 2, Section DB 100 of the Contract Documents, and except as otherwise noted, or amended, in these Contract Documents.

The Design-Builder shall prepare Project Specifications for the Project, for Work Items not covered by the NYSDOT/Authority Standard Specifications or applicable Special Specifications, and shall prepare Design Plans for the Project in accordance with Authority standards for general content and format, and in accordance with the Contract.

The Design-Builder shall prepare and submit a Non-conformance Report (in accordance with the provisions of DB §105-16) for any Work proposed to be or actually performed that does not conform to the Contract requirements and for any deviations from Authority standards.

1.2 SCOPE

The Design-Builder shall be responsible for complying with all terms of the Contract Documents. The Design-Builder shall review and understand all terms and conditions of the Contract Documents prior to the commencement of the Project and shall be responsible for determining the full Scope of the Project by undertaking a thorough examination of the Contract Documents, the Reference Documents and the Project Sites.

1.3 SCOPE OF WORK – MAJOR ITEMS

The scope of work for the Project includes but is not limited to the following items:

This Design-Build project involves the design and construction of "Cashless Tolling" on the New York State Thruway ticketed system from approximately NYS Thruway Exits 16 to 61 (MP 45.00 to MP 496.00).

Mainline Tolling Gantries

The work to be performed varies at each Toll Plaza location with Cashless Tolling to be implemented by demolishing Toll Booths and replacing them with Overhead Gantries on the Thruway Mainline.

The Mainline Tolling are comprised of eleven (11) interchange-to-interchange connections and five (5) terminus points on the current ticketed system and shall involve the strategic cost effective placement of gantries, the removal of toll plazas, the reduction (in most locations) of the infrastructure footprint, positive separation of opposing traffic, signing, striping, design and construction modifications of super elevations to accommodate higher speeds through the gantry areas and modified toll plazas areas, landscaping, electronic work, communication building construction (Communication Buildings), possible tandem lot access modifications or closures or relocations, and/or solutions to provide safe ingress and egress to and from the Thruway System.

Mainline Gantries are required at the following interchange locations: between 22 (Selkirk) and 23 (Boulevard), between 23 (Boulevard) and 24 (Washington Ave.), between 24 (Washington Ave.) and 25 (Schenectady), between 25 (Schenectady) and 25A (Duanesburg), between 25A (Duanesburg) and 26 (Rotterdam), between 34 (Canastota) and 34A (Collamer), between 34A (Collamer) and 35 (Thompson Road), between 35 (Thompson Road) and 36 (Mattydale), between 36 (Mattydale) and 37 (Electronics Parkway), between 38 (Liverpool) and 39 (State Fair), between 39 (State Fair) and 40 (Weedsport), between 43 (Manchester) and 44 (Canandaigua), between 44 (Canandaigua) and 45 (Victor), between 45 (Victor) and 46 (Henrietta), between 46 (Henrietta) and 47 (Leroy), between 47 (Leroy) and 48 (Batavia),

Mainline Gantries are also required at the following Terminus Locations: Woodbury (Approx. MP 45.03), Canaan (Approx. MP 17.83), Williamsville (Approx. MP 419.60); Lackawanna (Approx. MP 430.52), Ripley (Approx. MP 494.51).

Refer to Part 7, Engineering Data, Section 1 for the limits of where Mainline Gantries may be constructed.

The Design-Builder shall be responsible for demolition of existing Toll Plaza Communication Buildings (TUBs) at the following Terminus locations: Woodbury (MP 45.03) and Canaan (MP 17.83). Also, TUB removals are required at the Interchange locations of: Exit 23 (Boulevard), Exit 24 (Washington Ave.), Exit 25 (Schenectady), Exit 25A (Duanesburg), Exit 34A (Collamer), Exit 36 (Mattydale), Exit 39 (State Fair), Exit 44 (Canandaigua), Exit 45 (Victor), Exit 46 (Henrietta), and Exit 47 (Leroy).

The Mainline Tolling Gantries will have equipment provided and installed by Kapsch (Thruway provider).

Toll Plazas shall be demolished at the following terminus locations: 15 (Woodbury, MP 45.03), B3 (Canaan, MP 17.83), Williamsville (MP 419.69, Lackawanna (MP 430.51), Ripley (MP 494.51) and interchange Locations Exit 23 (Boulevard), Exit 24 (Washington Ave.), Exit 25 (Schenectady), Exit 25A (Duanesburg), Exit 34A (Collamer), Exit 36 (Mattydale), Exit 39 (State Fair), Exit 44 (Canandaigua), Exit 45 (Victor), Exit 46 (Henrietta), and Exit 47 (Leroy), along with Exit 35 (Thompson Road).

The Design-Builder shall be responsible for modifying the footprint leading into and out of the Toll plazas, which will involve pavement work, positive separation of opposing traffic flow, potential reduction and modification of conflicting traffic moves such as Park and Ride Lots, tandem Lots, Thruway Maintenance vehicles ingress and egress to Maintenance Yards, and State Police

ingress and egress to State Police facilities. Project also includes signing, placement of barrier/guiderail to delineate active lanes, striping, drainage, etc.

Open Road Tolling (ORT) Gantries

The work to be performed varies at each Toll Plaza location with Cashless Tolling to be implemented by demolishing Toll Booths and replacing them with Overhead Mini-Gantries at the Open Road Tolling locations. Open Road Tolling (ORT), formerly Toll-in-Place, is required at the following Exits:

B1 (Post Road), B2 (Taconic), 18 (New Paltz), 19 (Kingston), 20E (Saugerties E.), 20W (Saugerties W.), 21 (Catskill), 21B (Coxsackie), 22 (Selkirk), 26 (Rotterdam), 27 (Amsterdam), 28 (Fultonville), 29 (Canajoharie), 29A (Little Falls), 30 (Herkimer), 31 (Utica), 32 (Westmoreland), 33 (Verona), 34 (Canastota), 37 (Electronics Parkway), 38 (Liverpool), 40 (Weedsport), 41 (Waterloo), 42 (Geneva), 43 (Manchester), 48 (Batavia), 48A (Pembroke), 49 (Depew), 56 (Blasdell), 57 (Hamburg), 57A (Eden-Angola), 58 (Silvercreek), 59 (Dunkirk), and 60 (Westfield).

In addition, the Project will include modifications of the existing Toll Booth located at Exit 17 (Newburgh).

The Toll-in-Place at Newburgh shall require the Design-Builder to install cameras, signage, protective barrier installations, striping modifications, possibly limited Toll Booth removal attenuator installations, and new signage packages, including new VMS installations on the canopy on entry to the Thruway only – Newburgh entry to Thruway.

Also at Exit 35 there is no new equipment or Mainline Gantry or Mini-Gantry installation required. The work at this location will involve Toll Booth removal, potential concrete repairs, and possibly new super elevation and signage package(s), during transition to All Electronic Tolling, and necessary striping.

Lastly, Exit 16 (Harriman) shall require the removal of special Tolling Booths at certain exit points. This work needs to be complete immediately after the Toll-in-Place transition to All Electronic Tolling. Additional signage package is expected.

The Design-Builder shall be responsible for modifying the footprint leading into and out of the ORT Toll plazas, which will involve pavement work, new treadle installations, potential positive separation of opposing traffic flow, potential modification of conflicting traffic moves such as “Park and Ride” Lots, Tandem Lots, Thruway Maintenance vehicles ingress and egress to Maintenance Yards, and State Police ingress and egress to State Police facilities. Project also includes signing, placement of barrier/guiderail to delineate active lanes, striping, drainage, VMS installations, striping, etc.

ORT Toll Plazas shall be demolished at the following locations: B1 (Post Road), B2 (Taconic), 18 (New Paltz), 19 (Kingston), 20E (Saugerties E.), 20W (Saugerties W.), 21 (Catskill), 21B (Coxsackie), 22 (Selkirk), 26 (Rotterdam), 27 (Amsterdam), 28 (Fultonville), 29 (Canajoharie), 29A (Little Falls), 30 (Herkimer), 31 (Utica), 32 (Westmoreland), 33 (Verona), 34 (Canastota), 37 (Electronics Parkway), 38 (Liverpool), 40 (Weedsport), 41 (Waterloo), 42 (Geneva), 43 (Manchester), 48 (Batavia), 48A (Pembroke), 49 (Depew), 56 (Blasdell), 57 (Hamburg), 57A (Eden-Angola), 58 (Silvercreek), 59 (Dunkirk), and 60 (Westfield).

Special Exit Work Tolls

Miscellaneous work will be required Exit 16 – Harriman, Exit 17 (Newburgh) and Exit 35.

Exit 16 (Harriman) requires Special Tolling Booth removal, Exit 17 (Newburgh) will be Toll-in-Place, and Exit 35 (Thompson Road) requires pavement repairs, new cross slope implementation, and Toll Booth Removal.

Mainline and Open Road Tolling (ORT) Tolls & Special Exit Work Tolls

The Design-Builder shall design, construct, inspect all locations relative to the Mainline Gantries and Minny-Gantries that supports the Mainline Tolling Equipment and the Open Road Tolling Equipment respectfully, along with the removal of the Toll Booths at the locations identified above after all electric tolling (AET) is operational across this Project's ticketed system. These locations should require reduction in the roadway footprints. Surfaces may require road surface repairs, traffic control involving Toll Booth removal, concrete repairs, Minny-Gantry erection, installation of treadles, installation of concrete roadway surfaces, other work may involve sign package installations prior to All Electronic Tolling going live and after All Electronic tolling is live.

The Cashless Tolling System shall be operational prior to December 15, 2020, removal of Toll Booths and correction of Toll Plaza pavements and other modifications, as required, completed prior to December 15, 2021. The Cashless Tolling System has to be converted over in one evening (Saturday evening to Sunday morning), essentially at the same time. The only exception to this is the Erie Section, Lackawanna to Ripley, (MP 430.51 to MP 496.00), which can precede the rest of the ticketed system but not follow the rest of the ticketed system.

The Project scope of work will also include but not be limited to the following:

- Coordination with and/or preservation of existing utilities;
- Potential remediation and disposal of asbestos containing material;
- Potential remediation and disposal of lead paint;
- Installation of new guide railing;
- Other details, constraints, and/or limitations will be specified in this RFP.

1.4 COORDINATION WITH OTHER PROJECTS

The Design-Builder shall coordinate the work so as not to conflict with other projects occurring within or abutting the Contract limits. Projects are under development and as the Capital Program requires modifications or revisions, notification to the successful Design-Builder will occur based on the Design-Builder's schedule and the potential of possible conflicts.

1.5 THIRD PARTY AGREEMENTS

No Third Party Agreements have been developed in connection with this Project.

1.6 DESIGN CODES AND MANUALS

In addition to this Part 3, Project Requirements, the Design-Builder shall comply with all applicable engineering codes and standards, including those of the various Federal, State, and local jurisdictions.

If codes, standards and/or manuals are specified herein for the design of an element of the Project, then the edition(s) in effect on the Proposal due date shall be applicable to the Project. Responsibility for design remains with the Design-Builder in accordance with the terms and conditions of the Contract. If a code, manual or standard is subsequently modified by the issuer, the Design-Builder shall notify the Authority of such modification(s) and request the Authority's decision regarding application of the modification(s).

All Work shall conform to the following documents. In the event of a conflict between the codes and the referenced documents listed below, the more stringent requirements, as determined by the Authority, shall apply.

For Work not specifically covered by the individual sections of the Part 3 - *Project Requirements* and Part 4 - *Utility Requirements,* the Design-Builder shall, at a minimum, apply the Standards normally applied by NYSTA for such work, to the extent they do not conflict with express requirements in the Contract Documents. The Design-Builder shall be solely responsible for ensuring that it identifies and applies all correct Standards.

AASHTO:

- A Guide for Accommodating Utilities within Highway Right-of-Way
- A Policy on Design Standards - Interstate System
- A Policy on Geometric Design of Highways and Streets
- Construction Handbook for Bridge Temporary Works, with Interim Revisions
- Guide Design Specifications for Bridge Temporary Works
- Guide for the Design of Pavement Structures (with Supplement)
- Guide Specification for Bridge Railings (1989)
- Guide Specifications for LRFD Seismic Bridge Design
- LRFD Bridge Construction Specifications
- Manual for Assessing Safety Hardware (MASH)
- Manual for Bridge Evaluation
- Manual on Subsurface Investigations
- Mechanistic-Empirical Pavement Design Guide (MEPDG),
- Roadside Design Guide
- Roadway Lighting Design Guide
- Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

ADA

- The Americans with Disabilities Act of 1990

AISC:

- Steel Construction Manual

ANSI

- ANSI/AASHTO/AWS D1.5 Bridge Welding Code
- ANSI/IES Approved Recommended Practice for Roadway Lighting, RP-8-00
- ANSI/ASHRAE/IES Standard 90.1-2013, Energy Standard for Buildings Except Low-Rise Residential Buildings

- ANSI/ASHRAE Standard 62.1-2013, Ventilation for Acceptable Indoor Air Quality

Asphalt Institute:

- Drainage of Asphalt Pavement Structures

ASTM:

- E2213-03 Standard Specification for Telecommunications and Information Exchange Between Roadside and Vehicle Systems
- E2259-03 Standard Guide for Archiving and Retrieving ITS-Generated Data
- E2468-05 Standard Practice for Metadata to Support Archived Data Management Systems
- E2655-08 Standard Guide for Reporting Uncertainty of Test Results and Use of the Term Measurement Uncertainty in ASTM Test Methods

Federal Geographic Data Committee:

- GIS Standards

FHWA:

- FHWA NHI-00-043 Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines
- FHWA NHI-01-004 River Engineering for Highway Encroachments
- FHWA NHI-05-123 Soil Slope and Embankment Designs
- FHWA NHI-11-032 GEC No. 3 LRFD Seismic Analysis and Design of Transportation Geotechnical Features and Structural Foundations
- FHWA HI-99-007 Rock Slopes Reference Manual
- HEC 18 Evaluating Scour at Bridges
- HEC 23 Bridge Scour and Stream Instability Countermeasures
- Manual of Uniform Traffic Control Devices (MUTCD)
- Pavement Publications
- Standard Highway Signs and Markings (SHSM) Book
- Steel Bridge Design Handbook
- Technical Advisory T6640.8A, 10/30/87 (environmental analyses)
- Traffic Monitoring Guide
- Strategies for Improving Safety at Toll Collection Facilities
- State of the Practice and Recommendations on Traffic Control Strategies at Toll Plazas

ICC

- International Building Code
- International Plumbing Code
- International Mechanical Code

- International Fuel Gas Code
- International Fire Code
- International Property Maintenance Code
- International Existing Building Code
- International Energy Conservation Code
- Uniform Code Supplement

IEEE and ANSI

- Electric Power Engineering Standards (as applicable)
- 1609-2006 Standards for Wireless Access in Vehicular Environments (WAVE) – Multi-Channel Operations
- 1455-1999 Standards for Message Sets for Vehicle/Roadside Communications
- 802.11p Standards for Wireless LANs Providing Wireless Communications in a Vehicular Environment

NCHRP:

- Synthesis Report #240, Toll Plaza Design, Transportation Research Board

NFPA:

- NFPA 70 – National Electrical Code (NEC) Standards
- NFPA 70E - Standard for Electrical Safety in the Workplace
- NFPA 780 - Standard for the Installation of Lightning Protection Systems
- NFPA 101 – Life Safety Code
- NFPA 110 - Standard for Emergency and Standby Power Systems;
- 502: Standard for Road Tunnels, Bridges, and Other Limited Access Highways

NYSDEC:

- Standards and Specifications for Erosion and Sediment Control (SESC)
- Stormwater Management Design Manual (SMDM)

NYSDOS

- New York State Uniform Fire Prevention & Building Code (the Uniform Code) and its Reference Standards including the Codes of New York State
- New York State Energy Conservation Construction Code
- Supplement to the New York State Energy Conservation Construction Code

NYSDOT:

- Annual Report titled "Axle Factor Update"
- Approved Materials List

- Bridge Detail (BD) Sheets US Customary (NYSDOT BD Sheets)
- Bridge Inspection Manual
- Bridge Inventory Manual
- Bridge Manual
- Bridge Safety Assurance Seismic Vulnerability Manual
- CADD Standards and Procedure Manual
- Comprehensive Pavement Design Manual (CPDM)
- Design Consultant Manual
- Engineering Bulletins
- Engineering Instructions
- Environmental Procedures Manual (EPM) / The Environmental Manual (TEM)
- GCP-17, Procedure for the Control of Granular Materials
- Geotechnical Design Manual, including all appendices
- Highway Design Manual (HDM)
- Land Surveying Standards and Procedures Manual
- NYSDOT LRFD Bridge Design Specifications
- Manual for Uniform Record Keeping
- Materials Bureau - Applicable Sampling and Testing Manuals, Inspection Manuals, and Materials Methods.
- New York State Supplement to the Manual on Uniform Traffic Control Devices
- Overhead Sign Structures Design Manual
- Policy and Standards for the Design of Entrances to State Highways
- Policy on Highway Lighting
- Prestressed Concrete Construction Manual (PCCM)
- Project Development Manual
- ROW Mapping Procedure Manual
- Special Specifications as indicated in the Contract Documents
- Standard Specifications for Construction and Materials (excluding Section 100)
- Steel Construction Manual (SCM)
- U.S. Customary Standard Sheets
- Work Zone Traffic Control Manual

The above is a partial listing of applicable NYSDOT Engineering Manuals and Guidelines. The Design-Builder shall perform the Work in conformance with all NYSDOT Engineering Manuals and Guidelines in effect on the Proposal due date.

NYS:

- GIS Standards

NYSTA:

- Approved EI, EB Adoption List
- Consultant Instructions
- Engineering Instructions, Engineering Bulletins, Special Specifications and Standard Drawings
- Occupancy and Work Permit Accommodation Guidelines (TAP-401)
- Utility Occupancy Supplement (TAP-401U)
- General Design and Construction Requirements for Occupancies (TAP-421A-E)
- Guidelines for Use of Variable Message Signs (VMS) (TAP-633)
- Thruway Standard Sheets
- Standard Details
- Thruway Structures Design Manual (TSDM)
- Title 47 Code of Federal Regulations CFR 90.242 Travelers' Information Stations
- Design and Construction Requirements for Installations/ Crossings on or Attached to Bridge Structures, Bridge Culverts or Structural Retaining Walls
- Design and Construction Requirements for Aerial Communication and Power Line Installation

OSHA:

- PART 1910 - Safety And Health Regulations For Construction
- PART 1926 - Safety And Health Regulations For Construction

SAE:

- Overhead Sign Structures, Dedicated Short Range Communications Message Set Dictionary

SPC:

- Society of Protective Coatings Standards

USDOJ:

- ADA Accessibility Guidelines for Buildings and Facilities

USDOT:

- ADA Standards for Transportation Facilities
- Design Guide for Fiber Optic Installation on Freeway Right-of-Way

Other

- Green and Clean State Buildings and Vehicles Guidelines (Executive Order No. 111)
- State Green Procurement and Agency Sustainability Program (Executive Order No. 4)

1.7 REQUIREMENTS

The "Requirements" subsection of the individual sections of *Part 3 – Project Requirements* establishes the Authority's expectations with respect to specific Project elements. These include administrative, managerial and technical considerations as deemed appropriate to the subject, and encompass performance specifications, design criteria, and directive instructions as the Authority deems best suited to the subject. The Design-Builder shall develop its Definitive Design, Design Plans and Project Specifications in conformance with this *Part 3 – Project Requirements*.

The Design-Builder shall be responsible for meeting all requirements and terms contained in this *Part 3 – Project Requirements* unless explicitly stated otherwise.

The specific requirements in this *Part 3 – Project Requirements* may be more stringent and shall govern over the criteria given in the Standards. Where a specific requirement in this *Part 3 – Project Requirements* is more stringent than the criteria specified in a Standard, said specific requirement shall become the basis for determining compliance. Non-standard features needing justification and FHWA and/or NYSTA approval are defined as those not meeting the criteria cited in the Standards listed in this *Part 3 – Project Requirements*.

1.8 DELIVERABLES

Deliverables to be submitted by the Design-Builder throughout the design and construction of this Project, and upon completion of the Project, are specified in the NYSDOT and Authority manuals listed in Section 1.6 of this Part 3 – Project Requirements. These shall supplement the review plan and consultation and written comment cycles cited in *DB §111-8* through *DB §111-14*. The Design-Builder may submit deliverables for the Authority's consideration or consultation and written comment in addition to those cited in the NYSDOT/Authority manuals. The Design-Builder shall include such additional submittals in its review plan and revise the review plan as necessary to incorporate sufficient advance notice to the Authority. It is the goal of the Authority that all review and comments be completed within 10 business days. Should the Design-Builder elect to skip the Interim design review, the Authority's total review time as defined in Part 2 – Section DB 111-9.5 (20 days = Definitive design review + Interim design review + Release for Construction review) will not change.

Unless otherwise indicated elsewhere in the Contract Documents, or directed by the Authority's Project Manager, all deliverables shall be submitted in both electronic format and hardcopy format. Acceptable electronic formats include Bentley Microstation "dgn" format and Bentley InRoads ".alg" and "dtm" formats, Microsoft Word®, Microsoft Excel®, ArcMAP, or searchable portable document format (PDF) files, with no copy or password protection on the file content, unless otherwise indicated in a specific section of this Part 3 - Project Requirements or a Standard cited in a specific section of this Part 3 - Project Requirements.

1.9 INDICATIVE PLANS / CONCEPT PLANS

The Indicative Plans, if provided to the Design-Builder in Part 6 – RFP Plans, convey an overall potential solution or concept to the Project's needs that the Design-Builder may choose to

consider in developing its design. The plans presented herein, have been developed to a point sufficient to present the general concepts of the Project and specifically to show the current highway boundaries provided by the Authority. The Indicative Plans / Concept Plans are not mandatory, but portions within (as identified) may be directive or, with the exception of elements specifically mentioned elsewhere in this Part 3.

1.10 DIRECTIVE PLANS

The Directive Plans, if provided to the Design-Builder in Part 6 – RFP Plans, depict required elements and components of the Project within specifically defined parameters. The Design-Builder has no latitude to adjust components or details shown on Directive Plans, unless approved by the Authority, specifically noted, or through an approved Alternative Technical Concept (ATC).

1.11 CADD

CADD formatting for Design and As-Built Plans shall conform to the Authority's CADD Drafting Standards and CADD Design Standards in effect on the Proposal due date.

1.12 SCHEDULE OF PROJECT COMPLETION

All work on the design and on the construction of the Project shall be completed in accordance with Part 1, DB Agreement, Article 2, Contract Time, but in no case shall the overall Project Completion Date be later than December 15, 2021.

1.13 WORK PAYMENT SCHEDULES

Progress Payments will be made as each Work Item is completed to the satisfaction of the Authority's Construction Quality Assurance Engineer. Progress payments shall be subject to the requirements of DB §109-2 or as indicated below. Payments for Design, Construction Inspection and Laboratory activities will be made in conformance with DB § 109-2.2 or as stated in XXXXX.

WORK PAYMENT SCHEDULE **(Mainline Gantry Work (minimum of 16 locations and maximum of 32))** **Mainline Gantry Location MP _____** **Indicate Direction(s) _____ (i.e. North, South, East or West or Both Directions)**		
WORK ITEM	**MAXIMUM PERCENT OF LUMP SUM PRICE**	**PERCENT OF LUMP SUM PRICE (To be completed by D-B)[1]**
Survey	5%	
Gantry - Gantry Order (50%) - Gantry Delivery (20%) - Gantry in place (30%)	17%	
Highway Concrete Slab and Asphalt Removal	6%	

- Direction 1 (50%) - Opposing Direction 2 (50%)		

Concrete Slab Construction
- Direction 1 (50%)
- Opposing Direction 2 (50%)
  - Concrete Slab Ordering (if precast) (50%)
  - Concrete Slab Delivery (if precast) (20%)
  - Concrete Slab Installation (if precast) (30%)
	17%	

Communication Building Foundation - Direction 1 (50%) - Opposing Direction 2 (50%)	4%	

Communication Buildings (Proper)
- Direction 1 (50%)*
- Opposing Direction 2 (50%)*
  - Order Communication Building (if precast) (50%)
  - Delivery of Communication Building (if precast) (20%)
  - Erection and Completion of Communication Building (if precast) (30%)
  - Material Delivery (if stick built) (50%)
  - Communication Building Complete (50%)
	9%	

Parking Area for Communication Building Complete	2%	
Electric Service to Communication Building	2%	
Fiber Conduit to Communication Building and Rack Installation	2%	
Mainline Gantry Signage Construction - Ordering Signage (50%) - Delivery of Signage (complete to site) (10%) - Completed Erection of Permanent Signage and Public Visibility (40%)	4%	
Removal of Old Signage	2%	
Installation of Positive Separation of Opposing Traffic	6%	

Asphalt Paving Work (includes shoulders)
- Direction 1 (50%)
- Opposing Direction 2 (50%)
  - Repair Work on Mainline (including crack sealing) (10%)
  - Asphalt T and L and Base Complete (25%)
  - Asphalt Binder Complete (35%)
  - Asphalt Top Complete (correct superelevation) (30%)
	23%	

Striping of Project Limits (complete)	2%	
Temporary Striping (during staging and asphalt lifts) - Direction 1 (50%) - Opposing Direction 2 (50%)	2%	
Work Zone Traffic Control - Direction 1 (50%) - Opposing Direction 2 (50%)	21%	
Footprint Reduction	3%	
Landscaping	2%	
Guiderail Work	4%	
Punch List Work, Site Cleanup and Restoration	1% (fixed)	1% (fixed)
As-Builts Provided, Compiled Design Plans, Nonconformance Issues Resolved, All Construction Inspection Diaries and Records Complete (Final Acceptance per DB §109-12.1)	2% (fixed)	2% (fixed)
Final Agreement (Per DB §109-12.2)	2% (fixed)	2% (fixed)

* If more than one gantry or communication building used to look

WORK PAYMENT SCHEDULE **(Interchange Work (11 Interchanges))** **Interchange at Exit _____ (i.e. 24)**		
WORK ITEM	**MAXIMUM PERCENT OF LUMP SUM PRICE**	**PERCENT OF LUMP SUM PRICE (To be completed by D-B)[1]**
Survey	5%	

Highway Asphalt Work
- Direction 1 (50%)
- Opposing Direction 2 (50%)
  - Highway Concrete Repairs (includes sealing of cracks) (10%)
  - Toll Plaza Removal Area Reconstruction (25%)
  - Asphalt T and L and Base Complete (15%)
  - Asphalt Binder Course Complete (25%)
  - Asphalt Top Complete (correct super elevation) (25%)
	20%	

Toll Plaza Removed - Direction 1 (50%)	15%	

- Opposing Direction 2 (50%)		
Positive Separation (Final)	5%	
Removal of Existing TUB Complete	5%	
Tandem Lot Modifications of Intersections as per Legislative Proposed Routes	10%	
New Tandem Lot Construction (Exit 39 only)	10%	
Tandem Lot Modifications - Access Modifications - Accelerating Lane Construction - Camera Installation - Misc. Work (separation of traffic, lighting installation, striping, gate installations	14%	
Signing Package - Ordering of Signage (Complete) (50%) - Delivery of Signage (Complete) (10%) - Transitional Signage Installation (10%) - Completed Erection of Permanent Signage and Public Visibility (30%)	10%	
Electrical Work Complete	5%	
Fiber Work Complete	4%	
Work Zone Traffic Control (During staging to complete, toll plaza removal and asphalt completion) - Direction 1 (50%) - Opposing Direction 2 (50%)	20%	
Work Zone Traffic Control for All Other Applications - Direction 1 (50%) - Opposing Direction 2 (50%)	14%	
Temporary Striping During Staging and Asphalt Paving Lifts - Direction 1 (50%) - Opposing Direction 2 (50%)	3%	
Final Striping Complete	3%	
Footprint Reduction	4%	
Landscaping	3%	
Guiderail Work	5%	
Overhead Sign Structure Erection (where required) * - Structure Foundation (15%) - Structure Order (40%) - Structure Delivery (20%) - Structure Complete with Signs (25%)	10%	

Punch List Work	1% (fixed)	1% (fixed)
Final Acceptance (Per DB §109-12.1)	2% (fixed)	2% (fixed)
Final Agreement (Per DB §109-12.2)	2% (fixed)	2% (fixed)

WORK PAYMENT SCHEDULE

(Mainline Gantry Work Terminus Locations (minimum of 5 locations and maximum of 10))

Terminus Location Name: _____

Indicate Direction(s) _____ (i.e. North, South, East or West or Both Directions)

WORK ITEM	MAXIMUM PERCENT OF LUMP SUM PRICE	PERCENT OF LUMP SUM PRICE (To be completed by D-B)[1]
Survey	5%	
Gantry - Gantry Order (50%) - Gantry Delivery (20%) - Gantry in place (30%)	17%	
Highway Concrete Slab and Asphalt Removal - Direction 1 (50%) - Opposing Direction 2 (50%)	6%	

Concrete Slab Construction
- Direction 1 (50%)
- Opposing Direction 2 (50%)
  - Concrete Slab Ordering (if precast) (50%)
  - Concrete Slab Delivery (if precast) (20%)
  - Concrete Slab Installation (if precast) (30%)
	17%	

Communication Building Foundation - Direction 1 (50%) - Opposing Direction 2 (50%)	4%	

Communication Buildings (Proper)
- Direction 1 (50%)*
- Opposing Direction 2 (50%)*
  - Order Communication Building (if precast) (50%)
  - Delivery of Communication Building (if precast) (20%)
	9%	

- Erection and Completion of Communication Building (if precast) (30%) - Material Delivery (if stick built) (50%) - Communication Building Complete (50%)		
Parking Area for Communication Building Complete	2%	
Electric Service to Communication Building	2%	
Fiber Conduit to Communication Building and Rack Installation	2%	
Mainline Gantry Signage Construction - Ordering Signage (50%) - Delivery of Signage (complete to site) (10%) - Completed Erection of Permanent Signage and Public Visibility (40%)	4%	
Removal of Old Signage	2%	
Installation of Positive Separation of Opposing Traffic	6%	
Asphalt Paving Work (includes shoulders) - Direction 1 (50%) - Opposing Direction 2 (50%) - Repair Work on Mainline (including crack sealing) (10%) - Asphalt T and L and Base Complete (25%) - Asphalt Binder Complete (35%) - Asphalt Top Complete (correct superelevation) (30%)	23%	
Toll Plaza Removed - Direction 1 (50%) Opposing Direction 2 (50%)	15%	
Removal of Existing TUB Complete	5%	
Striping of Project Limits (complete)	2%	
Temporary Striping (during staging and asphalt lifts) - Direction 1 (50%) - Opposing Direction 2 (50%)	2%	
Work Zone Traffic Control - Direction 1 (50%) - Opposing Direction 2 (50%)	21%	
Footprint Reduction	3%	
Landscaping	2%	
Guiderail Work	4%	
Punch List Work, Site Cleanup and Restoration	1% (fixed)	1% (fixed)
As-Builts Provided, Compiled Design Plans, Nonconformance Issues Resolved, All Construction	2% (fixed)	2% (fixed)

Inspection Diaries and Records Complete (Final Acceptance per DB §109-12.1)		
Final Agreement (Per DB §109-12.2)	2% (fixed)	2% (fixed)

WORK PAYMENT SCHEDULE – (ORT Sites (34 Required)) **Exit _____**		
WORK ITEM	**MAXIMUM PERCENT OF LUMP SUM PRICE**	**PERCENT OF LUMP SUM PRICE (To be completed by D-B)[1]**
Survey	5%	
Highway Asphalt Repairs (includes sealing of cracks)	3%	
Highway Asphalt Work (includes all shoulder work) - Direction 1 (max 70%)* - Opposing Direction 2 (max 70%)* - Toll Plaza Removal Area Reconstruction (25%) - Asphalt T and L and Base Complete (10%) - Asphalt Binder Complete (35%) - Asphalt Top Complete (20%)	20%	
Toll Plaza Removal - Direction 1 (50%) - Opposing Direction 2 (50%)	20%	
Gantry Construction - Foundations of Gantry (25%) - Order Gantry (40%) - Delivery of Gantry (10%) - Gantry Erection and Gantry Complete (complete) (25%)	20%	
Positive Protection of Gantry Supports and Guiderail Work and Tie-ins Complete	6%	
Concrete Slab Installations with Treadle (Exit Side of Thruway System Only)	10%	
Construction of Communication Building Slab	4%	
Construction of Communications Building - Order Communication Building (if precast) (50%) - Communication Building Delivery (if precast) (20%)	10%	

- Communication Building Erection and Concrete (if precast) (30%) - Material Delivery (if stick built) (50%) - Communication Building Complete (50%)		
Maintenance and Tandem Lot Modifications (includes access or departure modifications)	10%	
Tandem Lot Camera Work/Supply - Ordering (50% - Delivery to Thruway Installation (20%) - Installing Complete (30%)	10%	
Tandem Lot Lighting Installation	6%	
Tandem Lot Modifications of Intersection as per legislative Proposed Routes	10%	
Signage Package - Ordering of Signage (complete) (40%) - Delivery of Signage (complete) (10%) - Transitional Signage Installed (before booth removals) (10%) - Complete Final Installation of Permanent Signage and Public Visibility (25%) - Removal of Obsolete Signage Mainline and ORT sites (15%)	6%	
Electrical Work Complete	2%	
Fiber and Conduit Work Complete	3%	
Striping of Project Limits Complete	3%	
Generator Installation Complete - Order Generator (40%) - Delivery (10%) - Install (50%)	3%	
Separation of Opposing Traffic (Positive or delineators)	6%	
Work Zone Traffic Control - Direction 1 (50%) - Direction 2 (50%)	25%	
Work Zone Traffic Control (outside of ORT site)		
Punch List Work	1% (fixed)	1% (fixed)
Final Acceptance (Per DB §109-12.1)	2% (fixed)	2% (fixed)
Final Agreement (Per DB §109-12.2)	2% (fixed)	2% (fixed)

* Must add to 100%

WORK PAYMENT SCHEDULE – (Exit 17 (Newburgh))		
WORK ITEM	**MAXIMUM PERCENT OF LUMP SUM PRICE**	**PERCENT OF LUMP SUM PRICE (To be completed by D-B)[1]**
Survey	5%	
Barrier/Guiderail Installation - Entry (50%) - Exit (50%)	20%	
Attenuator Installation - Entry (50%) - Exit (50%)	20%	
Toll Booth Removals - Entry (50%) - Exit (50%)	30%	
Striping Complete - Entry (50%) - Exit (50%)	4%	
VMS Installation (Entry only)	10%	
Delineator Installation - Entry (50%) - Exit (50%)	5%	
Work Zone Traffic Control - Entry (50%) - Exit (50%)	30%	
Signage Package - Entry (50%) - Exit (50%) - Sign Package Order (40%) - Delivery of Signage (10%) - Installation Complete (50%)	4%	
Concrete Barrier Removal Toll Booth - Entrance (50%) - Exit (50%)	10%	
Punch List Work	1% (fixed)	1% (fixed)
Final Acceptance (Per DB §109-12.1)	2% (fixed)	2% (fixed)
Final Agreement (Per DB §109-12.2)	2% (fixed)	2% (fixed)

WORK PAYMENT SCHEDULE – (Exit 16 Harriman Work)		
WORK ITEM	**MAXIMUM PERCENT OF LUMP SUM PRICE**	**PERCENT OF LUMP SUM PRICE (To be completed by D-B)[1]**
Survey	5%	
Toll Booth Removal	60%	
Electrical Work	20%	
Striping	20%	
Work Zone Traffic Control	30%	
Signage Package Complete - Order Signage (50%) - Signage Delivery (10%) - Install Signage (40%)	10%	
Punch List Work	1% (fixed)	1% (fixed)
Final Acceptance (Per DB §109-12.1)	2% (fixed)	2% (fixed)
Final Agreement (Per DB §109-12.2)	2% (fixed)	2% (fixed)

WORK PAYMENT SCHEDULE – (Exit 35 (Thompson Road))		
WORK ITEM	**MAXIMUM PERCENT OF LUMP SUM PRICE**	**PERCENT OF LUMP SUM PRICE (To be completed by D-B)[1]**
Survey	5%	
Highway Asphalt Work (includes complete shoulder construction) - Direction 1 (50%) - Opposing Direction 2 (50%) - Toll Plaza Removal Reconstruction (40%) - Highway Concrete Repairs (includes crack sealing) (5%) - Asphalt T and L and Base Complete (10%) - Asphalt Binder Complete (30%)	30%	

- Asphalt Top Complete Superelevation (15%)		
Signage Package - Order Signage Package Complete (40%) - Delivery of Signs Complete (10%) - Installation of Signs Complete (50%)	10%	
Toll Booth Removal - Direction 1 (50%) - Opposing Direction 2 (50%)	30%	
Footprint Reduction	5%	
Landscaping	4%	
Striping	3%	
Work Zone Traffic Control - Direction 1 - Opposing Direction 2	25%	
Maintenance and Tandem Lot Modification Punch List Work	1% (fixed)	1% (fixed)
Final Acceptance (Per DB §109-12.1)	2% (fixed)	2% (fixed)
Final Agreement (Per DB §109-12.2)	2% (fixed)	2% (fixed)

WORK PAYMENT SCHEDULE – (VMS All Locations)		
WORK ITEM	**MAXIMUM PERCENT OF LUMP SUM PRICE**	**PERCENT OF LUMP SUM PRICE (To be completed by D- B)[1]**
VMS in New York Division (6 Required)		
Work Zone Traffic Control	5%	
Connection Work	25%	
VMS Package Complete - Order VMS (50%) - VMS Delivery (10%) - VMS Installation (35%) - Testing VMS (5%)	70%	
VMS in Albany Division (32 Required)		
Work Zone Traffic Control	5%	
Connection Work	25%	
VMS Package Complete - Order VMS (50%) - VMS Delivery (10%) - VMS Installation (35%)	70%	

- Testing VMS (5%)		
VMS in Syracuse Division (26 Required)		
Work Zone Traffic Control	5%	
Connection Work	25%	
VMS Package Complete - Order VMS (50%) - VMS Delivery (10%) - VMS Installation (35%) - Testing VMS (5%)	70%	
VMS in Buffalo Division (17 Required)		
Work Zone Traffic Control	5%	
Connection Work	25%	
VMS Package Complete - Order VMS (50%) - VMS Delivery (10%) - VMS Installation (35%) - Testing VMS (5%)	70%	
Punch List Work	1% (fixed)	1% (fixed)
Final Acceptance (Per DB §109-12.1)	2% (fixed)	2% (fixed)
Final Agreement (Per DB §109-12.2)	2% (fixed)	2% (fixed)

Notes:

(1) Percent of Lump Sum Price to be completed by Proposer. Total percent for all Work Items shall equal 100%

(2) Subsequent to Selection of Best Value, the Design-Builder may submit to the Authority a more detailed Work Payment Schedule which breaks individual work items into multiple stages, for the Authority's review and acceptance. However, the sum of the percentages proposed for each stage shall equal the percentage for that work item submitted by the Design-Builder included on Form WPS, and in no case shall the payment for any individual stage be more than 50% nor less than 10% of the total percentage bid for that work item.

1.14 DEFINED COMPLETION MILESTONE

This Project's Defined Completion Milestones, if applicable, are defined as shown in Part 5 – Special Provisions.

The Defined Completion Milestone Dates may not be changed without written approval by the Authority's Project Manager.

SECTION 2 PROJECT MANAGEMENT

2.1 DESIGN-BUILDER'S ROLE

The Design-Builder shall have responsibility for controlling and managing the Work, including the responsibility for quality management as defined in the Contract Documents, Part 2 - DB §§ 111, 112 and 113. This section identifies the Design-Builder's Key Personnel and summarizes the Management Plans and schedule to be produced by the Design-Builder in accordance with the Contract Documents.

2.2 DESIGN-BUILDER'S KEY PERSONNEL

The positions listed below shall be the Design-Builder's key personnel for the Project. Key Personnel are preferred to have experience on projects of a similar size, type of work, and complexity as this Project, and should meet the qualifications described below. Proposed staff with qualifications less than those described below will receive a reduced score compared to staff that meet or exceed the described qualifications. Any requirements described as "**shall** have..." or "**shall** be…"are determined to be minimum response requirements. The Design-Builder shall provide personnel that meet these minimum requirements.

The Design-Builder's Project Manager shall be the Design-Builder's representative and single point of contact with the Authority.

The Authority's Project Manager may designate other Key Personnel positions as needed at any time during the Contract.

A) **Project Manager: Shall** have a minimum of 10 years but preferably 15 years of demonstrated experience in construction and construction management of bridge /highway and/or transportation and/or infrastructure projects. Projects should preferably be of similar scope, size and type(s) of work as this Project, and preferably include projects with multi-discipline involvement and coordination, compressed timelines, and community information requirements. Such experience in construction and management-of-construction should include at least one bridge infrastructure construction project having a construction value in excess of $15M, and one highway reconstruction project having a construction value in excess of $20M, and one infrastructure project which included either gantries or overhead sign structures. The Project Manager, who should have Design-Build experience and have extensive project management experience, can hold only this one Key Personnel position. It is preferred, but not required, that this individual be licensed and currently registered as a Professional Engineer in the State of New York. The Project Manager shall dedicate no less than 30% of their work time to this project.

B) **Design Manager: Shall** be licensed and currently registered as a Professional Engineer in the State of New York, **shall** be an owner or employee of the Designer and shall have a minimum of 15 years demonstrated experience in managing design for infrastructure projects, preferably some of similar scope as this Project. The Design Manager should preferably have Design-Build experience, and should have specific experience on projects of similar size and type(s). The Design Manager can hold only this one Key Personnel position. The Design Manager **shall** dedicate no less than 75% of their work time to this project.

C) **Quality Manager: Shall** be licensed and currently registered as a Professional Engineer in the State of New York, **shall** have demonstrated experience in bridge design, highway designs, sign structure designs and preferably gantry designs and infrastructure construction with at least 10 years of experience in quality assurance and quality control activities, including preparation and implementation of Quality Plans and procedures for design and construction. The Quality Manager can hold only this one Key Personnel position. The Quality Manager should have experience of quality systems based on ISO 9001, and should have experience with the quality systems of the Authority and/or Department of Transportation. The Quality Manager shall dedicate no less than 50% of their work time to this project.

D) **Supervisor of Resident Engineer(s): Shall** be licensed and currently registered as a Professional Engineer in the State of New York and should have a minimum of 10 years, of demonstrated construction experience in civil works projects with experience in managing the site work of new bridge construction and highway construction and/or reconstruction projects. This individual **shall** have at least 7 years of experience as a Resident Engineer. Experience should preferably include Design Build contracts. The Supervisor of Resident Engineer(s) can hold only this one Key Personnel position. The Supervisor of Resident Engineer(s) **shall** have performed Resident Engineer duties on a project within the last 5 years.

E) **Lead Structural Engineer**: **Shall** be licensed and currently registered as a Professional Engineer in the State of New York and **shall** have demonstrated at least 10 years of experience in structural analysis and design of the type of structures required for this Project, including Bridges, Gantries, Overhead Sign Structures, Toll Plazas, Equipment Buildings and structures that must resist/dampen vibrations of connected equipment.

F) **Lead Civil Engineer**: **Shall** be licensed and currently registered as a Professional Engineer in the State of New York and **shall** have at least 10 years of experience in civil roadway design, including congestion management and the preparation of Work Zone Traffic Control Plans.

G) **Lead Geotechnical Engineer**: **Shall** be licensed and currently registered as a Professional Engineer in the State of New York and **shall** have a minimum of 10, but preferably 15 years of experience which should include the following: planning and overseeing subsurface exploration programs for highway structures/facilities; the development of design soil/rock profiles, for the purpose of geotechnical analysis, design, and construction; design of structure foundations and earth support structures; analysis and design for static and dynamic (seismic) loading under current LRFD; analysis and design of mitigation measures for embankment settlement and stability; analysis and design of both temporary and permanent earth support structures; and interpreting geotechnical instrumentation programs.

H) **Resident Engineers** (Total 4; one per Division: Albany, Syracuse, Buffalo, New York): **Shall** be licensed and currently registered as a Professional Engineer in the State of New York and should have a minimum of 10 years of demonstrated experience in managing the site work of highway construction and reconstruction projects inspection including at least 5 years of experience as a Resident Engineer. Experience should preferably include Design-Build contracts. The Resident Engineers can hold only this key personnel position.

The Resident Engineers **shall** have performed Resident Engineer duties on a project within the last 3 years and should have been on at least one (1) construction project having a construction value in excess of $25,000,000. Experience with NYSTA and NYSDOT projects is preferred.

l) **Civil Rights Compliance Manager:** The Design-Builder **shall** provide a Project Civil Rights Compliance Manager who **shall** have a minimum of 10 years of experience in civil rights compliance and who **shall** be responsible for monitoring all Civil Rights Compliance requirements and achieving the MBE and WBE goals and EEO goals described in the Contract documents. The Civil Rights Compliance Manager **shall** have knowledge of: the principles and practices of Contract compliance for M/WBE programs and related State, and local rules and regulations, including the M/WBE Program (managed by NYS's Economic Development Corporation), and M/WBE program development, evaluation and management. The Civil Rights Compliance Manager **shall** also have the ability to organize, implement, and direct a M/WBE program for NYSTA; consult with and advise management on a wide variety of M/WBE and contract compliance issues; prepare and present concise, logical oral and written reports; interpret and apply applicable laws, policies, regulations and procedures; and establish and maintain cooperative working relationships with the prime contractor community, M/WBEs and M/WBE associations, and local community based organizations.

2.3 MANAGEMENT PLANS AND SCHEDULES

2.3.1 Management Plans and Schedule Requirements

The Design-Builder shall submit to the Authority's Project Manager, for review and comment or approval (as applicable), all the Management Plans and Schedule listed in Table 2-1. Following receipt of the Authority's acceptance or approval of the individual Management Plans and Schedule, as described in the Contract Documents, the Management Plans and Schedule shall be resubmitted to the Authority's Project Manager as the Design-Builder's consolidated Project Management Plan for the Project.

Table 2-1 – Project Management Plans

Plan Title	Contract Document Reference	Initial Plan Submitted with the Proposal?	Submittal Deadline
MBE/WBE/SDVOB Workforce Participation Plan	DB § 102-9.4B	No	45 Days after NTP
Safety Plan*	DB § 107-7.5	No	30 Days after NTP or 30 days prior to beginning any construction Work
Quality Control Plan*	DB § 113	Yes	45 Days after NTP
Overall Design-Build Team Organization Plan	Project Requirement Section 2.3.5	Yes	25 Days after NTP
Design Management Plan	Project Requirement Section 2.3.6	No	30 Days after NTP
Construction Management Plan	Project Requirements Section 2.3.7	No	45 Days after NTP

Design Review Plan	DB § 111-7	No	25 Days after NTP
Transportation Management Plan/Emergency Response Plan	Part 3, Section 15.3.10	No	30 Days after NTP
Initial Baseline Progress Schedule	Project Requirements Section 2.4	Yes	15 Days after NTP

* Requires Authority approval

2.3.2 MBE/WBE/SDVOB Workforce Participation Plan

The Design-Builder shall develop a Workforce Participation Plan to meet the requirements of DB §102-9.4B and submit it to the Authority's Project Manager for review and comment.

2.3.3 Safety Plan

The Design-Builder shall develop a Safety Plan to meet the requirements of Part 2, DB §107-7.5 and submit it to the Authority's Project Manager for written approval in accordance with DB §107-7.7. No construction Work shall progress and no payment shall be made to the Design-Builder until the Safety Plan is approved by the Authority.

2.3.4 Quality Control Plan

The Design-Builder shall use the Initial Quality Control Plan submitted with the Technical Proposal, modify and develop it, as necessary, to include the content required by Part 2, and submit it to the Authority's Project Manager for written approval in accordance with Part 2 DB §113. The Quality Control Plan shall be revised and resubmitted to the Authority's Project Manager within 14 calendar days of receipt of the Authority's written comments and resubmitted as required until Approved by the Authority's Project Manager. No offsite fabrication Work or Construction Work shall commence before the Quality Control Plan has been approved by the Authority's Project Manager. No payment will be made to the Design-Builder until the Quality Control Plan has been approved by the Authority.

2.3.5 Overall Design-Build Team Organizational Plan

The Design-Builder shall update the Initial Overall Design-Build Team Organization Plan by combining the Organizational Structure Chart and the Communication Protocol Graphic and narrative and expanding upon these initial submittals into a more comprehensive document. It shall describe the design and construction organizational arrangements it intends to implement. The organizational arrangements described should clearly identify responsibilities and reporting lines of staff, particularly relating to Key Personnel.

The Design-Builder shall include an organization chart and communication protocol graphic (on an 11" x 17" sheet of paper), illustrating the Proposer's Key Personnel and their prospective roles and responsibilities, as well as other principal participants and any known Subcontractors having a material role in the Project's design Work, design check Work, construction Work and construction inspection Work.

The Design-Builder shall describe the interrelationships and interfaces between each discipline within the Proposer's organization (e.g., design, design check, shop drawing preparation and review, construction, and quality management).

The Overall Design-Build Team Organization Plan shall also describe the interrelationships and

interfaces between the Design-Builder's organization, the Authority and other governmental agencies, utility owners, stakeholders, businesses, the public and other contractors working in the vicinity and impacted by the construction of the Project. This description shall also, at a minimum, address the following activities:

A) Reviews of plans and permits;

B) Progress, workshop, partnering and utility coordination meetings; and

C) Construction, engineering and inspection activities.

2.3.6 Design Management Plan

The Design-Builder shall provide a Design Management Plan and submit it to the Authority's Project Manager for Review and Comment.

The Design Management Plan shall include the Design-Builder's approach to managing the Project, including:

A) The Design-Builder's understanding of the Project Requirements.

B) The Design-Build Team's organizational structure and lines of responsibility.

C) The Design-Builder's approach to delivering the Project, including how the Design-Builder will address logistical challenges of the Project, scheduling to complete the Project on time and on or under budget with emphasis on quality, design, and construction.

D) How the Design-Builder will manage and coordinate the design, design quality control and design reviews.

E) The means of reporting on the design progress; the means of tracking quality control reviews and the resolution of comments on the design and describes how design non-conformance issues will be resolved.

F) How the design effort will be coordinated with construction activities and construction means and methods for the Project.

G) How design non-conformance issues will be resolved.

H) A description of the proposed methods to control the design progression for the overall project to support the construction schedule.

2.3.7 Construction Management Plan

The Design-Builder shall provide a Construction Management Plan, which may include relevant material submitted with its Proposal and submit it to the Authority's Project Manager for Review and Comment.

The Construction Management Plan shall provide how well the Design-Builder understands and is organized to manage construction, construction quality control, and shall:

A) Describe the tools that will be implemented to provide seamless interaction with the Authority's Construction Quality Assurance Engineer for the construction of a quality Project.

B) Provide how the progress of the construction work is reported to the Authority.

C) Provide how non-conformance issues in construction will be resolved; provides the method of updating the Baseline Schedule.

D) Provide how the work will be progressed in coordination with other agencies.

E) Provide the methods of maintaining detours.

F) Explain how the interaction with the Construction Inspection Professional Engineering Firm and the Materials Testing Firm/Laboratory will occur and how these firms will contribute to the Construction Management and quality of the Project.

2.3.8 Design Review Plan

The Design-Builder shall develop a Design Review Plan to meet the requirements of DB §111-7 and submit it to the Authority's Project Manager for review and comment.

2.3.9 Transportation Management Plan/Emergency Response Plan

The Design-Builder shall develop a Transportation Management Plan/Emergency Response Plan to meet the requirements of Part 3, Section 15.3.10 and submit it to the Authority's Project Manager for review and comment.

2.4 BASELINE PROGRESS SCHEDULE

The Design-Builder shall submit the Initial Baseline Progress Schedule that was submitted with the Technical Proposal, including any updates that may be necessary due to a NTP date change.

In addition, the Design-Builder shall expand and develop the Initial Baseline Progress Schedule in accordance with DB §108-1 and Part 5, Special Provision SP-3.

Design shall be considered complete when all Design related documents have been completed and accepted by the Authority including: all calculations, specifications, records of design quality control reviews and procedures; descriptions of and justification for any non-standard features created or retained as a result of the design; resolution of any non-conformance reports; and submission of "As Built" drawings.

Construction shall be considered complete when: the entire Scope of Work has been completed; any damage to the area caused by the Design-Builder's performance of the Work has been repaired to the satisfaction of the Authority; all construction quality control documents, test and inspection reports and forms have been completed; As-Built drawings have been completed; and the work site(s) have been cleaned of any debris.

2.5 MEETINGS

The Design-Builder shall convene or participate in meetings as indicated in Part 2 DB §105-17.

It is the Authority's policy to use the principles of partnering to guide the management of Design-Build contracts and the Design-Build program within the parameters covered by the laws, regulations, and other policies that govern the work. The Design-Builder shall convene or participate in meetings designed to foster the principles of partnering in accordance with Part 2 DB §103-2.

The Design-Builder shall record the minutes for each meeting.

2.6 COMPUTER AND NETWORKING REQUIREMENTS

The Authority will issue connection accounts to the Design-Builder and its Construction Inspection Professional Engineering Firm (CIPEF) to Projectwise and Cee's program.

The Design-Builder shall provide ALL Laptop Computers and Networking equipment to the CIPEF and staff, as necessary. The Design-Builder will need to provide high-speed communication into the CIPEF office for all users. It is recommended that the Design-Builder test the network connection success prior to fully equipping its staff and the CIPEF firm, to ensure both hardware and software compatibility.

The following laptop computer related specifications reflect the current technology utilized by the Authority and shall be provided to the Authority Construction Quality Assurance Staff. By the Design-Builder:

Hardware

- Processor: Intel® Core i7-6700 (Quad Core, 3.4GHz, 8M cache, 6th Generation), or better
- Memory: 8GB DDR4 Memory, 1X8GB, 2400, Non-ECC, or better
- Hard Drive: 512 GB Solid State Drive, or better
- Graphics: Intel® HD Graphics 530 for i7-6700U, or better
- Display: LCD Non-Touch FHD (1920 x 1080) LCD w/HD Cam (WLAN), or better
- Wireless: Intel 8265AC WW WLAN Bluetooth, or better
- Mobile Broadband: Wireless WAN Card
- Service: 3 Years Hardware Service with In-Home/Onsite Service After Remote Diagnosis
- Mouse
- Carrying Case

Software:

- Windows 10.0 Pro (64 bit edition)
- Microsoft Office 2016 Professional Edition, or later version
- WinZIP 20, or later version
- Norton Internet Security (latest version for Windows 10) set up to run in Auto-Protect Mode and Auto-Update Mode (monthly), or McAfee Internet Security (latest version)

Additional Software:

- Microsoft Photo Editor (latest version)
- Adobe Acrobat Pro (latest version)

A Total of 6 complete packages of Hardware, Software, and additional software shall be provided.

2.7 AUTHORITY'S CONSULTATION AND WRITTEN COMMENTS

The Authority's review, oversight, audit, and inspection activities are referred to as "consultation and written comment" (see Part 2, DB §105-16). The Authority's consultation and written comment will be provided to the Design-Builder in writing only. The Design-Builder shall be responsible for addressing the Authority's comments and shall indicate in writing whether it concurs with the comments. If the Design-Builder does not concur with the Authority's comments, then the Authority and Design-Builder will work together to resolve the issue before proceeding.

If agreement cannot be reached, the issue must be resolved as provided in the Contract Documents for dispute resolution in accordance with Part 2 DB §109-10.

2.8 PROJECTWISE

ProjectWise is the preferred platform to be used to organize, manage, distribute/share and archive electronic Project design documents for NYSTA. However, the Design-Builder may propose to utilize another internet-based platform for these purposes, subject to the Authority's acceptance. The documents to be posted to the selected platform typically include but are not limited to:

- Final design report and any modifications predicated by the Design-Builder's actions;
- All studies and supporting reports;
- Permits;
- Survey and ROW mapping;
- Photos taken prior to and during design;
- CADD and 2D/3D models files including current NYSTA- supported Microstation and InRoads file formats;
- Engineering calculations to support designs;
- All electronic plan sheets;
- Engineer of Record's estimate based on Payment Breakdown Structure; and
- Public Information.

All files posted to the selected platform shall be in accordance with the file naming convention and submission procedures as defined in Appendix 14 of the NYSDOT Project Development Manual.

The Design-Builder shall ensure that all electronic design documents are stored on the selected platform. Updates of engineering documents shall be provided on a monthly basis.

Regardless of the platform utilized during the progression of the Project, prior to Project completion all files shall be posted to ProjectWise in accordance with the criteria listed above.

The Design-Builder may obtain a ProjectWise account by contacting the Authority's Project Manager and providing the required account information per Appendix 14 of the NYSDOT Project Development Manual.

SECTION 3 ENVIRONMENTAL COMPLIANCE

3.1 SCOPE

Except as otherwise detailed herein, the Design-Builder shall be responsible for preparing its design, obtaining environmental approvals, carrying out construction activities, performing Quality Control, and undertaking other activities, including hazardous materials inspection and testing, as needed to ensure compliance with the Project's Environmental Requirements, State Environmental Quality Review Act (SEQRA) Determination, and all applicable environmental laws and regulations.

This Project Requirement identifies certain required actions to be performed by the Design-Builder to ensure that the Environmental Requirements are complied with throughout the duration of the Project.

3.2 ENVIRONMENTAL APPROVALS

The Authority has determined that this Project is a SEQRA Type I Action in accordance with 6 NYCRR, Part 617.

The Authority has not secured any environmental permits associated with this Project. It is the Design-Builder's responsibility to secure all environmental permits and approvals associated with and required for construction of this Project.

It is advisable that the Design-Builder hold a pre-application meeting with NYSDEC and/or the USACE as appropriate, within 60 days from NTP.

If during detailed design and/or construction the Design-Builder introduces design elements, variations, or methodologies that potentially induce environmental impacts requiring any approvals/permits, then the Design-Builder shall re-evaluate the SEQRA determination and process for this Project and obtain the necessary Environmental Approvals/Permits for the Project prior to proceeding with construction. The Design Builder shall be responsible for any supporting documentation and public notifications necessary to support the initial SEQRA determination, or future amended determination, as a result of Proposal elements which deviate from the original SEQRA determination. This requirement also applies to proposed variations which may affect, cultural resources, endangered species and wetlands, and other applicable federal and state environmental regulations.

3.3 REQUIREMENTS

3.3.1 General

A) The Design-Builder shall procure all Environmental Approvals as needed for all Design-Builder-located areas, including staging, borrow and disposal sites, and any other areas used by the Design-Builder, for its convenience, in the execution of the Project;

B) The Design-Builder shall be responsible for preparing all permit application materials and obtaining all environmental permits/approvals necessary for the Project. For any such permits/approvals required to be obtained by the Design-Builder that must formally be issued in the Authority's name, the Design-Builder shall allot ten (10) business days for the Authority to review and comment on the completeness and adequacy of the application materials. It shall then be the Design-Builder's discretion to address any Authority comments or elect to

move forward with the application materials as submitted. The Authority will cooperate with the Design-Builder as reasonably requested by the Design-Builder, including execution and delivery of appropriate applications and other documentation as prepared by the Design-Builder. The Authority will not be responsible for any delay or additional costs associated with the Design-Builder's environmental permit/approval applications;

C) The Design-Builder shall be solely responsible for compliance with and violations of any Environmental Requirements; and

D) The Design-Builder is responsible for any fines, non-compliance, violations, or damages incurred by reason of failure of the Design-Builder to comply with Environmental Approvals and shall indemnify the Authority and the State of New York for any fines, violations or damages incurred by reason of failure of the Design-Builder to comply with Environmental Approvals. Resulting fines or damages shall be deducted from monies owed the Design-Builder.

3.3.2 Environmental Plans

The Design-Builder shall be responsible for preparing the following documents in conformity with all Environmental Requirements:

A) Environmental Compliance Plan

The Design-Builder shall prepare, implement, and update monthly an Environmental Compliance Plan (ECP) that shall detail the Design-Builder's measures and procedures to ensure all applicable compliances. An Environmental Compliance Plan shall be submitted to the Authority at least 10 days prior to the start of construction for consultation and written comment. At a minimum, the Environmental Compliance Plan shall include the following elements:

A. Environmental team
    1. Environmental personnel: names, titles and project related responsibilities, years of relevant experience, licensing and applicable training;
    2. Environmental team organization; and
    3. Environmental team contact information.

B. Environmental compliance tracking and reporting procedures
    1. Method of reporting to the Authority of permit progress and status, emergencies and alleged violations of Environmental Requirements, Environmental Approvals and Environmental Laws; and
    2. Procedures for environmental compliance.

C. Environmental Approvals
    1. Describe the Design-Builder's plan to obtain all necessary permits and Environmental Approvals identified and how they fit into the Design-Builder's schedule.
    2. Identify and adequately assess any environmental impacts that are greater than those disclosed in the SEQRA environmental documents;
    3. Identify all permits and Environmental Approvals, including supplements to the SEQRA Document.

B) State Pollutant Discharge Elimination System (SPDES) Permit application; see Soil Erosion and Water Pollution Control;

C) Stormwater Pollution Prevention Plan (SWPPP).

3.3.3 Soil Erosion and Water Pollution Control

The Design-Builder shall prepare and maintain on file a Stormwater Pollution Prevention Plan (SWPPP) complying with the New York State SPDES General Permit for Stormwater Discharges from Construction Activities (GP-0-15-002 or current version).

At a minimum, the SWPPP shall include construction sequencing and phasing, cuts and fills, grading, pollution prevention measures, inspection and maintenance schedules, and drawings showing size, location and details of permanent (e.g., swales, check dams, etc.) and temporary (e.g., silt fence, construction entrance(s)/exit(s), temporary seed, mulch, etc.) erosion and sediment controls. The SWPPPs that will include permanent impervious or other construction that requires post-construction stormwater management shall include plans, details and design calculations for stormwater management practices to provide treatment of water quality volume and runoff reduction volume, stream channel protection, overbank flood, and extreme flood controls, as appropriate.

The Design-Builder shall submit the SWPPP and a corresponding SPDES Notice of Intent (NOI) and an "MS4 SWPPP Acceptance Form" to the Authority's Project Manager for review and acceptance prior to the scheduled start of construction. The eNOI shall include the text "DB: Site Preparation, Temporary Work and Demolition" along with the Project/Site Name. The Design-Builder shall submit the following items to the New York State Department of Environmental Conservation (NYSDEC) to obtain coverage under the SPDES General Permit: the eNOI, a SWPPP Preparer Certification and Owner/Operator Certification signed by the Design-Builder, and the MS4 SWPPP Acceptance Form signed by the Authority. Construction activities shall not commence until the date authorized on the SPDES Acknowledgement Letter from the NYSDEC.

The Design-Builder shall maintain SPDES General Permit coverage until the entire project is complete. Upon project completion, The Design-Builder shall prepare Notices of Termination (NOTs), complete final inspections and sign Parts VII, VIII and IX of the NOT. The Design-Builder shall submit the NOTs to the Authority's Project Manager for acceptance and Part VI signature prior to submitting the NOTs to the NYSDEC to terminate SPDES General Permit coverage.
SPDES General Permit, electronic Notice of Intent, MS4 SWPPP Acceptance, SWPPP Preparer Certification, Owner/Operator Certification and Notice of Termination Forms and Instructions are located at:

http://www.dec.ny.gov/chemical/43133.html

3.3.4 Threatened and Endangered Species Coordination

The Design-Builder shall be aware that the Indiana bat and northern long-eared bat (NLEB) occur in the Project area and are protected under the Endangered Species Act of 1973. To avoid adverse effects on the bats, any removal of trees 3" or greater in diameter at breast height (dbh) and should occur during the period between October 31st and March 31st. In addition, a

determined number of replacement trees shall be planted upon completion of the work. See Section 11 for replacement conditions.

Other threatened and endangered species may be present in the project area. Most work will occur within Thruway ROW which is maintained and cleared, therefore it is not anticipated there will be impacts to the habitat of threatened or endangered species. The Design Builder shall be responsible for securing the necessary approvals associated with state and federal threatened and endangered species, as required by any state and federal permits.

3.3.5 Invasive Species

A review of the existing corridor indicates presence of known invasive species such as common reed (Phragmites australis), Japanese knotweed (Fallopia japonica), and purple loosestrife (Lythrum salicaria) within the right of way. When work will encounter invasive species, care shall be taken to prevent the spread of those species as per NYSDOT special specifications Item 617.10000024 – Disposal of Material Containing Invasive Plant Species and Item 617.11000024 – Equipment Cleaning for Invasive Plant Species.

3.3.6 Asbestos Containing and Hazardous Materials

An Asbestos and Hazardous Material Assessment of many existing tolling structures was performed by a NYS Department of Labor licensed firm using certified inspection staff. Asbestos Containing Materials (ACMs) identified during this screening/assessment were sampled and positively analyzed for asbestos content; suspect ACMs are presumed positive. Lead in paint and polychlorinated biphenyls (PCB) testing were also included in the scope of this study. While all existing tolling structures were not screened for ACMs, Lead and PCBs, it is expected that all unscreened tolling structures will have similar levels of ACMs, Lead and PCBs. The completed Asbestos Containing Material and Hazardous Materials Reports are located in Part 7 – Engineering Data, Section 6.

The Design-Builder shall be responsible for performing Asbestos Screenings and Hazardous Material Assessments for all unscreened existing tolling structures and the TUB facilities to be removed. The Design-Builder shall also be responsible for the abatement design, asbestos abatement, waste disposal and any required project monitoring/compliance air sampling during abatement of all confirmed and assumed asbestos containing materials if such materials will be disturbed during the performance of the Work. All asbestos abatement and waste disposal shall be performed in accordance with applicable safety and health codes and all applicable State and Federal regulations. See also DB Section 112-5.5, Asbestos.

The Design-Builder (in particular, the lead constructor on the Design-Build team) is also made aware that 12 NYCRR 56 specifically prohibits the abatement contractor from directly contracting project monitoring and/or compliance air monitoring services. In order to comply with this regulatory requirement, no Principal Participant may perform any asbestos abatement work for this Project. The Design-Builder shall subcontract asbestos abatement and project monitoring/compliance air sampling services to separate and independent firms.

If during the course of work, any asbestos-containing or hazardous materials not already documented in the asbestos and hazardous material assessments provided, or Project record plans, are encountered and require disturbance, the Design-Builder shall be responsible for any needed additional asbestos assessment, abatement design, asbestos abatement, waste disposal, and Project monitoring/compliance air sampling. The Design-Builder will also be

responsible for the proper removal, handling, and disposal of any other un-documented hazardous materials. All additional work related to undocumented asbestos and hazardous materials shall be paid for under the Force Account pay item.

New York State Department of Labor (NYSDOL) asbestos licensure and applicable staff certification(s) are required for Work where confirmed or presumed asbestos-containing materials are impacted. All necessary asbestos assessment and Project design Work shall be performed in conformance with policy and guidance provided in NYSDOT's The Environmental Manual (TEM).

Any ACMs associated with private utilities located within the Project limits shall be the responsibility of the private utility owner. The Design-Builder shall coordinate with the private utility owners for the remediation of any ACMs which may be identified.

The Design Builder shall be responsible for the handling and disposal of all lead, PCB and hazardous materials in accordance with all applicable safety and health codes and all applicable State and Federal regulations.

3.3.7 Contaminated Materials

The project activities are generally limited to the existing highway and toll plaza areas. The proposed project will be constructed within the existing right-of-way. It is unlikely that subsurface hazardous or contaminated materials will be encountered.

If new subsurface hazardous or contaminated material is found then the additional material found shall be paid for under the Force Account pay item. All work shall be performed in accordance with all applicable safety and health codes and all applicable State and Federal regulations.

3.3.8 Cultural Resources

The Design-Builder shall be responsible for compliance with Section 14.09 of the NYS Historic Preservation Act. It is anticipated that all ground disturbing activities will take place in areas impacted by previous highway construction. With the exception of the Woodbury location, the Design-Builder should place any new gantries on the mainline 500 feet beyond the immediate limits of any historic district or resource directly adjacent to the Thruway. The limits for these resources are located on the NYS OPRHP's Cultural Resource Information System (CRIS) at: https://cris.parks.ny.gov/.

3.3.9 Wetland and Stream Information

Gantry Limits on Mainline

General information has been gathered relating to the potential location of wetlands and streams for the gantry limits along the mainline as identified in Part 7 Section 1 - Gantry Limits. Maps with this assessment information can be found in Part 7 Section 7 - Wetland Assessments. The Wetland Assessment maps display the following (be advised all wetland and stream boundaries are approximate):

Assessed Streams: Stream boundaries observed in the field within 50 feet from the edge of pavement.

Assessed Wetlands: Wetland boundaries observed in the field within 50 feet from the edge of pavement.
Mapped National Wetland Inventory (NWI) Wetlands**:** Mapped federal wetlands (US Army Corps of Engineers regulated).
Mapped NYSDEC Wetlands**:** Mapped NYSDEC Regulated Wetlands.

No wetland delineations were performed in the field in the locations of the Gantry Limits. No data sheets or other documentation are available.

In areas where Assessed Wetlands or Assessed Streams are shown, the Assessed Wetland or Stream boundary shall take precedence over the mapped boundaries. Any Assessed Wetland in close vicinity to a Mapped NYSDEC Wetland should be assumed to be part of that NYSDEC wetland. NYSDEC Wetlands include a 100 foot adjacent area beyond the wetland boundary. This 100 foot buffer is also regulated by NYSDEC. If an assessed wetland is not in the vicinity of either a “Mapped NWI Wetland” or a “Mapped NYSDEC Wetland”, the wetland shall be assumed to be regulated by the U.S. Army Corps of Engineers.

Interchange Locations
Wetland delineations have been undertaken only at Interchanges 24, 25A, 34A, 36, 39 and 45 where modifications are being proposed to facilitate egress and ingress associated with the maintenance facilities, tandem lots and park and ride commuter lots. The wetland delineation information can be found in Part 7 Section 20 – Wetland Delineations.

3.3.10 Environmental Plan Deliverables

Deliverables shall be as stated elsewhere in the RFP documents.

SECTION 4 GENERAL PROJECT SCOPE OF WORK

4.1 SCOPE

The Design-Builder shall perform all Work necessary to prepare the Project sites for construction, maintain the sites in suitable condition during all stages of construction, and provide cleanup and restoration of the Project sites and all disturbed areas.

4.2 STANDARDS

The Design-Builder shall perform the Work in accordance with the applicable Standards, Design Codes and Manuals cited in Section 1.6, unless otherwise stipulated in this Project Requirements, or otherwise applicable to the Project.

4.3 REQUIREMENTS

The Design-Builder shall prepare site work plans showing the extent of site works; disposal and storage locations; facility removal details; and approximate volumes; and shall provide for uninterrupted and unrestricted Authority maintenance and operations. All regulated waste shall be handled according to Section *3 – Environmental Compliance*.

The site work may include but not be limited to: clearing and grubbing; excavation and embankment; removal of pavement and pavement markings, road barriers, soil, drainage facilities, fencing, signage, and miscellaneous structures; subgrade preparation and stabilization; dust control; removal of abandoned above-ground and shallow piping and wiring, valves, meters, and other waste materials; and aggregate surfacing.

Unless specified otherwise in the Contract Documents, the Design-Builder shall remove all obstructions down to a minimum of two (2) feet below the existing or proposed surrounding ground elevation or to the elevation necessary to properly construct the Work, whichever is lower.

The Design-Builder shall grade and restore all disturbed areas to match the existing surrounding ground elevation unless otherwise specified elsewhere in the Contract Documents. The Design-Builder shall cut pavement or sidewalk to full depth with straight lines at removal terminations.

The Design-Builder shall over-excavate as necessary to remove unsuitable material from under the footprint of pavements and structures and backfill with properly compacted suitable material. Topsoil may be stripped, stockpiled, and reused within the Project Limits.

The Design-Builder may only reuse materials on the Project that meet the requirements for grading and backfill materials. Disposal of obsolete, unsuitable, and surplus material is not allowed within the Right-of-Way and shall be removed.

The Design-Builder shall prepare Site Works Plans showing the extent of site works, disposal and storage locations, and facility removal details, approximate volumes and shall provide for uninterrupted Authority maintenance and operations. All regulated waste shall be handled according to Project Requirement 3 – Environmental Compliance.

4.3.1 Field Office

The Design-Builder shall provide, furnish and maintain Field Offices for use by the Authority in accordance with the Authority Standard Specifications. One Field Office per Division is required

and shall be located centrally within the individual Divisions (Albany, Syracuse and Buffalo). The Field Offices shall be a Type 1 Office as described in Item 637.1100025.

4.3.2 Salvage

All materials removed from the Project site shall become the property of the Design-Builder, unless specifically stated elsewhere in this Part 3 - Project Requirements.

4.3.3 Surplus Quantity

Section not used.

4.3.4 Snow and Ice Operations

The Authority shares snow and ice operations with other agencies. The adoption of Cashless Tolling on the ticketed system introduces issues relative to Thruway and other agencies that share the snow and ice operations. Specific snow plow turnaround locations are identified in this RFP. The turnaround locations are found in Part 7 – Engineering Data, Section 11. The Design-Builder shall design and construct all turn-arounds at the identified locations so that appropriate Thruway vehicles and/or other state agency vehicles can negotiate the turn radii at all locations. The specific vehicle identification/classified are defined as follows:

The turn-arounds shall be constructed before, but not later than Cashless Tolling has been activated.

The turn-around locations shall be designed and constructed for a SU-40 type of vehicle. The Authority U-Turns are described in Part 7 – Engineering Data, Section 11.

The requirements for turn-around construction shall be found in Section 16 – Highway Design Manual.

The following Exits require U-Turns for snow and ice operations: B2, 25, 25A, 26, 29A,30, 31, 32, 33, 34, 34A, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, and 56

SECTION 5 SURVEYING AND GIS

5.1 SCOPE

The Design-Builder shall perform all surveying tasks necessary to undertake and complete the Project including but not limited to: acquisition of terrain data (topography); mapping of roadways and appurtenances, features, bridges, buildings and appurtenances, toll facilities, and utilities as needed; locating boundaries; waterway surveys; contract control plan; construction and stakeout surveys; As-Built surveys; surveys that arise from other Project Requirements; asset inventory; and all other surveying services as necessary to complete the Project.

5.2 STANDARDS

The Design-Builder shall perform the surveying activities in accordance with the applicable Standards, Design Codes and Manuals cited in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

5.3 REQUIREMENTS

5.3.1 Project Survey Control

Survey control, if available, will be provided as Reference Documents. The Design-Builder may supplement that information or conduct complete new surveys as necessary to perform all the necessary surveys required to complete the Project, as the Design-Builder deems appropriate.

5.3.2 Authority Supplied Data

The Authority will provide the Design-Builder with the following Survey-Related Data as Reference Documents:

- ROW / Highway Boundary Geometry;
- Survey / Photogrammetric Base Mapping Planimetrics;
- Survey / Photogrammetric Digital Terrain Model; and
- Record Plans of Toll Booths.

The Design-Builder shall be responsible for verifying any data used for the Project.

5.3.3 Construction Requirements

All control points and monuments shall be verified prior to commencement of work on Site, and where necessary re-established through the duration of the Project in coordination with the Authority.

5.3.4 Inventory of New Assets

The Design-Builder shall complete a survey to itemize and form an inventory of all new assets, including Gantries, Cashless Tolling Equipment, Equipment Buildings, Sign Structures, Lighting, Security Equipment, Utilities, infrastructure and street furniture, within the ROW Limits.

5.3.5 Survey Reports, Records and Maps

The Design-Builder shall submit to the Construction Inspection Professional Engineering Firm, all information listed under the '*Documentation*' sub-section of each chapter of the NYSDOT *Land Surveying Standards and Procedures Manual* that is applicable to its survey work. The Design-Builder shall index and submit all calculations, notes, computer files, raw data, Project reports, meeting notes, correspondence, digital images, maps, corner records, records of surveys, aerial photogrammetric products, centerline alignment maps, and other maps and related items.

The Design-Builder shall be responsible for ensuring that information submitted is compatible with the applicable NYSDOT/NYSTA CADD standards, software and operating systems and formats.

All survey reports and maps shall be signed-and-sealed by a New York State licensed professional land surveyor.

5.3.6 Geographical Information System (GIS) Protocol

All data collected by the Design-Builder and provided to the Authority by the Design-Builder shall be:

A) in a GIS-readable format, using a commercial proprietary GIS software package;

B) have all relevant metadata stored with it, including but not limited to the surveying and engineering specifications and accuracies; and

C) be referenced to a real-world coordinate system.

5.3.7 Permanent Survey Markers

This Section not used.

5.4 SURVEYING AND GIS DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.

SECTION 6 RIGHT-OF-WAY

6.1 SCOPE

Plans showing the existing Authority owned Right-of-Way (ROW) are included in Part 7 - Engineering Data, Section 10 – Right of Way Plans. The Design-Builder shall perform all the permanent Project Work within the existing Authority owned ROW and any additional ROW that has been, or will be, obtained for the Project.

Property releases for driveway reconnections or other work that is required are the responsibility of the Design-Builder, in close coordination with the Construction Quality Assurance Engineer.

Right of ownership of all ROW and the improvements made thereon by the Design-Builder shall remain at all times with the Authority. The Design-Builder's right to entry and use of the ROW arises solely from permission granted by the Authority under the Contract.

6.2 REQUIREMENTS

6.2.1 Right-of-Way Fencing

Any ROW fencing that has been damaged due to construction of the Project or removed by the Design-Builder shall be replaced by the Design-Builder with new ROW fencing meeting current Authority standards.

6.2.2 Property Interests Identified by the Design-Builder for its Convenience

The Design-Builder shall be responsible for the acquisition and all costs associated therewith for any temporary land or other property required for the Design-Builder's convenience outside the ROW Limits, such as for staging, lay-down, access, office space, temporary works, or other purposes. The Design-Builder shall assume responsibility for satisfying all Federal and State regulations, identifying, analyzing, and documenting the environmental impacts associated with the additional space and securing all necessary consent, including that of the Authority, prior to initiating use of the space, in accordance with *DB* §*107-22*.

6.2.3 Right of Way Markers

The Design-Builder shall provide new ROW markers for missing ROW markers with similar concrete monuments at the Toll Plazas areas at Exits B3 (Canaan), 15 (Woodbury), 23 (Boulevard), 24 (Washington Ave.), 25 (Schenectady), 25A (Duanesburg), 34A (Collamer), 36 (Mattydale), 39 (State Fair), 44 (Canandaigua), 45 (Victor), 46 (Henrietta), and 47 (Leroy), 50 (Williamsville), 55 (Lackawanna), and 61 (Ripley) in accordance with the Authority Standard sheets, NYSDOT Highway Design Manual, and NYSDOT ROW Mapping Procedure Manual.

SECTION 7 PUBLIC INVOLVEMENT

7.1 SCOPE

The goal of the public involvement activities is to inform the public and Authority participants by providing timely information throughout the design and construction process. The Design-Builder shall be responsible for supporting and cooperating with the Authority for all public involvement activities.

7.2 STANDARDS

The Design-Builder, in close coordination with the Authority, shall perform the Public Involvement activities in accordance with the NYSDOT Project Development Manual: Appendix 2, Public Involvement Manual.

7.3 REQUIREMENTS

7.3.1 Public Outreach

The Design-Builder shall have the primary responsibility for performing public outreach activities for the Project, but the lead in all public outreach activities shall be the Authority. All public outreach activities shall be coordinated through the Authority's Construction Quality Assurance Engineer (CQAE). All public communication activities must be reviewed and approved by the Authority. This includes communication and notifications of key stakeholders (motorists, general public, area residents, educational institutions, emergency services, businesses, etc.) of road closure information, Project milestones or Project construction related activities that have the potential to affect the general public and/or residents in proximity to the Project area. Project milestones include, but are not limited to: the visible start of construction activities; travel pattern changes; significant Project accomplishments, any potential schedule delays and construction completion.

The Design-Builder shall be aware that outreach to the public is a critical component to the successful completion of any NYSTA project. Design-Build projects by their nature introduce unknowns and variables that the public is not aware of due to the fact the design is not complete. In an effort to offset those potential concerns and anxieties that a yet fully vetted design could create, in the eyes of the public, outreach to the public shall commence early on this project. The Design-Builder shall be prepared to meet with appropriate stakeholders and the elected officials and/or the general public within 30 calendar days' notice provided by the Authority. The Authority remains the lead on this activity but the Design-Builder shall assist in coordinating the logistics, preparing the presentation material, the announcement of the meeting(s), and other outreach efforts necessary to capture the community's interest and participation. The Design-Builder shall be prepared at this time to discuss the design, the reason for said design, the construction methods, the schedule of the construction contract, the time periods of the day that the work will be on-going, and how traffic and pedestrians will be accommodated, as a minimum. This will all be coordinated with the Authority's Project Manager and the discussion of this meeting and coordination will begin at the Design Workshop and shall be so listed as an agenda item for the Design Workshop.

The Design-Builder shall coordinate with and provide a minimum of two weeks advance notice to the CQAE prior to all changes to traffic patterns and the following Project milestones: start of construction; Project completion; and any other interim completion milestone(s) determined by the Authority.

The Design-Builder shall provide the Authority with a minimum of two weeks advance notification for each public information activity (press announcements, travel advisories, VMS postings, etc.) to allow for proper review and comment by the Authority.

The Design-Builder shall provide the Authority's CQAE with a written work Schedule (including anticipated traffic changes) two weeks in advance of work that will change traffic patterns.

7.3.2 Media Relations

Media Inquiries: All media inquiries, requests for interviews from local print or broadcast news media, trade magazines or other media outlets must be referred to the CQAE for direction. The Authority will coordinate and respond to all media requests. The Design-Builder shall alert all Project personnel about this policy.

Travel Advisories: To allow for timely notice to the public, two weeks advance notice of the start of work, any lane closures, road closures, or changes to traffic patterns is required to be given to the CQAE and the Authority's Project Manager.

Notifications referenced above are in addition to the written work schedule discussed in Section 7.3.1. The Authority will develop a draft travel advisory for content and quality review by the Design-Builder and other Authority staff as deemed appropriate. The travel advisories will be finalized and distributed to the press and appropriate state elected officials, and posted on the Project website by the Authority. However, the Design-Builder is responsible for the notification of local public officials, emergency service providers, schools, residents, businesses, and other affected parties, of any major travel pattern change.

The strategies described above are consistent with the requirements of Part 3 Section 15 – Work Zone Traffic Control and Access, and shall include Construction Bulletins published by the Authority, based on information provided by the Design-Builder, especially focused on traffic changes, night time work, higher-noise construction periods or locations, or other construction activities of potential concern to the public. The Design-Builder shall be responsible for interaction with the affected homeowners, tenants and businesses with regards to issues including but not limited to, security of and access to their property or properties, utility services, night time operation, etc.

7.3.3 Public Information Meeting

The Design-Builder shall be prepared to partner with the Authority on additional Public Information Meeting(s) to discuss the Project's progress with the community in an open forum format. The Design-Builder shall prepare design and construction-related information about the Project and the Design-Build process and progress, schedule or construction methods being used to advance the Project, etc., that will help inform Project stakeholders. The Design-Builder shall work in cooperation with the CQAE in determining the necessary presentation materials, but PowerPoint material shall be required.

Project update meetings including public informational meetings, as discussed above, may be required during the course of construction, depending on how smoothly the Project is progressing and the community(s) reaction and receptiveness to the construction of the Project.

SECTION 8 UTILITIES

8.1 SCOPE

The utility requirements set forth in Part 4 – Utility Requirements and DB §102-5 present the Design-Builder's responsibilities as they relate to existing and/or new utilities, the manner in which utilities shall be protected, relocated, upgraded, constructed or incorporated into the construction, and responsibilities for the Work.

8.2 STANDARDS

The Design-Builder shall perform all utility activities in accordance with the Contract Requirements, the applicable Standards, Codes and Manuals listed in Section 1.6 or otherwise applicable to the Project, and the standards required by the various utility companies affected by the work.

8.3 GENERAL REQUIREMENTS

The Design-Builder shall examine the record plans of the work site, make a field survey of the work site and examine all other available documents to determine the type and location of all utilities that may be affected by the Design-Builder's Work. Before any work begins the Design-Builder shall confirm and or inform the Authority's Project Manager what utilities are present and how they may be affected by the work.

The Design-Builder, in coordination with the Authority's Project Manager (or designee) and potentially the Authority's Utility Engineer, shall meet with all the affected Utility owners or operators for the purpose of discussing the effect on the utility facilities and to agree on a plan to maintain, protect, relocate, reinstall, acquire utility sources, or other action that may be necessary for the work to progress.

All utilities must be maintained, supported and protected during construction, unless otherwise directed by the utility owner.

Any utility conduit, conductor, splice box, pull box or other item that is part of a utility system or street light system that is embedded in a concrete deck, sidewalk or other concrete element that is being removed and replaced as part of this Project shall be replaced and its location coordinated with the utility owner unless the utility owner indicates that replacement is not required. The design and construction of the replaced utility shall be in conformance with the current standards of the Utility owner.

The Design-Builder shall be responsible for repair to any damage and consequential damages to those utilities caused by his operations at the Design-Builder's expense. If the nature of the damage is such as to endanger the satisfactory operations of the utilities and the necessary repairs are not immediately made by the Design-Builder, the work may be done by the respective owning companies and the cost thereof charged against the Design-Builder.

The Design-Builder shall provide notice to the Construction Quality Assurance Engineer (CQAE) at least two weeks before construction begins on any portion of the Project that involves utilities. The CQAE will notify the Authority Utility Engineer of the pending construction and of any planned interruptions to service. It should be noted that utility companies set their own notification time frames and requirements. The Design-Builder shall coordinate with respective Utility Owners.

8.3.1 Electrical Power Supply and Distribution

8.3.1.1 General Requirements

The Design-Builder shall be responsible for the design and implementation of the necessary electricity supply commensurate with the Design-Builder's design, and for all planning and liaison necessary with relevant utility suppliers for the arrangements for provision of the necessary supply. The Design-Builder's design shall maximize the reliability of the normal power while minimizing the total installation cost and future electricity and maintenance costs. Wherever it is feasible and cost-effective, electricity shall be delivered to the Authority at the primary billing rate.

The Design-Builder shall purchase and install all necessary components required to deliver the electricity supply and distribution system including but not limited to the following: power substations, transformers and distribution equipment; electrical grounding and master metering; extension of the existing lightning protection system; excavation, paving, temporary construction barriers; structural elements for conduit systems; fire-rated electrical rooms; and fireproofing.

Utility Poles in the Right of Way are provided in Part 7 - Engineering Data, Section 13 – Power Poles and may be used as a mechanism to obtain electrical power lines required for equipment at the Cashless Tolling Gantries. The Design-Builder may construct one additional Utility Pole in the Thruway Right of Way as needed to support electrical power lines coming from Utility Poles adjacent to the Thruway Right of Way. The electrical power lines shall be transitioned from the Utility Poles in the Thruway Right of Way to underground lines to be designed and constructed by the Design-Builder. The power lines currently providing power to the Toll Plazas that are not going to be demolished shall remain as is.

The Design-Builder shall be responsible for commissioning electrical power systems.

All electrical work shall be performed by or under the supervision of a Master Electrician licensed in a New York State municipality.

8.3.1.2 Emergency Power Generation

In the event that the normal electrical supply experiences an interruption at the Cashless Tolling locations, the supply system shall automatically switch to emergency power generation utilizing a diesel fuel generator and shall return to normal power as soon as the normal supply of electricity is restored.

The emergency power systems shall be capable of feeding the entire electrical load at each Mainline Cashless Tolling location, with the exception of any purely aesthetic light fixtures. Components (for example, automatic transfer switches) shall be sized and installed at locations to minimize the length of emergency power conduit and conductors.

At the ORT sites, emergency backup generators currently exist within the TUBs that are to remain or immediately adjacent to those TUBs. At least eleven locations of supplement power backup generators are required. The locations and requirements of those generators are found in Part 7 – Engineering Data, Section 12.

8.3.1.3 Power Supply and Distribution Staging

The electricity supply to the existing Tolls and TUBs, including emergency power, shall remain fully operational throughout construction of the new power supply systems for the Cashless Tolling facilities. The Design-Builder's responsibilities for permanent and temporary electrical components shall be in accordance with the maintenance jurisdiction period detailed in DB §105-12. When the electricity supply to the existing Toll Booths to be demolished is discontinued, and with prior approval of the Authority, the Design-Builder shall remove from the Project site any extraneous electrical supply components that are not needed for operation of the Cashless Tolling components.

8.3.1.4 Additional Requirements

The following requirements shall be met:

A) All exposed raceways or conduits shall be made of PVC coated rigid galvanized steel (RGS);

B) All outdoor electrical enclosures and attached parts (for example, breather drains) shall be rated NEMA 4X or a higher degree of protection; and

C) All electrical enclosures shall have a key lock.

8.3.2 Utility Relocation Agreements

It is anticipated that the required Final Utility Work Agreements will be executed between the Authority, the Design-Builder and the owners of impacted utilities once the Design-Builder has determined the final locations of the impacted utilities and the locations of power sources to be utilized. See Part 4.

The Design Builder shall be responsible for the design and construction of these facilities as outlined in Part 4 - Utilities.

8.3.3 Other Utility Conflicts

Please see Part 4 – Utility Requirements for additional utilities in the project vicinity that may require relocation and modification, if any.

SECTION 9 GEOTECHNICS

9.1 SCOPE

The Design-Builder shall be responsible for all Geotechnical Work necessary for the design and construction of all permanent and temporary structures, including assessing available information, planning and implementing subsurface investigations, geotechnical analysis and reporting, geotechnical instrumentation and monitoring, and protection of existing infrastructure, structures and utilities in accordance with the requirements of the Contract Documents.

These requirements are considered as a minimum and do not include all possible conditions that may be encountered in the Design-Builder's final design.

The Design-Builder shall be familiar with available geotechnical, geologic, seismic, hydrogeology, soils literature, and existing site conditions (both native and man-made), and shall interpret the existing geotechnical data pertaining to the Project Site. The Design-Builder shall form its own interpretation of the existing geotechnical data, and any additional geotechnical data the Design-Builder may obtain from its own investigations, and shall produce designs compatible with geotechnical site conditions and provide for the durability of the finished product.

9.2 STANDARDS

The Design-Builder shall perform geotechnical activities in accordance with the Contract Requirements and the applicable Standards, Design Codes and Manuals cited in Section 1.6 or otherwise applicable to the Project.

The Design-Builder shall use Bentley gINT® software and the most recent gINT template and library file which are posted on the Authority's website to develop and maintain an electronic database of subsurface information including in-situ test and laboratory test results, and to produce all final subsurface exploration logs or records.

9.3 DESIGN REQUIREMENTS

9.3.1 Geotechnical Work Plan

The Design-Builder shall prepare a Geotechnical Work Plan, for the Project that identifies the geotechnical scope of work that the Design-Builder plans to complete for the design and construction of the Project. The Geotechnical Work Plan shall include:

A) Design-Builder's knowledge and understanding of the geotechnical, geologic, hydrogeologic and seismic settings of the Project Site and how the nature and behavior of the soil, rock, groundwater and subsurface conditions will affect the investigation, design and methods of construction;

B) Identification of key constraints, site and subsurface conditions, and a description of how the geotechnical activities will be designed and constructed to meet these constraints and conditions;

C) Types of subsurface investigations to be carried out for the Project, including locations and depths of borings and other field testing with a narrative of the in-situ tests (if applicable) and laboratory tests to be carried out;

D) A summary of the proposed geotechnical works including identification of major design and construction risks, and how these risks will be managed and mitigated;

E) A narrative on the proposed geotechnical instrumentation and how it will be used for design verification and to demonstrate prior to final project acceptance that measured performance meets predicted performance; and

F) Corrective actions to be taken if geotechnical instrumentation shows that measured performance does not meet predicted performance.

9.3.2 Geotechnical Investigations

The Design-Builder shall plan and conduct geotechnical investigations in accordance with the Authority's and AASHTO Standards for subsurface exploration programs, and as deemed necessary by the Design-Builder's Lead Geotechnical Engineer to establish the geotechnical conditions and to perform all geotechnical and foundation design and analysis.

The Design-Builder shall determine the as-drilled Latitude and Longitude coordinate location (accurate to six decimal places) and ground surface elevation for each boring and field exploration position, and shall show the actual coordinates and the datum version, the station and offset, and the elevation for each individual boring log or exploration record in accordance with Department standards. Boring shall be located using NAD83 Geodetic Reference System. Elevations shall be referenced to the Project datum and horizontal control system.

9.3.3 Borings

Information from existing borings provided by the Authority as Reference Documents may be combined by the Design-Builder with the Design-Builder's subsurface investigation to comply with the requirements of the applicable standards. It is the sole responsibility of the Design-Builder to determine if the existing borings are suitable for use in the Project. It is the sole responsibility of the Design-Builder to determine the extent to which further borings by the Design-Builder are necessary for the Project.

9.3.4 Subsurface Investigation Records

For each subsurface exploration, the Design-Builder shall be responsible for keeping a continuous and accurate log. Borings shall be taken in accordance with the most recent version of the NYSTA Subsurface Exploration Specification. The logs shall include all information listed on the NYSTA Subsurface Exploration Specification, including water level readings. For borings which obtain rock cores, color photographs and a rock core evaluation log prepared by a qualified Geologist shall also be provided. The method of preparing rock core evaluation logs shall be from the most recent version of NYSDOT GEB Rock Core Evaluation Manual (GEM-23).

9.3.5 Software Requirements

The Design-Builder shall use Bentley gINT® software and the most recent gINT template and library file which are posted on the Authority's website to develop and maintain an electronic database of subsurface information including in-situ test and laboratory test results, and to produce all final subsurface exploration logs or records.

The Design-Builder must use gINT® and the Template and Library files exactly as provided. In case of difficulty using the Template and/or Library files, the contractor MUST contact the Authority's Geotechnical Engineer for further instructions.

The Design-Builder shall export project data from gINT® and transmit it electronically to the Authority. This electronic submission shall include a pdf of the full report (as-drilled boring location plan, subsurface exploration logs, laboratory testing results and rock core evaluations sheets and color photos, if applicable). The electronic submission shall also include the gINT files (.gpj).

9.3.6 Geotechnical Data Report

The Design-Builder shall be responsible for preparing a geotechnical data report, signed and sealed by the Lead Geotechnical Engineer. The Geotechnical Data Report shall serve as a factual depiction of the subsurface conditions and at a minimum it shall include:

A) A detailed description of the investigation methods;

B) Complete records with summary tables of investigation;

C) Complete records with summary tables of laboratory test results;

D) An exploratory hole location plan, showing locations of any existing (pre-award) exploratory holes for which data was used by the Design-Builder plus locations of post-award exploratory hole locations undertaken by the Design-Builder; and

E) Final logs for all subsurface explorations progressed by the Design-Builder (see requirements in sections 9.3.4 and 9.3.5).

The Design-Builder shall provide the Department with a copy of the Geotechnical Data Report, including a final log for each subsurface investigation exploratory hole progressed.

9.3.7 Retaining Walls

The Design-Builder shall design and construct retaining walls, if required, in accordance with Section 10 of this Part 3 - Project Requirements. The Design-Builder shall provide retaining wall designs to address internal, external, and global (overall) stability and settlements (total and differential) of the walls in accordance with the AASHTO LRFD Bridge Design Specifications.

All retaining walls shall be evaluated and designed for seismic stability internally and externally (i.e. sliding and overturning). With regard to overall seismic slope stability (global stability) involving a retaining wall, with or without liquefaction, the Lead Geotechnical Engineer shall evaluate the impacts of failure due to seismic loading, if failure is predicted to occur.

Gabion and crib walls (stretcher and header type) shall not be used.

9.3.8 Geotechnical Instrumentation and Construction Monitoring

The Design-Builder shall develop, implement, and maintain a Geotechnical Instrumentation and Construction Monitoring Plan to monitor vibrations, accelerations, vertical settlement, and lateral movement of temporary support structures and adjacent ground, and existing structures and infrastructure during construction, including ancillary structures and infrastructure within the zone of influence of construction.

The Geotechnical Instrumentation and Construction Monitoring Plan shall also include, when necessary, details of design verification geotechnical instrumentation such as settlement monitoring for embankment construction, groundwater monitoring for dewatering operations, and monitoring of other geotechnical operations proposed by the Design-Builder.

Wherever vibration-producing activities are located within 100 feet of a structure, building, or utility, the Design-Builder shall perform vibration monitoring in accordance with Special Specification 634.99020017 to address the potential impacts to nearby receptors due to construction or demolition activities associated with this Project. The term “receptor” includes buildings, utilities, newly constructed elements, and existing structures, for which construction impacts or Work above recommended limits may be detrimental.

The Design-Builder shall provide weekly construction instrumentation monitoring reports to the Authority. Monitoring reports shall be interpretive in nature, and shall enumerate any corrections applied to the data including, but not limited to any notification measures taken regarding data. The weekly reports shall include clear and explicit statements of readings exceeding any pre-determined threshold values. The Design-Builder shall maintain the instrumentation and monitor the measurements during and after construction up to Final Acceptance.

The Geotechnical Instrumentation and Construction Monitoring Plan shall be signed and stamped by the Lead Geotechnical Engineer, and as a minimum shall include:

A. Identification of receptors, including structures and/or utilities located within 100 feet of vibration-producing activities that require vibration monitoring;

B. The types and quantities of instruments to be used for monitoring, and the proposed location of the instruments;

C. Alert and Action level vibration limits for monitored structures and/or utilities, and notification protocol for instances where the limits are exceeded;

D. The frequency and duration of instrument readings; and

E. When necessary, geotechnical instrumentation for design verification including the types, quantities, locations, and frequency of readings for proposed instrumentation.

The Design-Builder shall install and take readings on vibration monitoring instruments at least two weeks prior to construction activities within the 100 foot zone of influence to establish baseline readings.

The geotechnical instrumentation shall be used to demonstrate at Project acceptance that measured geotechnical performance is in line with predicted performance.

9.3.9 Slope Stability

The Design-Builder shall be responsible for assessing the stability and impacts of any new soil fill and cut slopes (permanent and temporary) required for the Project, and ensuring the long term stability of these slopes.

9.3.10 Temporary Works

The Design-Builder shall be responsible for the design and construction of all temporary works required for the Project.

9.4 CONSTRUCTION REQUIREMENTS

9.4.1 Dewatering and Groundwater Control

The Design-Builder shall be responsible for evaluating the potential need for dewatering and groundwater control, and for implementing such measures as appropriate, and shall evaluate the effects on existing facilities resulting from any dewatering and draw down.

9.4.2 Deep Foundations

The Design-Builder shall design and provide integrity and/or capacity testing of all deep foundations, in accordance with NYSDOT standards. If applicable, integrity testing requirements on drilled shafts and test shafts shall comprise of, as a minimum, crosshole sonic logging on all drilled shafts.

As part of the As-Built Plans, the Design-Builder shall provide installation records for all deep foundations installed, in accordance with NYSDOT standards.

The Design-Builder shall report the results of all foundation installation inspections and rock socket observations.

9.4.3 Soil and Rock Excavations and Embankments For Roadway Foundations

Excavations and embankments for roadway foundations shall be constructed so that post construction settlement is expected to remain within two inches of the profile grade line at any point along the entire alignment. Also, prior to the Project's final acceptance, differential settlement along travel lane and shoulder surfaces shall not exceed two inches over a 100-foot length along the alignment (longitudinal direction), or over one half inch along a ten foot length in the transverse direction or within ten feet of any approach slab or edge of structure.

9.4.4 Condition Surveys

9.4.4.1 Pre-Construction Condition Survey

The Design-Builder shall conduct a pre-construction inspection and survey of the existing condition of all structures and properties within 100 feet of vibration or settlement causing construction activities and generate photographic and video documentation of existing damage, leaks and cracks, in accordance with the requirements of NYSDOT Special Specification 634.99010017. The pre-construction condition survey shall form the basis against which all new cracks, existing progressive cracks, or damage will be measured.

The Design-Builder shall ensure that the pre-construction condition survey encompasses at a minimum all properties within areas that are identified by the Design-Builder to be potentially prone to: (i) ground vibration levels, expressed as resultant peak particle velocity, in excess of 2.0 inches per second; and (ii) predicted ground settlements of greater than ¼ inch.

The Design-Builder shall record the results of the pre-construction condition survey, which shall be signed and stamped by a Professional Engineer registered in the State of New York.

9.4.4.2 Post-Construction Condition Survey

The Design-Builder shall conduct a post-construction inspection and survey of the properties covered by the pre-construction conditions survey. The post-construction condition survey shall be performed by the Design-Builder within 20 calendar days of Project Completion, and it shall compare the post-construction conditions with the conditions documented in the pre-construction condition survey. A summary of the damages observed, if any, shall be provided at the end of the report. The location and scope of the post-construction condition survey shall match those of the pre-construction condition survey. The complete documentation of the post-construction survey, describing the comparison with the preconstruction conditions and signed by a Professional Engineer registered in the State of New York, shall be submitted to the Authority, both in hardcopy and electronic format.

9.5 DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.

SECTION 10 STRUCTURES

10.1 SCOPE

The Design-Builder shall be responsible for all work necessary to complete the design and construction or rehabilitation of all permanent and temporary structures required to complete the Project, including, but not limited to, the Toll Utility Buildings (TUBs), barriers, sign structures and miscellaneous structures. The design and construction and rehabilitation of all structural systems and components shall provide functionality, durability, ease of operations, maintenance, inspection, safety and pleasant aesthetics.

The Design-Builder shall be responsible for the review and approval of all shop drawings needed for the scope of work. The review and acceptance process shall be in conformance with the Design-Builder's accepted Quality Control Plan.

10.2 STANDARDS

The Design-Builder shall perform structural design and construction activities in accordance with the Contract Requirements and the applicable Standards, Design Codes, and Manuals cited in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

10.3 DESIGN REQUIREMENTS

10.3.1 General Components

A) Barriers, Railings and Pedestrian Fencing: Temporary traffic barriers shall meet, as a minimum, the testing requirements of TL 2 and permanent traffic barriers shall meet, as a minimum, the testing requirements of TL 5.

B) Decks: Precast panel and/or cast in place decks are preferred. Cast in place decks shall use internally curing concrete as per NYSDOT Special Specifications 557.51090018 and 557.54090018. Two-course decks with asphalt overlays as defined in the NYSDOT Bridge Manual are not permitted. Unfilled steel grating decks and orthotropic steel decks are not permitted. Bridge decks shall be made fully composite with the underlying primary member system. All decks shall be protectively sealed. All deck reinforcement shall be galvanized.

C) Deck Joints shall not be allowed.

D) Superstructure: The superstructure may be constructed of concrete or structural steel. Structural steel, if used, shall be either weathering steel or conventionally metalized or galvanized steel. If weathering steel is used on curb less bridges and/or bridges with deck joints, the fascia side of all exterior girders, including the underside of the top flange and the top and underside of the bottom flange, shall be metalized or galvanized. In addition, all girder ends within 1.5 times the depth of the girder or five (5) feet, whichever is greater from a deck joint, (if applicable) shall be metalized or galvanized. Should weathering steel be used, the following conditions shall also apply:

- Uncoated weathering steel bridges shall be detailed to include an additional 1/16 inch of thickness per exposed face beyond what is required by design for the small amount of corrosion expected over the life of the bridge. The additional thickness shall not be included in calculations for design strength, but must be included in the dead load and

camber calculations. Guidance in the Bridge Manual Section 8 regarding recommended plate thickness increments shall still be followed.

- Each end of uncoated weathering steel beams embedded in an integral or semi-integral abutment shall be protectively coated for the length of the beam embedment into the abutment plus an additional 12 inches.

If steel girders are utilized as primary members in conjunction with a composite reinforced concrete bridge deck, then, at a minimum, the beams and deck shall be made continuous for dead and live load in lieu of installing a bridge deck joint over the pier.

If prestressed concrete girders are utilized as primary members in conjunction with a composite reinforced concrete bridge deck, then, at a minimum, the beams and deck shall be made continuous for live load in lieu of installing a bridge deck joint over the pier.

Timber superstructure systems or decks are not permitted.

Prestressed concrete box beams (either adjacent or spread) and prestressed Concrete voided slabs are not permitted.

Fracture-critical members are not permitted.

Refer to Section 10.3.2 for color requirements related to painted steel superstructure elements, if any.

E) Prefabricated superstructure components and precast bridge deck panels: If prefabricated superstructure components (NEXT Beams, Deck Bulb Tee, etc.), and/or precast bridge deck panels are used, where no standard details are available in the BD sheets, Field Cast joints between prefabricated components and panels shall be made with Ultra-High-Performance Concrete (UHPC) or Internal Curing High Performance Concrete. Stainless steel reinforcement shall be used in the prefabricated superstructure component (s) and the associated field cast joints. In addition, the field cast joints shall be sealed with High Molecular Weight Methacrylate (HMWM) as per Special specification 557.25000016 and/or 557.26000016. The proposed special specifications for UHPC joints shall be similar to Special specification 557.21020016 and in compliance with guidance given in FHWA publications No. FHWA-HRT-14-084, Design and Construction of Field Cast UHPC connections. This publication can be found at the following link:

http://www.Fhwa.dot.gov/publications/research/infrastructure/Structures/14084/14084.pdf

The use of Internal Curing High Performance Concrete is as per NYSDOT special specifications 557.2101XX09.

F) Bearings: Design and location of bearings shall provide for easy maintenance and accessibility and future bearing replacement. Bearing replacement shall be easily accomplished via jacking points off the top of the substructure bridge seat(s) with no additional strengthening of members and/or connections required. Jacking points with sufficient capacity (full dead load and live load) to allow the superstructure to be lifted for future bearing replacement under live load shall be provided. The plans shall include the location of the jacking points and provide the jacking loads.

G) Substructures:

Abutments: The tops of all bridge seats, all bearing pedestal surfaces, and the backwall tops be coated with penetrating type protective sealers. All substructure reinforcement shall be galvanized.

Pier Caps (if necessary): The tops of all piers and bearing pedestal surfaces shall be coated with penetrating type protective sealers. All Pier reinforcement shall be galvanized.

H) Earth Retaining Structures: The Design-Builder shall determine the location(s) and types of earth retaining structures. Wall type selection and design by the Design-Builder shall meet all applicable Project Requirements. Gabion and crib walls are not permitted.

I) Foundations: The Design-Builder shall calculate settlements for the different geotechnical conditions at the gantry locations. Settlements likely to occur during construction shall be calculated separately from long term settlements.

J) Drainage: Drainage requirements are outlined in Section 17 of these Project Requirements.

K) BIN Plate Sign: The Design-Builder shall be furnished by the Authority, the new BIN Plate Sign and the Design-Builder shall install the new BIN plate.

The BIN Plate Sign shall be supplied at the Design Workshop with one for each BIN, eight (8) total.

The BIN plate shall be attached to the beginning abutment, right side of the bridge using expansion anchors. The plate shall be placed high on the abutment, near the fascia of the bridge so that it cannot be painted over via a spray paint can or easily removed or damaged.

L) All reinforcing steel mentioned above that is galvanized shall follow Standard Specification Item 556.0203.

10.3.2 Sign Structures

The Design-Builder shall design and construct all necessary sign structures at the Project Sites. The Design-Builder shall replace the existing sign structures to suit temporary and permanent roadway conditions. See Section 12 on specifics on Overhead and ground mounted signs. All Overhead Sign Structures, if required, shall be monotube construction.

10.3.3 Aesthetics

Aesthetics treatments may include form lines, or other creative methods (i.e. recessed panels) to introduce distinctive Aesthetic enhancements on wingwalls, abutment stems, piers, and concrete parapets/barriers.

For Aesthetic treatments, the Design-Builder should be creative and innovative. The Authority does not want flat concrete surfaces on the barrier systems, where used on the superstructure. Aesthetic treatments can also incorporate color or shapes of the elements or combinations of such, but most important is no flat, plain, bland concrete surfaces. Those flat surfaces must be enhanced. Aesthetic enhancements are not required on the traffic side of the superstructure barriers.

Any superstructure steel that utilizes a protective coating of paint shall be painted with a coating coordinated with Authority, but should be as similar to the superstructure steel for bearings, etc. An example would be for a Weathering steel superstructure, the paint coating should meet Weathered Brown Guide Rail Paint as specified in Standard Specification 708.

10.4 DEMOLITION

10.4.1 Scope

Refer to Section 25 for Demolition requirements for Toll Plazas.

10.4.2 Standards

The Design-Builder shall perform the demolition activities in accordance with the Contract Requirements and the applicable Standards, Codes and Manuals listed in Section 1.6 unless otherwise stipulated in this Project Requirement, or otherwise applicable to the Project.

10.5 CONSTRUCTION REQUIREMENTS

The Design-Builder shall develop erection procedures for the bridges that include complete detailed erection sequence drawings; erection stresses in permanent and temporary members; bent and false work reactions determined for each construction stage.

10.5.1 Construction Vehicles on Bridge

The Design-Builder is prohibited from running equipment that does not operate on rubber tires (milling machines, rollers, etc.) across new bridge decks unless proper precautions (mats, etc.) are provided to prevent damage to the deck. The methods used to move equipment across bridge decks shall be subject to approval by the Construction Inspection Professional Engineering Firm with comments/acceptance from the CQAE.

10.6 LOAD RATING REQUIREMENTS

Prior to any bridge(s) in this Project being opened to traffic, including temporary bridges, the Design-Builder shall provide to the Authority, the necessary load rating requirements, including Virtis load rating files, as per NYSDOT standards and manuals for review and acceptance by the Design Quality Assurance Engineer. The Design-Builder shall take the necessary steps to ensure that proper allocated time is afforded the Design-Quality Assurance Engineer, to fully execute a proper review and the Design-Builder shall make provisions in their CPM schedule addressing such submittal, review, and acceptance. The load rating for all permanent bridges shall be a resulting factor of 1.1 Inventory with an operating resulting factor higher. A resulting factor of 1.0 is not acceptable.

Before the new bridge(s) can be opened to traffic, the load rating shall be presented to the Authority's Quality Assurance Engineer for acceptance. The Quality Manager shall supply a certification statement that the load rating followed the accepted Quality Control Plan and the results are in compliance with the requirements of the contract documents.

10.7 DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.

SECTION 11 LANDSCAPE ARCHITECTURE

11.1 SCOPE

The Design-Builder shall perform the landscape architectural activities as described in this Section. The primary scope involves landscaping work where existing excessive areas are being removed, as Cashless Tolling implementation reduces the infrastructure footprint. The Authority wishes to reduce future maintenance costs associated with the no longer needed infrastructure (road surface) areas.

11.2 STANDARDS

The Design-Builder shall perform site work in accordance with the Contract Requirements and the applicable Standards, Design Codes and Manuals cited in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

11.3 GENERAL LANDSCAPE DEVELOPMENT

11.3.1 Existing Vegetation

Existing vegetation removal and disturbance should be minimized to the cut/fill limits and any removals, whether within the cut/fill limits or beyond those areas, shall be replaced in kind with native species appropriate for USDA NY Plant Hardiness Planting Zones in the areas that the landscaping work is to be performed as described in Section 11.3.2, if trees are removed. In most locations, the Design-Builder shall provide topsoil and seed for all disturbed areas including the areas of footprint reduction.

Prior to the removal of any trees or shrubs, an inventory of existing trees and shrubs shall be prepared by the Design-Builder and a copy provided to the CQAE. The inventory shall include major deciduous trees over 6 inches in diameter at breast height (DBH), coniferous trees over 6 feet in height, and deciduous or evergreen shrubs between 3 feet and 6 feet in height. The inventory shall include the size, location and species of each tree or shrub. Only living trees and shrubs shall be included in the existing tree/shrub inventory.

Vegetation outside the limits of disturbance shall be protected with temporary plastic barrier fence along the limit of disturbance line.

Disturbed areas shall receive topsoil and turf establishment. The type of topsoil and turf establishment, either roadside or lawn, will vary based on location.

11.3.2 Tree Replacement Factors

A) Every live, deciduous tree greater than six inches in diameter at breast height (“DBH”) which is removed must be replaced with a total quantity of deciduous trees a minimum of 2 inch caliper (size measured 6 inches above the base of the tree) equal to the total DBH size of the tree removed. For example, a 10 inch DBH tree removed could be replaced with five (5) two inch caliper trees or two (2) three inch and one (1) four inch caliper trees; however the replacement quantity will go down if larger caliper trees are used for replacement.

B) Every live, coniferous tree removed must be replaced with a total quantity of coniferous trees equal to the height and width of the tree removed. For example, a 20 ft high x 10 ft wide coniferous tree could be replaced by two (2) 10 ft high x 5 ft wide coniferous trees.

C) Every live shrub, between 3 foot height and 6 foot height, removed must be replaced with a total quantity of shrubs equal to the quantity of shrubs removed.

D) Each replacement tree should be the same genus and species of the tree removed, with the exception of Ash (genus Fraxinus), unless the tree being removed was identified by the Design-Builder as an invasive plant species or one threatened by invasive species, including the Emerald Ash Borer and the Spotted Lantern Fly.

E) The minimum replacement sizes shall be as follows: 2-inch caliper for major deciduous trees, 1.5-inch caliper for minor deciduous trees, 6-foot height for coniferous trees, 3-foot height for deciduous shrubs, and 2-foot height for evergreen shrubs.

11.3.3 Replacement Locations

Replacement planting may be located in the available right-of-way near the original locations of the trees that were removed.

Replacement planting may also be done near the right-of-way line or on private property. Planting on private property may only be done if private property owners provide written permission to the Design-Builder and agree to take over the long term care and maintenance of the plant material, and the appropriate release is obtained by the Design-Builder and in consultation with the adjoining property owner in accordance with NYSDOT EI 11-010.

11.3.4 Proposed Planting

The Design-Builder shall not use invasive plant species for any of the proposed planting as required by the New York State 2012 Invasive Species Prevention Act, or a monoculture of plant species, to reduce the potential for disease or invasive insect species to eradicate the proposed plantings. Planting shall be located in a manner that does not interfere with the safe use of travel ways. Planting should be designed in a manner that provides a mix of plant material species to create seasonal interest for the traveling public.

Post planting care and replacement plantings shall be as per the requirements of Special Specification 611.190X0024, Post Planting Care with Replacement.

11.3.5 Reduction of Infrastructure (Roadway Surface) Footprint

The Authority anticipates that Sections 11.3.1, 11.3.2, 11.3.3 and 11.3.4 apply primarily to the Mainline Gantry selections of the Design-Builder.

Areas of Pavement removal, reduction of existing infrastructure footprint applies greatly to the Interchange locations and Terminus locations. Essentially the Terminus locations removals and reductions in footprints at the existing Toll Booth removal areas shall look like the rest of the Thruway system in that the new Gantry area are consistent travel lane widths and shoulders define the new footprint.

Areas outside of these new footprints shall have all Roadway Surfaces removed and new topsoil and turf establishment.

The Interchange areas of Toll Booths removed will see significant reduction in infrastructure footprint. Based on the Design-Builder's alignment and other variables all contributing to the

Design-Builder's solutions, excess pavement roadway surface shall be removed and those areas reestablished with topsoil and turf established.

The ORT sites will have significantly less removal of excess infrastructure footprint, however each location will require various amounts of Roadway surface areas reduced, Roadway surface footprint reductions, and reestablish of the areas removed with topsoil and reestablishment of turf (Seeding).

SECTION 12 SIGNAGE, PAVEMENT MARKING AND SIGNALS

12.1 SCOPE

The Design-Builder shall provide all temporary and permanent fixed signing, variable message signs, temporary and permanent pavement markings, including rumble strips (if applicable), and signal work (if applicable) required for the Project. Project Signage shall be in accordance of the requirements shown in the documents in Part 7 – Engineering Data, Section 8 – Signage.

The Design-Builder shall be responsible for identifying, designing, detailing, fabricating, delivering and installing all signage and pavement marking materials and shall install all components necessary for a complete and functional system which, in addition to meeting the design and construction criteria, meets the following requirements:

A) Provides for the orderly and predictable movement of all traffic;

B) Provides such regulation, guidance, warnings and advisories as are needed to ensure safe and informed operation;

C) Is fully and seamlessly integrated into the existing signing elements beyond the Project limits;

The following constitutes the requirements for signage for ticketed system: Part 7 – Engineering Data, Section 8 for Mainline Gantry and Terminus locations Signage (Permanent) in place when AET goes live, a small temporary sign package required on all active toll booths prior to Toll Booth demolition and during staging to demolish the Toll Booths is required at the Terminus locations. Section 8 for Interchanges (Permanent) when AET goes live and includes a small temporary sign package required on all active toll booths prior to Toll Booth demolition and during staging to demolish the Toll Booths. Section 8 provides the sign package for Toll-in-Place (Newburgh only) and shall be in place when AET goes live. Section 8 also provides the necessary signage package required at Exit 35 when AET goes live and the Toll Booths are removed. A small temporary sign package is required here as well prior to Toll Booth demolition and during Staging to demolish the Toll Booths. Section 8 provides the required signage package for all the ORT Exit sites (34 locations/Exits) and shall be in place when AET goes live. This Package also includes a small temporary sign package required on all active Toll Booths prior to Toll Booth demolition and during staging to demolish the Toll Booths. Section 8 includes all the sign details required. The Design-Builder is responsible for the design and construction of the necessary sign posts and foundations and all shall be supported by breakaway posts and have appropriate protection per current Standards.

The Design-Builder shall also be required to remove a list of signs provided in Section 8. The timing of the removals are provided in the excel sheet in the Engineering Data. Removal of Signs requires removal of sign panels, posts and foundations to 2 ft. below existing ground elevations.

The Design-Builder shall be responsible for the review and approval of all shop drawings needed for the scope of work. The review and approval process shall be in conformance with the Design-Builder's Accepted/Approved Quality Control Plan.

12.2 STANDARDS

The Design-Builder shall perform the signage, pavement marking and signal activities in accordance with Contract Requirements and the applicable Standards, Design Codes and Manuals cited in Section 1.6, unless otherwise stipulated in the Project Requirement.

12.3 REQUIREMENTS

12.3.1 Design Requirements

The Design-Builder shall develop a signing and pavement marking plan and a Traffic Signal Plan (if applicable) for the Project sites that shall:

A) Provide for all components as called for in this Section 12;

B) Encompass the placement of new signs, the removal of no longer applicable signs, and signage transition plans as AETC is activated to when the Toll Booths are removed. This applies to both the Interchange(s), Mainline Gantry locations, the Terminus location(s), and the ORT locations work areas, as well as the special exits of Exit 16, Exit 35 and Exit 17 (Newburgh)

C) Locate signs in accordance with the MUTCD and the NYS supplement;

D) Provide signs with high reflectivity with Type XI sheeting such as to not warrant sign lighting;

E) Provide and Erect mainline mile marker posts consistent with Authority practice, spaced every 0.10 mile, and the Thruway shall supply the mile marker signs;

F) Overhead Sign Structures on the Thruway Mainline shall not be 800 ft. behind/after the Mainline Gantry, as the Gantry will obstruct the sign panel visibility if within those limits. In addition, the Mainline Gantry following an Overhead Sign Structure shall not be within 100 ft. of the Overhead Structure.

G) Overhead Sign Structures on any of ORT Exit Site locations shall not be 150 ft. before/after the Mini Gantry as the Mini Gantry will obstruct the sign panel visibility if within those limits.

The Design-Builder shall not attach signs to corridor overhead bridges without the written prior consent of the Authority.

The Design-Builder may present the respective signing and pavement marking elements on separate drawings, but shall demonstrate that the proposed signs and pavement markings work are in unison in the manner called for in this Project Requirements and the governing standards.

The Design-Builder shall prepare Design Plans that shall at a minimum cover the following signing aspects:

H) Accurate sign locations;

I) Sign panel sizes and legends;

J) Types of sign supports.

At minimum, the Design Plans shall cover the following pavement marking aspects:

K) Plan views showing the proposed pavement markings with the transitions and tapers appropriate for the design speed. Existing markings shall be graphically distinguished from proposed markings, for example by using a lighter-weight drawing line than for the proposed markings;

12.3.2 Variable Message Signs (VMS)

The Design-Builder shall refer to the google images for the identified locations of where the variable message sign structures shall be located. The images provided in Part 7 – Engineering Data, Section 17 provide locations of VMS sites and deal with directions approaching entry to the Thruway System. The VMS shall be ground mounted and shall be utilized to notify motorists of Thruway closures due to weather, accidents, or emergency conditions. The google images of the VMS sign locations limit placement at each site by a distinct colored line. One sign is a different distinct color on the Google Image. The reason for the different colored line is that VMS at that location shall be fiber connected and be powered by electricity. The distance to the available sources of fiber and electricity make this a cost-effective approach. Lastly, there are approximately ~~80~~ 81 VMS sign locations. The one sign is required to be fiber and electric and the Authority prefers to have all signs that are located on the Authority's right of way to also be powered by electricity and connected to the Authority's fiber network. The signs that are within a few hundred feet of an existing Authority Toll Plaza and Toll utility building can be easily connected to both power and fiber at the building. For locations listed in 12.3.2.1, the Design-Builder has the option of providing fiber and/or electrical or both between the location of the VMS and the Toll Utility Building (TUB), Maintenance building or the new Comm. Bldg., or provide cellular and/or solar type VMS at these locations. The Design-Builder is responsible for the design, supply, construction, inspection of these VMS along with testing of their performance. These shall all be ground mounted except for Exit 17 (Newburgh), which shall be canopy mounted on Thruway entry side at this location and shall be electric powered and fiber connected. Part 7 – Engineering Data, Section 22 provides the Right of Way areas for the VMS signs. Part 7 – Engineering Data, Section 17 only provides a longitudinal limit of where the VMS shall be placed within, but the Design-Builder shall cross-reference with Part 7, Section 22.

The VMS signs shall be in place anytime the Design-Builder can install but must be installed a minimum of two months prior to the overall Contract completion date.

12.3.2.1 Connectivity to Variable Message Signs (VMS)

The DB will be responsible for installation and connection to VMS near the entrance(s) to the Thruway as shown in the Part 7 – Engineering Data, Section 17.

For the locations listed below, the Design-Builder has the option of providing fiber and/or electrical or both connections between the location of the VMS and the Toll Utility Building (TUB), Maintenance building or the new Comm. Bldg., or provide cellular and/or solar type vims at these locations.

The Design-Builder's Obligations for the communications are as follows-
Additional details regarding these obligations can be found in the appropriate specifications.

1. Hand holes/manholes or pull boxes necessary for the designed route,
2. 1 - 1 ¼" HDPE orange colored inner duct
3. 1800 lb. tension polyester mule tape
4. Tracer wire
5. Underground Warning Tape
6. Fiber Distribution Panel (FDP), including pig tails and coupler panels
7. A minimum of 6 strands SMF 28e Fiber rated for outdoor installation and defined in the specification and approved by the Authority
8. Fiber installation, splicing, and terminations
9. Testing and delivery of test results

Should the Design-Builder choose the fiber versus solar then they would be responsible for installing all of the items listed above and in accordance to the specifications to establish communications from the new VMS sign to the existing TUB or Maintenance Building. The Design-Builder's designed route shall have pull assist points at intervals no more than 500 feet. Fiber optic cable will need to be installed with a minimum of 30 feet of coil slack in each hand hole/pull box and 100 feet of coil slack at both ends. The fiber should enter the existing TUB and be properly installed to a point nearest the existing fiber termination. Install a new FDP next to any existing wall mounted FDPs or if there is an existing basement cabinet, the new FDP can be placed in that cabinet. At the VMS sign, the FDP should be placed within the sign controller box. The fiber needs to be tested in accordance with the Fiber Optic Component specification and test results delivered to the Authority's Network Services team for approval.

Required at each end of the fiber:
Manufacturer Part # Comnet C9FE1003S2
TDK Lambda DRB30-12-1
Description:
Media Converter (SC, Singlemode)
Power Supply (Din Rail)

When the Design-Builder is ready to connect and test the VMS sign or other devices, a connection between the newly installed fiber and existing network in the TUB or Maintenance building will be required. The Authority's Network Services team will instruct the Design-Builder on which port to connect to at the existing switch. The Design-Builder is responsible for cables needed.

Fiber Connectivity Sites:
New Paltz – Fiber to the TUB
Kingston – Fiber to the TUB
Saugerties– The two VMS sites can be brought back to a central underground box and then a single inner duct run to the TUB.
Saugerties – Fiber to TUB (Exit 20W requires to be fiber and electric connected to the TUB)
Catskill – Fiber to TUB
Taconic – Fiber to TUB
Selkirk – Fiber to TUB
Amsterdam – Fiber to TUB
Fultonville – Fiber to TUB
Canajoharie – Fiber to TUB
Herkimer – Fiber to TUB
Utica – Fiber to TUB
Westmoreland – Fiber to TUB
Verona – Fiber to TUB

Canastota – Fiber to TUB
Carrier Circle – Fiber to TUB
Liverpool – Fiber to TUB
Weedsport – Fiber to TUB
Waterloo – Fiber to TUB
Manchester – Fiber to TUB
Batavia – Fiber to TUB
Pembroke – Fiber to TUB
Depew – Fiber to TUB
Blasdell – Fiber to TUB
Hamburg – Fiber to TUB
Eden – Fiber to TUB
Silver Creek – Fiber to TUB or Maintenance building
Dunkirk – Fiber to TUB or Maintenance building
Westfield – Fiber to TUB or Maintenance building

For all other sites, where fiber is not available, a cellular modem will be used for communications. The modems have to be configured by the Authority's Network Services team. The DB will need to procure the following equipment, and the modems only will need to be sent to the Authority's Network Services team at 200 Southern Blvd, Albany, NY 12209, the Authority will be responsible for configuration. These parts should be verified with the Authority before purchase as this type of technology is often changing. The Design-Builder should verify the quantities with the design plans. Due to the work load on the Authority's Network Services team it is recommended this equipment is ordered and delivered as soon as the contract is awarded, it is required that the equipment be in the hands of the Authority a minimum of 60 days in advance of the scheduled Design-Builder's install date. The Authority will return the modems to the Design-Builder for the Design-Builder required installation and testing.

Manufacturer Part # Digi TDK Lambda WR31-M52A-DE1-TB DRB30-12-1
Description: Cellular Modem
Power Supply (Din Rail)
Overhead Sign Structures (Existing)
Mainline Gantries – The Design-Builder shall ensure that within the limits presented for the Mainline Gantry and Terminus locations, eleven Interchanges locations, 34 ORT Exit Sites that the new Gantries are constructed by the Design-Builder do not interfere with the overhead sign structure panels. The new Mainline Gantries and Terminus locations shall not be within 800 ft. of the approach to an overhead structures sign panel. Visibility of the Sign panel is not adequate for the design speed on the Thruway (interstate) System.
For the mini Gantries at the ORT sites all the conditions apply as well except that the new Mini Gantries shall not be within 150 ft. of the approach to the existing overhead sign structures sign panels unless the Design-Builder wishes to ground mount the overhead sign structure sign panels and removes the overhead sign structure complete.

12.3.3 Construction Requirements

12.3.3.1 Signs

The Design-Builder shall not reuse any existing Authority sign panel materials as part of the permanent signing installation and shall be responsible for the disposal of all signing materials and structures that are removed from the Project. Standard signs owned by municipalities other

than Authority, and non-standard signs owned by private entities but placed within Authority right-of-way, with the acceptance of the Authority, shall be removed, stored and reinstalled as required.

The Design-Builder shall be responsible for the provision of all signs, posts, frames and other structural components required for the installation and support of the sign panels.

12.3.3.2 Pavement Markings

Pavement markings shall be uniform in type, color, dimensions, location, and reflectivity and shall meet the Thruway Standards and Specifications.

The Design-Builder shall be responsible for the design of all temporary and permanent pavement markings for this Project. Permanent pavement markings for the 5 Terminus Locations and all Mainline Gantry Locations for the new asphalt placed shall use the Thruway's triple drop pavement marking system, specification Item Number 685.17XX-25. For all ORT Sites and Interchange locations, permanent pavement markings on new asphalt placements shall be epoxy pavement markings.

At the ORT Exit Sites, the Design-Builder shall provide solid continuous pavement markings (white and yellow) under the Mini-Gantries (64 feet), for the purposes of preventing vehicles crossing lanes while under the Mini-Gantries to better collect information to reinforce surety of proper toll collection.

All linear roadway and cross hatching pavement markings shall be installed in accordance with the Authority's Specifications.

12.3.3.3 Overhead Sign Structures

All ground mounted sign supports shall include breakaway devices, unless protected by concrete barrier.

12.3.3.4 Traffic Signals

Provisions listed below shall apply to the signalized intersection at Interchange 23 constructed as part of this project.

Infrastructure shall be provided to facilitate the addition of traffic signal heads for dedicated protected left turn phases (including red, yellow and green left turn arrow displays) for any signalized intersection approach with or without dedicated left turn lanes.

Infrastructure shall be provided to facilitate the addition of protected left turn phases (including future heads for green left turn arrow displays) for any signalized intersection approach without a dedicated left turn lane.

Loop detectors shall be installed beneath the top course of any dedicated left turn lane at the signalized intersection.

The Design-Builder will be responsible for maintaining the existing signal until the new signal is activated.

Traffic signal activation shall be done by NYS Traffic Signal Personnel only. The Design-Builder shall pay a liquidated damages charge of $10,000 if the traffic signal is activated (including

flashing operation) without NYS Traffic Signal personnel present. The Design-Builder shall notify the Authority's Project Manager two weeks prior to the requested date of activation inspection.

Provisions below apply to the entire project area.

Two weeks prior to beginning any construction work on traffic signals associated with the project, the Design-Builder shall notify the Authority's Project Manager to perform an inspection of the existing traffic signal equipment. After the inspection, the Design-Builder shall submit to the Authority Project Manager a written notification of the date they will assume responsibility for traffic signal maintenance. No construction work shall proceed until traffic signal maintenance is assumed by the Design-Builder. The existing traffic signal shall be maintained by the Design-Builder under the requirements of Section 619 of the Standard Specifications, except for the controller, programming, and timing which shall be maintained by the Authority/NYSDOT Region 1.~~Not Applicable – There are no signals on this project.~~

12.3.3.5 Loop Detectors

The Design-Builder shall replace all existing loops on the Thruway exit ramp to 9W. All loops shall have two sets of 6'x20' loop spaced 10' apart installed at the stop bar, centered in the respective lane, with three turns wired in parallel. The Design-Builder shall splice the loop wire to a twisted pair lead cable, which shall in turn be wired to the cabinet. In addition shielded lead-in cable shall be run from the new cabinet to the pullbox by any service road point loop detector. A separate lead-in shall be run for each loop. These lead-in cables are to be terminated inside their respective controller cabinets.

12.3.3.6 Conduit/Cabling Requirements

The following cables shall be utilized during the installation of new signal heads.:

A) One way signal heads: furnish and install a 5C#14 awg cable;

B) Two way signal heads: furnish and install a 10C#14 awg cable;

C) Three way signal heads: furnish and install a 15C#14 awg cable.

The Design-Builder shall furnish and install the following conduit as a minimum:

D) Detection loop conduits shall be 1" Flex between the first junction box and loop including "J-box" in left lanes or far side pullbox.

E) Conduits under roadway shall be 3" RGS.

F) Conduits between Span or Mast Arm poles and nearest junction box shall include a 2 21-inch RGS and a 4-inch RGS.

G) Conduits between Pedestrian poles and nearest junction box shall use a 2" RGS.

H) All other underground conduit installations shall be 2" RGS.

12.3.3.7 Signal Heads/ Signal Poles

All signal faces to be installed as part of this Project shall be 12" LED,. All signal heads shall have 5-inch backplates with 3-inch yellow reflective tape.

Span Pole Analysis shall be carried out using the latest version of the NYSDOT's Span Wire Analysis Program to determine the signal pole sizes and foundations needed. Span pole sizes identified by the Span Wire Analysis Program shall be increased by a minimum of 15% loading rounded up to the nearest 1000 lb increment. Footing size shall be increased to accommodate the maximum loading of the pole.

12.3.3.8 Cabinet/Disconnect Switch

The Design-Builder shall install one Authority supplied microcomputer cabinet at each of the signalized intersections. The Design-Builder shall also install a meter and disconnect switch on the span pole to which the cabinet has been mounted. At a minimum of 8 feet above ground level. The cabinet and disconnect switch shall meet the requirements of Special Specifications 680.80324515 and 680.94997008, respectively.

12.3.3.9 Pullbox

All other pullboxes required shall be standard 26"x18" pullboxes. Pullboxes may be either reinforced concrete or reinforced concrete/bituminous fiber.

12.3.3.10 Power Supply

Power shall be supplied to the microcomputer cabinet from the currently utilized utility pole. The power supply cable shall be a 2 conductor, 6awg cable conforming to the requirements of Special Specification 680.95020615.

12.3.3.11 Traffic Signal Salvage

Any traffic signal heads, span wires, poles, cabinets and controllers removed as part of the project shall continue to be property of NYSDOT. This signal equipment will be stored by the Design-Builder until picked up by NYSDOT staff within 2 weeks. The contractor shall notify the CQAE when this equipment is available for pick up.

12.4 DELIVERABLES

Section not used.

SECTION 13 LIGHTING

13.1 SCOPE

The Design-Builder shall conduct all Work necessary to provide all required lighting and lighting components required for the Project. This includes design, fabrication and construction of all transportation related permanent and temporary roadway lighting of the roadways within the Project Limits. The Design-Builder shall be responsible for the review and approval of all shop drawings needed for the scope of work. The review and approval process shall be in conformance with the Design-Builder's Accepted/Approved Quality Control Plan.

13.2 STANDARDS

The Design-Builder shall perform the lighting activities in accordance with the Contract Requirements and the applicable Standards, Design Codes and Manuals listed in Section 1.6, or otherwise applicable to the Project, and the following additional Standards:

13.3 REQUIREMENTS

13.3.1 General Requirements

The Design-Builder shall be responsible for designing, furnishing and installing all components required for the implementation of the lighting system for the Project including new luminaires, foundation, controls, poles, mounting, wiring, conduits, and support hardware, as necessary for delivering a complete and functional lighting system that meets the following requirements:

A) Provides for sufficient quality illumination for orderly and predictable movement of all tandem lot traffic;

B) Provides sufficient illumination for appropriate visibility levels (VL) through small target visibility (STV) measurement criteria, or further advanced method applicable by ANSI/IESNA;

C) Provides illumination such that the road surface of the Tandem Lots illumination meets or exceeds the uniformity and the illuminance and/or luminance criteria during darkness;

D) Utilizes energy efficient and long-life, low maintenance lighting technologies that have been reviewed and accepted by the Authority;

E) Is fully and seamlessly integrated into the existing lighting elements (if existing) within the Project sites;

F) Utilizes a photo-control switch system that automatically activates lighting before dusk and deactivates the system past dawn. In addition, the use of independent light switching shall be considered, in order to reduce power consumption and control wiring;

G) Provides for protection against damage by lightning strikes.

H) Provides fixtures that are water tight and intended for a marine/industrial environment; and

I) Utilizes lighting components that are readily available and not proprietary equipment.

The Design-Builder shall coordinate with the Authority and affected local agencies to ensure the appropriate design methods, procedures, submittals, plan preparation, analysis methodology, review and comment processes, approval procedures, specifications and construction requirements are met.

The Lighting System within the Project limits shall be fully maintained by the Design-Builder for the duration of the Project.

13.3.1.1 Power Supply Requirements

For reference, the lighting installation shall comply with the following:

A) Meet all requirements of NFPA 70 – National Electrical Code (NEC);

B) All outdoor electrical enclosures shall be type 316 stainless steel, rated NEMA 4X or a higher degree of protection; and

C) Meet all requirements of applicable IEEE and ANSI power engineering standards.

13.3.1.2 Removal of Existing Equipment

The Design-Builder shall be responsible for ensuring that:

A) All wiring, conduits, switches, electrical junction boxes, panels, cabinets, enclosures, and other electrical equipment in working condition shall be turned over to the Authority for storage and re-use at other locations.

13.3.2 Permanent Lighting System

13.3.2.1 Lighting Locations

Exit 39 – A new Tandem Lot is to be constructed at the Exit and the old Tandem Lot put out of service. The lighting at the new Tandem Lot must illuminate the entire new Tandem Lot. Design-Builder is responsible for the design and construction, electrical connection to the nearby power source. See information relative to GPS located utilities provided by the Thruway under Part 7 - Engineering Data, Section 9.

The old Tandem Lot lighting shall be removed when the new lot is placed in service. Placement into service has to be granted by the Authority's Project Manager.

Exit 27, 29 (North Lot), 45, 46, 57, Ripley (Westbound): Some illuminators exist at this Tandem Lot already. The Design-Builder shall design and construct additional lighting to illuminate the dark areas of the Tandem Lot. The Lot lighting not consistently or comparably illuminated are not accepted. The Design-Builder is responsible for providing the comparable lighting so the illumination is consistent across the Tandem Lots. Existing Power is already at these Tandem Lots providing power to the initial lighting. The Design-Builder shall be aware of Part 7 - Engineering Data, Section 13 for other potential electrical sources.

Exits/Locations Ripley Eastbound, Exits 19, 22 and 24

Ripley Eastbound has no lighting in the Tandem Lot. Check Part 7 – Engineering Data, Section 9 for the GPS of Utility locations at the Ripley Terminus location. There is a need for lighting at this location and the entire lot needs illumination. Power does exist in Ripley Westbound Lot.

Exits 19 and 22 has no lighting. Check Part 7 - Engineering Data, Section 13 for potential power sources. The Design-Builder shall place lighting to consistently illuminate across the Tandem Lot. Power may also be available at TUB locations or nearby Maintenance Facilities.

Exit 24 – Most of the Lot is consistently illuminated from the Toll buildings, the Toll Booths, which will go away after the AET goes live and the gore lights. Supplemental Lighting should be added in the area of the acceleration entrance(s) of Tandem access to I-90 Eastbound to ensure motorists can adequately see merging Tandem from the Tandem Lot. Power sources at this Interchange can be found at Part 7 – Engineering Data, Section 9 and/or Sections 13.

13.3.2.2 Construction Requirements

The Design-Builder shall use materials listed on the NYSDOT approved list of materials and consistent with the details shown on the Authority's Standard Sheets.

The Design-Builder shall provide permanent lighting materials that satisfy the Project Requirements and applicable codes. In addition, the Design-Builder shall:

A) Provide all permanent and temporary lighting and related supports, lamping, controls for operational systems throughout the duration of the Project;

B) Ensure that all temporary lighting used during construction and demolition works shall conform to the glare control requirements of NYSDOT Standard Specification Construction and Materials §619-3.19;

C) Provide all new luminaires, poles, mounting, controls, wiring, grounding and bonding, electrical raceways/conduits, pull boxes, switches, junction boxes, panels, cabinets, enclosures, and related electrical equipment as needed;

D) Ensure that all electrical work is performed by or under the supervision of a licensed electrician;

E) Ensure that all exposed raceways/conduits are made of PVC coated rigid galvanized steel (RGS). Short runs (no longer than 15 feet) of liquid-tight flexible metal conduit may only be used to make a final connection between the main power feeder and a light pole or fixture;

F) Ensure that all outdoor electrical enclosures and attached parts (e.g. breather drain) shall be type 316 stainless steel, rated NEMA 4X or a higher degree of protection;

G) Provide As-Built Plans with narratives fully describing the lighting installation;

H) Ensure that any new electrical enclosures shall have a key lock;

I) Ensure that all lighting installed by the Design-Builder shall be maintained in an operational condition until Final Acceptance.

13.3.3 Temporary Lighting System

The Design-Builder shall ensure that the existing lighting levels within the Project limits are maintained at all times. A temporary lighting system shall be installed as necessary to meet this

requirement. The temporary system shall be energized either separately or though connection to the existing lighting system.

13.4 DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.

SECTION 14 INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

Section not used.

SECTION 15 WORK ZONE TRAFFIC CONTROL

15.1 SCOPE

The Design-Builder shall be responsible for the planning and provision of Work Zone Traffic Control (WZTC), required to perform the Project Work until Project Completion. This Project Requirement applies to any roads, ramps, cross roads, local streets, maintenance roads, driveways, and active paths within and/or affected by the Project.

The Design-Builder shall provide WZTC for the safe and efficient movement of people, goods, and services through the Project area(s) while maintaining access and minimizing negative impacts to residents, commuters, businesses, toll operations, State Police, and Authority maintenance operations.

Note that, as used in this section, “Work Zone Traffic Control plan” or “WZTC plan” is the equivalent of “Maintenance and Protection of Traffic plan” or “MPT plan” as described in Chapter 16 of the Highway Design Manual (HDM).

15.2 STANDARDS

The Design-Builder shall perform the work zone traffic control activities in accordance with the Contract Requirements and the applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirements, or otherwise applicable to the Project.

15.3 REQUIREMENTS

15.3.1 Work Zone Traffic Control at Gantries

The Design-Builder is required to follow the Standard Sheets found on-line at the Thruway Authority website for each Division. These restrictions listed by time of day and locations on the Thruway Mainline are based on volumes of traffic and shall not be violated. Gantry erection (lifting operations) on the Mainline and at the ORT sites is the only exception for violations of traffic lane restrictions as shown on the Thruway Standard Sheets. For Gantry erection, the Design-Builder shall station portable Variable Message Sign (VMS) to provide advance notice to travelers one week prior to short term closure(s). The placement of the VMS boards shall remain in place (not necessarily activated) until 24 hours after Gantry erection. The number of VMS boards to be used at each Gantry location is two per direction for which the Gantry erection impacts. The placement of the VMS boards shall be coordinated and approved by the Authority, two (2) weeks prior to placement and shall be placed so traffic can opt to use an alternate route outside the Thruway System.

In addition, the Design-Builder shall work with the Authority on a press release to be issued by the Authority one week prior to the short-term closure. The Design-Builder shall submit a draft to the Authority 10 days prior to the intended closure. Any delay in implementing the short-term closure will delay the adjusted closure date by a minimum of three (3) days so follow-up notifications and public outreach can be modified.

For each Gantry erection (Mainline Gantry or ORT Mini-Gantry), the work shall take place and be completed within 20 minutes (the short term closure), and those short term closures shall occur between 1:00 A.M. and 3:00 A.M. If the Design-Builder exceeds that time period allowed, whether it is the 20 minutes or the work occurs outside the 1:00 A.M. to 3:00 P.M. required, liquidated

damages shall be applied under Section 619 of the Standard Specifications. This is considered a major violation act.

15.3.2 Work Zone Traffic Control at Toll Plazas Prior to AET Going Live

The Authority provide(s) under Part 7 – Engineering Data, Section 16 the Design-Builder with the number of lanes that must remain open at each Exit for each hour of the day. The number of lanes that must remain open is a Project Requirement and shall not be violated. The work at the Exits where the Toll Plaza work is occurring prior to AET going live shall be completed within these requirements.

At the ORT Exit sites, the Design-Builder can take a single lane out of service in a two lane directional scenario provided the hourly volume of traffic is 1200vph or less.
The Design-Builder can direct traffic to the shoulder area (if available) in a single lane directional scenario provided the hourly volume of traffic is 1200vph or less. Alternating one way traffic with flaggers is allowed provided the opposing traffic hourly volumes are 600vph or less.

Any violation of these established restrictions shall result in Liquidated Damages as applied under Section 619 of the Standard Specifications. Regardless of the Liquidated Damages amount, this is considered a major violation act.

15.3.3 Work Zone Traffic Control at Toll Plazas to be Demolished

The Design-Builder shall follow the requirements as stated below. The demolition of the Toll Booths shall require staging as stated under the Mainline Gantry Requirements Section 23 and ORT Exit Sites, section 25. The Authority has determined that once the Cashless Tolling is activated and the booths are all EZPass at speeds of 20 MPH that 1,100 cars per hour per booth per direction can be processed. The Design-Builder shall determine the number of booths in each direction that shall be required to be used for each stage of toll booth removal based on the 1,100 vehicles per lane booth/per hour based on the traffic data provided in Section 19 of the Engineering Data Part 7, for all locations requiring Toll Booth removals. Failure to provide the necessary required number of toll booths for staging purposes will result in safety issues/congestion/public outcry and Liquidated Damages resulting in the number of booths deficient to handle the traffic X multiplied by 1,100 vehicles multiplied by Y hours of direction in effect multiplied by $2.50/vehicle. Where X is the number of Booths deficient and Y is the number of hours the deficiency existed. This is considered a major violations act.

15.3.4 Work Zone Traffic Control Plans

The Design-Builder shall prepare and submit WZTC Plans, for each Project Toll Collection location current and proposed, for managing traffic operations and controlling access until Project Completion. The Plans shall identify stages and phases of construction and provide appropriate operating procedures. The plans shall be signed and stamped by a New York-registered professional engineer and submitted to the Authority's Project Manager prior to initiation of any work in proximity to traffic or the implementation of any change in traffic patterns.

The Authority will retain responsibility for toll operations throughout the Project's duration.

The WZTC Plans shall be submitted to the Authority's Design Quality Assurance Engineer a minimum of two weeks prior to initiation of any Work requiring a lane closure or the implementation of any change in traffic patterns.

The WZTC Plan shall include:

A) Contingency plans for reasonable unforeseen interruptions;

B) Duration of each WZTC stage, including duration of lane closure(s), if any;

C) Provisions for maintaining pedestrian traffic through the Project area at all times at all locations where pedestrian access through the Project area currently exists.

The Design-Builder shall notify local officials, and affected police jurisdictions, to facilitate safe and effective enforcement. The WZTC Plans shall recognize the need for approval of the use of local public roads, if applicable.

The Design-Builder shall be responsible for updating the WZTC Plans as necessary throughout the Contract, so that at all times the current traffic control on site is representative of the design drawings that have been accepted by the Authority.

15.3.5 Construction Staging Plans and Requirements

The Design-Builder shall be responsible for preparing and implementing Construction Staging Plans, which shall identify the general sequencing for construction for each stage of construction at the Project Sites.

The Construction Staging Plans shall include details of:

A) Duration of construction and sequencing of construction required for each construction stage;

B) Identification of lane(s) to be closed and duration of closure(s), if any;

C) Location and scheduled dates of use for all traffic control and safety devices, including but not limited to traffic channelization devices, barriers, impact attenuators, signs, pavement markings and variable message signs; and

D) Location and schedule of flaggers (where such use is permitted).

The Construction Staging Plans shall indicate the location and treatment of all traffic streams (motorized vehicles, bicycles, pedestrians), the location and type of regulatory, guidance and warning devices, the anticipated impact on local businesses, the means of delivery and deployment of construction equipment, trailers, supplies, materials and other items for the Project, the safety and movement of bicycles and pedestrians, time of construction and public information considerations.

The Construction Staging Plans shall be coordinated with affected police jurisdictions to facilitate safe and effective enforcement. The Plans shall recognize the need for local approval of the use of public roads and indicate how such approval shall be obtained by the Design-Builder.

The use of flaggers is not permitted on the Thruway mainline or Highways.

The Design-Builder shall produce a clear graphical representation of the staging with each stage, with associated traffic clearly delineated, in linear chronological order. Each significant change in traffic patterns shall be presented separately.

The Design-Builder shall be responsible for updating the Construction Staging Plans as necessary throughout the Contract, so that at all times the current version reflects the planned current and future construction staging activities.

15.3.6 General Restrictions

There shall be no temporary lane/shoulder closures on roadway facilities owned and/or maintained by Authority on the major holidays listed below.

Construction activities that will result in temporary lane/shoulder closures shall be suspended to minimize travel delays associated with road work for major holidays as follows:

Holiday	Falls on	Temporary lane closures are NOT allowed from
New Year's Day Independence Day Christmas Day	Sunday or Monday	6:00 AM Friday before to 6:00 AM Tuesday after
	Tuesday	6:00 AM Saturday before to 6:00 AM Wednesday after (starting at 6:00 AM Friday before to 6:00 AM Wednesday after for Christmas Day)
	Wednesday	6:00 AM Tuesday before to 6:00 AM Thursday after (starting at 6:00 AM Saturday before to 6:00 AM Thursday after for Christmas Day)
	Thursday	6:00 AM Thursday to 6:00 AM Monday after (starting at 6:00 AM Wednesday before to 6:00 AM Monday after for Christmas Day)
	Friday or Saturday	6:00 AM Thursday before to 6:00 AM Monday after

Holiday	Falls on	Temporary lane closures are NOT allowed from
Memorial Day Labor Day	Monday	6:00 AM Friday before to 6:00 AM Tuesday after
Thanksgiving Day	Thursday	6:00 AM Wednesday before to 6:00 AM Monday after

Exceptions can only be made under the following conditions:

- Emergency work.
- Work within long-term stationary lane/shoulder closures.
- Safety work that does not adversely impact traffic mobility and has been authorized by the Authority's Project Manager.

Note: The Authority reserves the right to cancel any work operations, including lane closures and/or total road closures, that would create traffic delays by unforeseen events. The Design-Builder would be notified at least seven (7) calendar days prior to the proposed work.

15.3.7 Access to Commercial Properties and Driveways

The Design-Builder shall provide uninterrupted access to all commercial properties and driveways within the Project Limits at all times, if any exist.

15.3.8 Closure Restrictions

Additional lane closures and time periods can be found on the Thruway Authority's Standard Sheets. Failure of the Design-Builder to stay within the restrictions defined shall result in liquidated damages applied under Section 619 of the Standard Specifications. This is considered a major violation act.

15.3.9 Minimum Lane Widths during Construction

In general, the Design-Builder shall maintain a minimum travel lane width of 11 feet during construction. Shoulder widths during construction shall be 1 foot minimum.

The allowable minimum lane widths and shoulder widths are only allowable during the construction season of March 15th to December 1st. Outside that period, the original lane widths and shoulder widths shall be returned to the work site for snow and ice control.

15.3.10 Portable Variable Message Signs

The Design-Builder shall provide, as a minimum, **eight (8)** Portable Variable Message Signs, but more should the Design-Builders design dictate, for the duration of this Contract. The Portable Variable Message Signs shall be deployed as necessary for the various WZTC schemes developed in coordination and concurrence/acceptance by the Authority's Project Manager. The portable variable message signs provided shall meet the requirements of Item No. 619.111112 (Portable Variable Message Boards with Cellular Communication).

The development of messages for the Variable Message Sign(s) shall be the responsibility of the Authority's CQAE and operations staff with approval by the Authority's Project Manager.

The Design-Builder shall contact the Authority's CQAE at least two weeks prior to placement of any Variable Message Sign regarding their location and receive concurrence of the location.

15.3.11 Temporary and Interim Pavement Markings

The Design-Builder shall provide temporary and interim pavement markings during all construction phases conforming to the requirements of the Standard Specifications. See Section 12 of Part 3 for additional directions.

15.3.12 Coordination with Division Traffic Management Center

The Design-Builder is advised that the Authority's Division Office will provide support for the Project's WZTC activities. Therefore, coordination among the Authority's Construction Quality Assurance Engineer, Design-Builder, and Authority's Project Manager, will be required for all WZTC activities, particularly with respect to the use of Variable Message Signs (VMS) in the Project areas.

The Design-Builder shall notify the Authority's Project Manager of all lane and/or shoulder closures prior to implementation. The Authority's Project Manager will, in turn, notify the Authority's Division Office.

The Design-Builder is responsible for preparing the Road Work Form and submitting it to the Authority's Project Manager. The Road Work Form must be submitted to the Authority's Project Manager a minimum of ten (10) calendar days in advance of scheduled closures. The Authority's Project Manager will respond within four (4) calendar days after receipt of the Road Work Form.

The Road Work Form shall be supplied to the Best Value selected Design-Builder for use on this Project.

15.3.13 Emergency Response and Transportation Management Plans

The Design-Builder shall notify the Authority's CQAE immediately following any impacts to motorists due to construction activities and/or unforeseen circumstances. The CQAE will be responsible for disseminating the information to the appropriate personnel/entities for appropriate response to mitigate impacts to motorists.

The Design-Builder shall prepare an Emergency Response Plan to be implemented in the event the roadway (Mainline or Interchange, ORT Exit Site, or Special Exit Sites) are shut down for unforeseen or unplanned circumstances. The Plan shall be implemented when the anticipated duration of closure exceeds twenty (20) minutes. The Plan shall be submitted to the Authority's Project Manager for review and comment as per Part 3, Section 2, Table 2-1~~a minimum of two weeks prior to the beginning of Work~~. Work on this Project shall not begin until the Design-Builder receives written notification from the Authority's Project Manager that the Emergency Response Plan has been reviewed by the Authority and all Authority comments have been resolved.

The Emergency Response Plan shall include a notification and communication plan that describes how the Design-Builder will promptly inform the appropriate personnel/entities of an unforeseen or unplanned circumstance. No later than ~~30~~ 45 calendar days following NTP, the Authority's Project Manager will provide the Design-Builder with a list of personnel and entities that need to be contacted in this section of the Emergency Response Plan.

The Design-Builder shall also provide the Authority's Project Manager a Transportation Management Plan (TMP) per FHWA's Final Rule on Work Zone Safety and Mobility, 23 CFR 630 Subpart J. The intent of the TMP is to minimize impacts to the travelling public and to provide continuity of reasonably safe and efficient road user flow and highway worker safety. The Emergency Response Plan shall be a component of the TMP and shall be located in the contingency section of the TMP.

15.3.14 Lifting Operations

The Design-Builder shall be aware that under no circumstances shall lifting operations for Gantries (Mainline or Mini), overhead sign structures, or any other items, be carried out over active traffic lanes. All such operations shall at a minimum require short-duration roadway closures in accordance with the provisions of this Section 15.

15.3.15 Work Zone Traffic Control Violations

If the Design-Builder exceeds five (5) major Work Zone Traffic Control violations (major violation act), the opportunity for incentives in this contract is reduced by one calendar day incentive offered in both SCD-1 and SCD-2 totaling $145,000 per calendar day, for each violation exceeding the five allowed. If the Design-Builder is no longer pursuing those incentives the $145,000 per calendar day constitutes the liquidated damages to be applied. Since the Design-Builder bid within their proposal the duration for the defined completion dates and it was part of "Best Value" selection criteria, the Design-Builder shall still be required to finish the work as bid by the dates within their proposal but any incentives associated with that work shall be reduced and the liquidated damages as shown still apply.

15.4 FUTURE WORK ZONE REQUIREMENTS

15.4.1 Ensuring Design Solution does not compromise Level of Service in Future Contracts

The Design-Builder's design solutions for each Project Site must account for the ability to maintain all Roadways when work at the Project Sites ensues.

SECTION 16 PAVEMENT DESIGN AND CONSTRUCTION

16.1 SCOPE

The Design-Builder shall perform all Work necessary to provide all pavement required for the Project. This includes design, furnishing of materials, fabrication and construction of all temporary and permanent pavement for impacted roadways within the Project Limits including:

A) Thruway mainline on subgrade, from the Gantry approach slabs to the points where pavement Work limits are met;

B) Thruway ramps on subgrade, to the extent they need to be reconstructed, repaired, and/or resurfaced;

C) Toll plaza area pavement removal locations, interchanges, ORT, Exit Sites, and Terminus locations including approaches, to the extent they need to be reconstructed, repaired, and/or resurfaced;

D) Local roads to the extent they need to be reconstructed, repaired, and/or resurfaced;

E) Maintenance entrances and exits and maintenance access roads to the extent they need to be reconstructed, repaired, and/ or resurfaced;

F) Tandem Lots entrances and exits and Tandem Lot access roads to the extent they need to be reconstructed, repaired, and/ or resurfaced or constructed new;

G) Commuter Lots entrances and exits and Commuter Lot access roads to the extent they need to be reconstructed, repaired, and/ or resurfaced or constructed new;

H) Full depth pavement repair locations identified in Part 7, Engineering Data Section 14.

I) Temporary Pavements;

J) Identified isolated resurfaced/repaired or damaged pavement locations.

The Design-Builder shall be responsible for the review and acceptance of all submittals needed for the scope of work. The review and acceptance process shall be in conformance with the Design-Builder's accepted/approved Quality Control Plan.

16.2 STANDARDS

The Design-Builder shall perform the pavement activities in accordance with the Contract Requirements and the applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirement, or otherwise applicable to the Project.

16.3 REQUIREMENTS

All pavement materials except as stated below and construction methods shall be in accordance with the requirements of the NYSDOT *Standard Specifications* and *NYSTA Addendum to the NYSDOT Specifications* and the NYSDOT materials and pavement installation methods as supplemented by NYSTA requirements.

Except as noted in this Section, all asphalt pavement on the Thruway mainline shall be designed in accordance with the requirements of Chapter 6 of the Comprehensive Pavement Design Manual (CPDM) including Performance Graded Binder Selection, Compaction Monitoring, and Friction Aggregate Requirements.

If the existing roadway section at the limits of work varies from the standards applicable for new or resurfaced sections, the roadway features (lane & shoulder widths and cross slope) shall be transitioned to meet the existing conditions.

Straight Tack Coat is required for all Mainline and Ramp pavement installations.

For HMA pavements, NYSDOT EI 18-016: New Standard Specification Section 653 Pavement Ride Quality Smoothness applies to this project. Pavement installation at Interchanges, , 23, 24, 25, 25A, 34A, 36, 39, 44, 45, 46, 47 shall be performed to the same ride quality requirements as Interstates.

16.3.1 Full Depth Reconstruction

Where the Design-Builder is required to do Full Depth Reconstruction, the Design-Builder shall develop and construct pavement section(s) for full depth reconstruction, including subbase, of the Project roadways in conformance with the Comprehensive Pavement Design Manual, using the ESAL-based pavement design method.

Full depth reconstruction is required within the limits of any horizontal alignment changes, or vertical alignment changes until such point as the revised alignment meets the existing alignment. However, increases in profile elevations, up to eight inches (8”), may be made through asphalt and concrete overlays without the requirement of full depth reconstruction. No partial-width full depth reconstruction will be permitted; any roadway requiring full depth reconstruction shall be reconstructed for its full width, including shoulders, curbs and/or sidewalks.

If any roadway is permanently widened, beyond the limits of the existing travel lanes, for the purpose of providing additional travel and/or turning lanes, new full depth pavement need only be developed and constructed for the widened section, provided that no other portion of the pavement within the widened section requires full depth reconstruction for any other purpose. However, the existing pavement within the widened section shall be milled and resurfaced from curb to curb or edge of pavement to edge of pavement to provide a uniform pavement as specified in Section 16.3.3.

16.3.2 Gantry Approach Pavement

Non-metallic reinforced concrete pavement installed at the Gantry treadle detector slabs shall be placed at locations in accordance with current NYSTA Standard Sheets. Other new or reconstructed pavement within the Project limits not required to be non-metallic reinforced shall be designed and installed in accordance with Section 16.3.1.

All remaining existing areas of Toll Plaza pavement transition limits not reconstructed under the Project shall at minimum be milled and resurfaced in accordance with Section 16.3.3.

16.3.3 Milled and Resurfaced Roadways

The Design-Builder shall mill and resurface pavement areas as necessary to provide for a smooth transition between the existing and fully reconstructed or profile modified pavement surfaces. Transitions into existing surfaces shall be in accordance with the applicable Standard Sheets. The Design-Builder shall mill a minimum of 50' beyond the limits of any full depth reconstructed or profile modified pavement sections. Minimum mill and inlay depth at tie-transitions shall be 2".

Within the horizontal limits of any widened pavement section, the existing pavement shall be milled and resurfaced in conjunction with the top course placement for the widened section in order to provide a uniform pavement within the widened section of roadway.

16.3.4 Utility Trench Restoration

Outside areas of full depth reconstruction, pavements in trench restoration areas shall minimally match the adjacent pavement section.

16.3.5 Local Roadways and Streets

16.3.5.1 Reconstructed/Resurfaced Local Roadways

Reconstructed permanent local roads and streets pavements systems shall be constructed in accordance with the NYSDOT CPDM. The same pavement treatment shall be applied across the entire width of the roadway and shoulders and shall be placed on properly prepared subgrade. Asphalt and concrete pavement materials and construction methods shall meet the requirements of NYSDOT Standard Specification Sections 402 and 502 respectively.

In the absence of local Standards, the reconstructed local roadways (other than on bridges) shall consist of a pavement structure, applied across the entire width of the roadway and shoulders, and placed on a properly prepared subgrade, that meets or exceeds the following characteristics:

A) Pavement structure: Thicker of existing or Table 4-1 of NYSDOT CPDM conventional pavement thickness guide;

B) Suitable and properly prepared subgrade, per the CPDM;

C) Where positive drainage outlets can be provided, suitable edge drain or under drain systems shall be installed in accordance to requirements of the NYSDOT CPDM Chapter 9.

Disturbed and damaged curbs, sidewalks, and driveways shall be replaced with corresponding elements having equal to or better characteristics.

The Design-Builder shall provide all tie-in work to avoid differential problems, accounting for such factors as total surfacing thickness, minimum structural requirements, and unbound base/subbase thickness.

16.3.5.2 Resurfaced Local Roadways

In the absence of local Standards, resurfaced local roadways shall minimally consist of a pavement course, comprising 1.5 inches of top course HMA, and shall be placed on a properly-

prepared surface, across the entire width of all lanes and shoulders. Locations retaining curb or other controlling edge of pavement features shall be milled to the depth of the resurfacing section.

Existing profiles and cross slopes of local roadways shall be maintained, unless a transition to match the new construction profiles and cross slopes is necessary.

The finish quality of the pavement shall meet the requirements of NYSDOT standards as supplemented by Authority requirements prior to opening the facility to traffic.

16.3.6 Maintenance, Trucking, and Commuter Access Roadways and Parking Lots

New or Reconstructed maintenance, trucking, and commuter access roadways and parking lots shall be constructed of HMA or Concrete pavement. Installed pavement and supporting subbase shall meet or exceed the maximum thickness requirements as defined for minor commercial driveways in NYSDOT Standard Sheet 608-03.

The finish quality of the pavement shall meet the requirements of NYSDOT standards as supplemented by the Authority requirements prior to opening the facility to traffic.

16.3.7 Temporary Pavement

The Design-Builder shall design, construct, and maintain all temporary pavements within the Project Limits in compliance with the following requirements:

A) Engineered to provide adequate pavement support for existing traffic loading for duration of temporary condition. As required under 619 of the Standard Specifications, the pavement surface in such a condition as to permit the safe, comfortable passage of vehicle at posted speed limit;

B) Provide a pavement system that meets the same friction aggregate specifications as the permanent pavement,

C) Provide a durable, maintainable pavement system that meets the requirements of NYSDOT and NYSTA Section 619 Specifications;

D) Include pavement-to-structure transition areas as a part of ride quality;

E) Minimize pavement-to-structure transition deviations;

F) Minimize pavement type-to-pavement type transition deviations;

G) Provide adequate cross slope to drain water from pavement surface, consistent with maximum grade breaks between lanes and between lanes and shoulders;

16.3.8 Structures Approach Pavement

Approach pavement shall be designed and placed in accordance with Project Requirement 10 - Structures and placed over a subgrade course equaling or exceeding the properties outlined in Section 16.3.1 herein.

16.3.9 Repaired or Damaged Pavement

Except as noted in this section, requirements of Section 619 of the Standard Specifications, as supplemented by the Thruway Addendum, apply.

Concrete or Composite Pavement: Locations of concrete or composite pavement systems shall be repaired by the Design-Builder in accordance with the Authority's methodologies and repair details. Slab replacements at locations with existing precast pavement shall utilize precast pavement slabs with in-kind thickness.

Asphalt Pavement: Wearing course repairs and/or full depth asphalt sections shall be repaired by the Design-Builder in accordance with the Authority's methodologies and repair details.

Pavement to remain that is damaged by the Design-Builder's operations, whether within or outside the Project Limits, shall be repaired such as to maintain safe and reliable operation during construction, and restored to its original or better condition, at the end of construction.

16.3.10 Subsurface Drainage System

The Design-Builder shall design and construct edge drains, where stipulated within this Project Requirement, and/or in accordance with the applicable Standards. Subsurface drainage outlets shall not cross roadways. Left- and right-side subsurface drainage systems shall not use a common outlet pipe.

Additionally, the Design-Builder shall evaluate and provide an underdrain system as follows:

A) Underdrain shall be installed where an existing ground water condition needs to be addressed;

B) The proposed pavement traverses an area with high ground water;

C) Where identified as needed by the Engineer or Foundations Lead Designer of record.

16.3.11 Pavement Removal

Obsolete and unnecessary pavement shall be removed and disposed of by the Design-Builder. Pavement removal shall be such as to permit the unimpeded use of the space for the immediate and/or permanent purposes of the affected space. At a minimum, obsolete and unnecessary pavement shall be removed to the top of the subbase. Any pavement to remain that is damaged during pavement removal operations shall be replaced by the Design-Builder. In the absence of the need for treatments associated with specific subsequent uses, disturbed material underlying removed pavement shall be re-compacted to not less than 95% standard proctor maximum density, and then top soiled and seeded.

SECTION 17 DRAINAGE AND STORMWATER

17.1 SCOPE

The Design-Builder shall design and construct drainage systems, as needed, for the estimated storm runoff at the Project Sites that provide functionality, durability, ease of maintenance, maintenance access, safety.

The Design-Builder shall be responsible for the review and approval of all shop drawings needed for the scope of work. The review and approval process shall be in conformance with the Design-Builder's approved Quality Control Plan.

Drainage facilities shall be compatible with existing and/or proposed drainage systems in adjacent properties and shall preserve existing drainage patterns. Where drainage patterns will or must be changed from existing patterns, the Design-Builder shall be responsible for securing all necessary permits, local entity and Authority's approval/compliance prior to construction of any drainage facilities.

Prior to Project Completion, the Design-Builder shall be responsible for cleaning all new and existing drainage facilities within the Project Limits.

17.2 STANDARDS

The Design-Builder shall perform the drainage and stormwater activities, including highway and site systems, in accordance with the Contract Requirements and the applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

Stormwater shall be conveyed from point to point through the use of a single pipe. Smaller pipes in parallel shall not be permitted.

17.3 REQUIREMENTS

17.3.1 Drainage Concept Plans

The Design-Builder shall develop Drainage Concept Plans, for those Project sites where drainage may be affected, which shall serve as the base for the final drainage design. The Drainage Concept Plan shall show the existing drainage features, including but not limited to the following:

A) Drainage areas and contributing flows of existing and proposed drainage;

B) Summary table with time of concentration and runoff coefficients;

C) Impacts from the Project and proposed mitigation within the Project Limits;

D) Ultimate discharge locations and waters receiving Project runoff.

17.3.2 Construction Documents

The Design-Builder shall develop and maintain Construction Documents, which shall include the following items:

A) Drainage plans and specifications in accordance with HDM Chapter 8, Section 8.10 and HDM Chapter 21;

B) Temporary and permanent erosion control plans in accordance with HDM Chapter 8, Section 8.8 and HDM Chapter 21.

17.3.3 Drainage Report

The Design-Builder shall provide a Drainage Report to the Authority for each Project site location to the Authority and any other entities whose facilities will be impacted by the Project in accordance with NYSDOT HDM Chapter 8. The Design-Builder shall be responsible for coordination in advance with any third party to determine the necessary document submission required by the third party. At least two (2) weeks prior to providing documents to any third party, the Design-Builder shall submit a draft Drainage Report to the Authority's Design Quality Assurance Engineer for consultation and written comment.

The Drainage Report shall document the design criteria used, final design basis, and all supporting calculations and computer model output.

17.3.4 Connections to Existing Systems

The Design-Builder shall develop Design Plans and Project Specifications for any connections to existing storm systems. The Design-Builder shall be responsible for calculations performed to ensure there is sufficient capacity to accommodate any increase in flow due to changes in drainage catchment area and/or to land use. These details shall be provided by the Design-Builder for review by the Authority and by any affected local entities at least 30 days prior to the proposed date for making the relevant connections. This paragraph shall not be construed to relieve the Design-Builder of the obligation to treat runoff water that requires treatment.

17.3.5 Drainage Channels

Roadside drainage channels, if used, shall be designed to capture and convey the 50-year design storm and shall meet the criteria of HDM Chapter 8, section 8.5. Geometric layout shall be in accordance with the AASHTO Roadside Design Guide and consider safety, maintenance, landscaping and aesthetics. Determine channel capacity using Manning's Equation. Design channel linings in accordance with HEC-15 when required by analysis. Provide 2-foot freeboard above design storm.

17.3.6 Spill Management

Spill prevention and response measures shall be described in the SWPPP.

17.4 DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.

SECTION 18 HIGHWAY DESIGN

18.1 SCOPE

The Design-Builder shall be responsible for the design, construction or reconstruction of the permanent roadway(s) to be constructed or reconstructed within the Project Limits, and any other roads damaged by construction operations, or necessary for permanent operations, all in accordance with the design requirements stated herein. Highway design, construction and reconstruction shall be understood to include the design, furnishing, and construction of all road appurtenances, protections, and safety devices not specifically cited in other Project Requirements.

In addition, the Design-Builder shall be responsible for the removal of non-standard and non-conforming systems/features that currently exist within the Project limits, whether they are affected by the proposed work or not, and replacement with systems meeting current Authority Standards.

U-turns shall be constructed of HMA or Concrete pavement. Installed pavement and supporting subbase shall meet or exceed the maximum thickness requirements as defined for minor commercial driveways in NYSDOT Standard Sheet 608-03. Minimum turning path shall be for Interstate Single Unit truck (SU-40) Design Vehicle.

18.2 STANDARDS

The Design-Builder shall perform the Work in accordance with the Contract Documents and the Applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

18.3 REQUIREMENTS

18.3.1 General

The Design-Builder shall be responsible for performing the detailed highway design and construction within the Project Limits in accordance with the Project Requirements set forth herein.

18.3.2 Design Requirements

Design requirements for the reconstruction of roadways within the Project Sites shall be as specified below.

- Design Speed shall be 40 mph for ramp leg from Thruway ramps to Intersecting Road at the following locations: 17, 18, 19, 20E, 20W, 21, 21B B1, B2, 22, 26, 27, 28, 29, 29A, 30, 31, 32, 33, 34, 35, 37, 38, 40, 41, 42, 43, 48, 48A, 49, 56, 57, 57A, 58, 59, and 60.
- Design Speed shall be 40 mph for Interchanges at the following locations: 36, 39 and 47.
- Design Speed shall be 50 mph for Interchanges at the following locations: 23, 34A, 44, and 46.
- Design Speed shall be 70 mph for Interchanges at the following locations: 24 and 25.
- Design speed shall be 80 mph for Interchanges 25A and 45.

- Design Speed shall be 70 mph for Mainline Gantries at the following Terminus Locations: Williamsville and Lackawanna.
- Design Speed shall be 80 mph on the Thruway Mainline for Mainline Gantries and Terminus Locations at the following Locations: Woodbury, Canaan, 23, 24, 25, 25A, 34A, 36, 39, 44, 45, 46, 47, and Ripley.
- Required number of lanes, refer to Table of proposed conditions for required number of lanes, located in Part 7 – Engineering Data, Section 18;
- Lane and Shoulder Widths: per HDM Design Criteria

18.3.3 Guide Railing, Barrier Systems and Impact Attenuators

The Design-Builder is responsible for the design and construction of systems that shall be implemented where opposing traffic is not currently separated or the system in place does not meet current standards. The criteria and requirements that shall be followed by the Design-Builder shall be in accordance with the Table shown in Part 7 – Engineering Data, Section 18. Inventory/Existing/Proposed Conditions for Median Protection between opposing Lanes in Plazas and Interchanges.

The Design-Builder shall remove and dispose of all existing guide railing, barrier systems and/or impact attenuators within the Project limits, and replace with new guide railing, barrier systems and/or impact attenuators if required, as per NYSDOT Standards and Authority practices.

The limits of work for new roadside and new median barrier shall be the lesser of the following:

1) The point where barrier is no longer warranted unless specifically required elsewhere in the Project Requirements; or

2) The Design Builder will be responsible for upgrading all guiderail, median barrier and terminal end sections within the project limits to current standards. The Design Builder will be allowed to transition and connect new guiderail/barrier system into existing guiderail/barrier system not meeting current standards beyond the project limits if the system being connected to extends greater than 500 feet beyond the project limits. Runs of guide rail or median barrier that extend less than 500 feet beyond the project limits shall be entirely replaced with components meeting current standards. The exception to this rule is for median barrier between opposite direction ramps with two-way AADT of ETC+ 10 of less than 10,000 vehicles per day. For this case, existing median barrier not meeting current standards may be retained since it falls below the threshold for requiring positive separation.~~A point where the proposed new barrier within the project limits can be transitioned to an existing barrier system, outside the project limits~~.

All existing barrier systems that are removed shall become property of the Design-Builder.

18.3.4 Median Protection Requirements for Opposite Direction Ramps

The Authority has determined that opposite direction ramps where the AADT of ETC + 10 exceeds 10,000 vehicles per day, requires positive separations. For Interchanges (23, 24, 25, 25A, 34A, 36, 39, 44, 45, 46, 47) positive separation will consist of permanent concrete barrier from the

Thruway ramp gore area to the connecting highway gore (ramp terminus location). Median barrier meeting current standards is required at all other opposite direction ramp locations where the AADT of ETC + 10 exceeds 10,000 vehicles.

For opposite direction ramps that exceed ETC + 10 of 10,000 vehicles per day and already have a form of separation, the existing mechanism of separation that currently exists can be retained as long as it meets the current standards for median barrier. If the mechanism does not meet current standards then the existing separation shall be replaced with barrier that meets the current standards.

Regardless of replacement or retainage of the opposite direction Ramp Separation Mechanism, standard transitions are required between change in median barrier type.

When the opposite direction ramp volumes of ETC + 10 equal or drop below 10,000, separation of opposing directional traffic shall be accomplished through the use of striping, rumble strips and delineators, 25 ft. center to center, (easily removable). These delineators shall be placed from the Thruway ramp termination to where the opposite/opposing directional traffic begins/ends.

Opposite direction ramps within volumes equal to or below of AADT ETC + 10 of 10,000 requiring delineators and already having an established means of separation such as corrugated beam median barrier, concrete median barrier, or box beam median barrier, etc. shall be retained and left in place.

In each of the categories described above; positive separation, delineators, and enhanced striping and rumble strips (CARDS), where two types of applications might apply: one for the opposite direction ramp(s) from gore area, and one for the Toll Plaza removal area , from terminus location at intersecting roadway or connecting highway to ramp gore area, it is the Design-Builder's responsibility to ensure that safe transitions exist. There shall be logical and standard transitions, or logical termini locations, and standard protection of blunt ends.

18.3.5 Access Modifications

Should the Design-Builder's proposed designs result in a new access point or revised access point to the Thruway mainline or ramps, the Design-Builder shall obtain approval from the FHWA prior to implementing such a design, in accordance with NYSDOT's Project Development Manual, Appendix 8.

18.3.6 Clear zone

The Design–Builder shall document clear zone on the final record plans.

18.4 DESIGN EXCEPTIONS AND NON-STANDARD FEATURES

It is the responsibility of the Design-Builder, in coordination with the Authority, to obtain acceptance of any non-standard features included by the Design-Builder in the final design, prior to that non-standard feature being incorporated.

18.5 DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.

SECTION 19 SECURITY

Information is not yet provided.

SECTION 20 TANDEM LOTS

20.1 SCOPE

The Design-Builder shall be responsible for the demolition of the Tandem Lot at Toll Exits 23 (Boulevard) and 39 (State Fair) and for the design and construction of a new Tandem Lot at Exit 39 and the service area (Dewitt) to be located as shown in the RFP Plans. The design and construction of the Tandem Lot at Exit 39 and Dewitt service area shall be understood to include the design, furnishing, and construction of all entrances and/or driveways providing access to and from the Tandem Lot(s), road appurtenances, lighting and safety devices not specifically cited in other Project Requirements.

The Design-Builder shall be responsible for the design, construction or reconstruction or modification thereof the driveway entrances and/or exits providing access to and egress from the Tandem Lots at Toll Plazas 17 (Newburgh), 18 (New Paltz), 19 (Kingston), 22 (Selkirk), 23 (Boulevard), 24 (Washington Ave.), 25A (Duanesburg), 27 (Amsterdam), 28 (Fultonville), 29 (Canajoharie), 31 (Utica), 32 (Westmoreland), 33 (Verona), 34 (Canastota), 34A (Collamer), 35 (Thompson Road), 36 (Mattydale), 39 (Statefair), 40 (Weedsport), 42 (Geneva), 43 (Manchester), 45 (Victor), 46 (Henrietta), 47 (Leroy), 48 (Batavia), 57 (Hamburg), 59 (Dunkirk), and 61 (Ripley), and any other entrances/exits or driveways damaged by construction operations, or necessary for permanent operations, all in accordance with the design requirements stated herein. Tandem Lot modifications Tandem Lot driveway design, construction and reconstruction shall be understood to include the design, furnishing, and construction of all road appurtenances, protections, and safety devices not specifically cited in other Project Requirements.

Proposed Tandem Lot routes are included in Part 7, Engineering Data, Section 3 – Tandem Lot Routes.

20.2 STANDARDS

The Design-Builder shall perform the Work in accordance with the Contract Documents and the Applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

20.3 REQUIREMENTS

20.3.1 Design Requirements

Design requirements for the reconstruction of Tandem Lot driveway entrances and exits within the Project Sites shall be as specified below.

20.3.2 Access Gate at Tandem Lot

There are 3 Tandem Lots and one service area (Dewitt) that require access gate control to the local and/or State DOT side of the Tandem Lot. These exits are Exit 24, Exit 46 and Exit 47 with the one service area being the DeWitt service area.

The Design-Builder is responsible for the design; acquiring all equipment, material, hardware and installation of the access gate. In addition, the Design-Builder is responsible for fiber connectivity, and providing electrical power to the access gate location. The location of access gate shall not be located within 100 feet of access drive road/intersection with local and/or State highway.

20.3.3 Cameras at Tandem Lots

The Design-Builder is responsible for purchasing and installing cameras potentially mounting hardware at various Tandem lots and an identified service area (Dewitt). Camera pole design, installation may also be required. Refer to Table 20-1 for the locations, availability of existing poles to mount the cameras and other information that may be of value to the Design-Builder.

The cameras required shall be able to view the entire lot including the entering and departure locations.

The cameras required for the access gate area shall be mounted so that Thruway TSOC can identify the single trailer seeking backside access to the Tandem Lot. The viewing of the vehicles will allow the Authority to raise and lower the access gate when needed and/or requested.

The following specifications apply, Items 651.0201, Item 651.02001525, Item 683.6730-25.

Table 20-1

Tandem Locations

INTERCHANGE/LOT	OPEN/CLOSE/ RELOCATE/NEW	CAMERA NEEDED (Y/N)	ADD TO EXISTING TRAFFIC CAMERA POLE	ACCESS GATE NEEDED (Y/N)
6A (MP 5.47)	N/A	N/A	N/A	N/A
14 (MP 24.31)	N/A	N/A	N/A	N/A
15 (MP 32.40)	N/A	N/A	N/A	N/A
17 (MP 60.10 S)	OPEN	Y	Y	N
18 (MP 76.01)	OPEN	Y	Y	N
19 (MP 91.37)	OPEN	Y	Y	N
23 (MP 141.92)	CLOSE	N	N/A	N
24 (MP 148.15)	OPEN	Y	Y	Y
25A (MP 158.82)	OPEN	Y	N	N
27 (MP 173.59)	OPEN	Y	N	N
29 (MP 194.10)	OPEN	Y	N	N
31 (MP 232.85)	OPEN	Y	Y	N
32 (MP 243.37)	OPEN	Y	N	N
33 (MP 252.71)	OPEN	Y	N	N
34 (MP 261.50)	OPEN	Y	N	N
34A (MP 276.58)	OPEN	Y	N	N
35 (MP 278.93)	OPEN	Y	Y - Raise Camera/Pole	N
DeWitt Service Area (MP 279.9)	NEW	Y	Currently no camera/structure	Y
36 (MP 282.93)	OPEN	Y	Y	N
39 (MP 289.53)	RELOCATE	N	Y	N
40 (MP 304.19)	OPEN	Y	Y	N
42 (MP 327.10)	OPEN	Y	N	N
43 (MP 340.15)	OPEN	Y	N	N
45 (MP 350.99)	OPEN	Y	Y	N
46 (MP 362.44)	OPEN	Y	N	Y
47 (MP 378.56)	OPEN	Y	N	Y
48 (MP 390.13)	OPEN	Y	N	N
49 (MP 417.27)	OPEN	Y	N	N
57 (MP 436.22)	OPEN	Y	N	N
59 (MP 467.74)	OPEN	Y	N	N
61 (MP 494.50)	OPEN	N	Y	N

20.3.4 Tandem Lot Barrier Gate System

The Design-Builder shall provide a Barrier Gate System (BGS) to control access into and out of tandem lots at I-90 Interchanges 24, 46, 47, and the DeWitt Service Area. A single lane shall be instrumented with a BGS at each of these locations.

Door King Model # 1601 is provided as an example BGS that may satisfy these requirements, but the Design-Builder is free to propose other solutions. The Design-Builder must verify that all requirements are met by whatever solution is proposed.

The BGS shall control access to a single, bi-directional traffic lane 14 feet in width.

The BGS arm shall be 14 feet in length and constructed of wood.

The BGS shall be operable in temperatures between -20 to 140 degrees Fahrenheit, and shall include appropriate heaters and/or fans as specified by the manufacturer to meet this range of temperatures.

The BGS shall include a Vehicular/Pedestrian Detection System that prevents the barrier from coming down if a pedestrian or vehicle is detected under the gate.

The BGS shall include loops embedded in pavement on either side of the gate as specified by the manufacturer to prevent the gate from closing on vehicles in the path of the gate. The loops shall be connected to the BGS using loop controllers as specified by the manufacturer.

The BGS shall be operated on 115 VAC, 60 HZ input. The Design-Builder shall provide power to the BGS.

The BGS shall include a feature to automatically open the gate if power is lost.

The Design-Builder shall provide a means of gate equipment protection to protect the gate equipment from being damaged from vehicle hits (e.g. guiderail, post, etc.)

20.3.5 Tandem Lot Equipment Cabinet

The Design-Builder shall provide an equipment cabinet as specified in 680.8020XX25 Cabinets for ITS Equipment. The cabinet provided shall be the one specified for TRANSMIT. The Equipment Cabinet shall be mounted on a 20 foot tall pole, per the following specifications: 670.1120 (20’ tall light pole), and 670.0106 (6’ pole foundation)

The cabinet shall be mounted on the pole at a height of 3 feet.

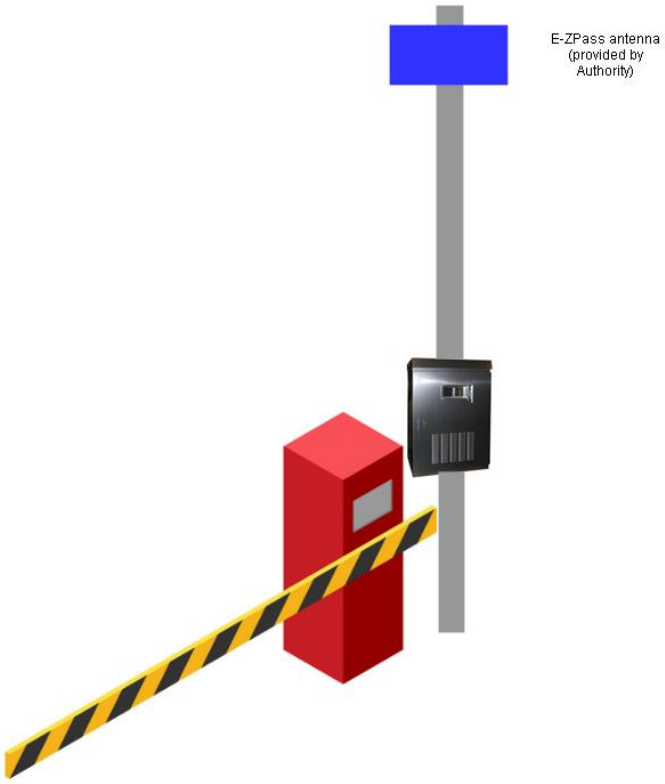
The Design-Builder shall provide power and fiber optic communications to the cabinet. The fiber optic communications cable shall be terminated “SC”.

The Design-Builder shall install a conduit between the equipment cabinet and the BGS cabinet. The conduit shall contain an appropriate multi-conductor cable. In the BGS cabinet, the cable shall be connected to the appropriate connections on the BGS controller that when electrically connected cause the gate to rise. In the Equipment Cabinet, the multi-conductor cable shall be connected to an appropriate switch that results in the connections on the BGS controller to be electrically connected, causing the gate to rise.

The Design-Builder shall install an appropriately sized conduit from the top of this structure to the Equipment Cabinet to enable the Authority to install Times LMR400 cable.

The Authority shall provide and install a side-fire E-ZPass antenna on the pole at a height of 17.5 feet.

A conceptual drawing is provided below:



20.4 DESIGN EXCEPTIONS AND NON-STANDARD FEATURES

It is the responsibility of the Design-Builder, in coordination with the Authority, to obtain acceptance of any non-standard features included in this final design.

20.5 DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.

SECTION 21 MAINLINE TOLLING GANTRIES (11 INTERECHANGES & 5 TERMINUS)

21.1 SCOPE

The Design-Builder shall design and construct Cashless Tolling Gantries at the following locations: between 22 (Selkirk) and 23 (Boulevard), between 23 (Southern Boulevard) and 24 (Washington Ave.), between 24 (Washington Ave.) and 25 (Schenectady), between 25 (Schenectady) and 25A (Duanesburg), between 25A (Duanesburg) and 26 (Rotterdam), between 34 (Canastota) and 34A (Collamer), between 34A (Collamer) and 35 (Thompson Road), between 35 (Thompson Road) and 36 (Mattydale), between 36 (Mattydale) and 37 (Electronics Parkway), between 38 (Liverpool) and 39 (State Fair), between 39 (State Fair) and 40 (Weedsport), between 43 (Manchester) and 44 (Canandaigua), between 44 (Canandaigua) and 45 (Victor), between 45 (Victor) and 46 (Henrietta), between 46 (Henrietta) and 47 (Leroy), between 47 (Leroy) and 48 (Batavia).

Mainline Gantries are also required at the following Terminus Locations: Woodbury (Approx. MP 45.03), Canaan (Approx. MP 17.83), Williamsville (Approx. MP 419.60) ; Lackawanna (Approx. MP 430.52), and Ripley (Approx. MP 494.51).

Location of Gantries shall be constructed within the limits described in Part 7 – Engineering Data, Section 1. The Design-Builder shall not place any Mainline Gantries beyond the specified limits. Gantries shall not span over the acceleration or deceleration ramps.

The Design-Builder shall be responsible for reducing the footprint currently leading into and out of the Toll plazas at the Terminus locations, which will involve pavement removal work, Toll Plaza removals, potential positive separation of opposing traffic flow, placement of barrier/guiderail to delineate active lanes, striping, drainage, etc. are all part of the work.

Mainline Gantries shall not be placed in Wetland Assessment Areas and Historic Districts. Wetland Assessments are provided in Part 7 - Engineering Data, Section 7.

21.2 STANDARDS

The Design-Builder shall perform the Work in accordance with the Contract Documents and the Applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

21.3 GENERAL REQUIREMENTS

The Mainline Gantries shall be located to ensure that the Authority can capture where vehicles enter and exit the Thruway system. This is imperative and required so that the Authority can accurately bill motorists by providing the entry and exit locations of each vehicle. It also ensures proper and accurate revenue collection, and potential projections thereof..

The Mainline Gantries shall be designed and constructed so that maintenance and/or replacement, inspection, and adjustments of Cashless Tolling Equipment attached to the Mainline Gantries can be accomplished without the need for any lane(s) taken out of service, which subsequently impacts traffic. To access the equipment to perform maintenance, replacement, inspection, or moddifications, the Mainline Gantries shall have a 4 foot minimum, 5 foot maximum, walkway system above traffic with easy accessibility from this walkway to the various equipment components.

The Kapsch Vehicle Detection, Tracking, Triggering and Classification System (nVDC) unit mounted below the horizontal Gantry structure is required to be accessible and available for maintenance repair and/or replacement by Authority employees from the gantry walkway. The requirement entails that work to repair/replace or adjust the operations of nVDC unit shall occur from the Mainline Gantry walkway. Employees of the Authority shall have full access to the nVDC from this walkway area and be able to remove and replace each piece of Equipment from the walkway area. No lane closures shall be required to replace, repair/or adjust the nVDC units. The nVDC units must be accessible and be able to be worked on while the employee is on the Mainline Gantry walkway. The mechanisms to access the equipment (cameras/lasers/ illuminators/nVDC units) shall not require tools to safely protect the traffic below. The access to the equipment to be worked on may require leverage mechanisms. Those leverage mechanisms shall be tethered and the tether cannot be greater than 3 feet

The access opening for the nVDC unit shall require a retraction up into the walkway area (not a lift and place). Once the nVDC unit is in the working position the gap/opening that is generated by this action has to be protected/covered so employees or equipment cannot fall to the traffic below. The access opening must be securely closed.

The stairway to the walkway shall be steady with minimal movement. Only one stairway to access the walkway is required. The minimum stairway interior width shall be 42” (inside of railing to inside of railing.

Access to the walkway from the ground level shall be via stairways, founded on a concrete pad. All walkway areas, on the Mainline Gantries and stairways shall not retain snow nor allow icicles to form for the safety of the traveling public and employees.

The Mainline Gantry Walkways shall have handrails on both sides and a continuous tie off mechanism that minimizes the number of times an employee has to reconnect as they travel across the Mainline Gantry. The handrails, when not in use, shall be retractable and still remain secure. The railings when not in use shall not be seen by the traveling public. The elevation view of the Mainline Gantry itself as traveler’s approach should not be viewed as a multiple type structure but rather as a single element, even though that is not the case. In other words, the Mainline Gantry should look streamlined. In addition, negative camber is not allowed.

The Design-Builder shall install electrical and fiber conduits to connect the Cashless Tolling Equipment to the Communications Building. The conduits shall be hidden from view and shall be protected from vandalism.

Whatever Mainline Gantry design is used at one location, the style shall be used throughout the ticketed system for all Mainline Gantries for the purposes of consistency, maintenance access, maintenance repairs, parts, and other reasons that benefit the Authority. Obviously spans dictate member sizes but the style of the Mainline Gantry shall remain the same.

The equipment locations, their distances from the Roadway surfaces, and their relation to one another, is presented in a graphical display of these requirements, later in this section.

The Design-Builder is responsible for the foundation design for all Mainline Gantries. See Part 3, Project Requirements, Section 9 – Geotechnical Requirements.

Since the equipment shall be accessed from the Mainline Gantry walkway, the amount of effort to raise any of the pieces of equipment shall be small to prevnt injury. Access to the equipment

shall not require any employee to lean over the railing or the Mainline Gantry itself to bring equipment up or to work on the equipment. The nVDC unit shall be brought to the Mainline Gantry walkway area where employees can repair, replace or adjust their functions. As the nVDC unit is being worked on, no openings to the traffic below shall be allowed and movement by emploees around or across from the nVDC being worked on shall be safe and include preventing employees from falling by eliminating any walkway openings.

All Mainline Gantry Components shall have a protective coating system such as galvanizing or metalizing, use of aluminum or aluminum componants are acceptable to ensure long term durability and resistance to corrosion or degradation of the initial design strength. Painting is not an acceptable solution.

The span length of each Mainline Gantry shall be dertermined by the Design-Builder. The Gantries may span across traffic in both directions or they could be two separate Gantries each handling traffic in opposing directions. Regardless of span choices the vertical supports of the Mainline Gantry shall be protected via an appropriate barrier system in compliance with the design standards. Under no circumctance, even if the verticle supports are outside the clear zone, can they be unprotected.

The placement of the Mainline Gantries shall not include mainline deceleration or acceleration ramps, rest access ramps, service area ramps, or welcome center ramps. Mainline Gantry shall not be located withing 1000' to existing 2011 Booths at the Terminus locations.

Mainline Gantries shall not be located within 800 feet before or 100 feet after overhead roadway signage.

21.4 HIGHWAY REQUIREMENTS AT MAINLINE GANTRY LOCATIONS:

Requirements of the Highway at the Mainline Gantry Locations is as follows:

- Treadle Frame shall be installed as per Specification Item 690.6202—25
- The Treadle Frame shall be located as per Part 7 – Engineering Data, Section 21.
- Concrete Pavement (approximately 104 ft. in length including treadle frame) shall be installed so that 70 ft. of slab exists prior to the treadle frame and 30 ft. after the treadle frame in the direction of travel for each lane of travel. The treadle frame must be centered within the travel lane as the treadle frame is typically 10 ft. in length. Details about the treadle frames can be found in the Thruway Authority's standard sheets.
- Prior to placement of the concrete slabs that should reside under the Mainline Gantries the existing slabs are required to be removed and proper sub-base and/or asphalt placed depending on the existing highway section makeup. The removal of existing slabs shall be 50 feet beyond the limits of the proposed new slab locations (begin and end limits). Proper drainage such as underdrain shall be included in the reconstructed sections as defined above (approximately 104'+100'). If drainage structures are within the limits of the new Mainline Gantry proper, adjustments to elevation, stormwater flow and drainage capacity shall be the responsibility of the Design-Builder under the New York State's DOT Highway Design Manual.
- The Design-Builder shall reconstruct the entire pavement shoulders within the reconstruction limits defined above. The shoulders to be reconstructed shall be full depth

asphalt to allow for loops to be cut into the asphalt. The Design-Builder is responsible to ensure proper drainage of the shoulder areas and treadle slabs.

- The Mainline Gantries shall be fully completed and conduits from the Communication Building to the Mainline Gantries along with all the mounting hardware, brackets or arms shall be in place so that cameras, antennas, laser scanners and illuminators can be attached by Kapsch and adjusted.
- Cashless Toll lanes and shoulders shall as a minimum match the maximum number of approach lanes and shoulders entering the Cashless Toll Collection Zone;
- Design-Builder shall ensure the slab containing the treadle and trench drain shall be embedded in a minimum of 22 inch of heavily reinforced Portland Cement Concrete (PCC) utilizing fiber reinforced polymer (FRP) reinforcing bars so as not to interfere with the Authority's toll collection system

21.4.1 Woodbury Terminus Location

Terminus location at Woodbury required the design and construction of a vehicle enforcement area for the State Police. It shall be provided after the mainline gantry as traffic heads South. The required enforcement area shall be constructed utilizing the current available concrete pavement located to the West of the traffic headed South. Proper deceleration and acceleration lanes shall be applied. The vehicle enforcement pertains to all types of vehicles utilizing the Thruway, from tandems to passenger vehicles. Proper pavement striping, signage is required. The Design-Builder is responsible for the full design and construction at this location. Refer to Part 7 – Engineering Data, Section 5 for concept drawings. This particular location does not require a reduction of the overall infrastructure foot print, with the exception of the area specifically designated to be removed involving the deceleration lane and ramp to Exit 16 for traffic heading South. See concept drawings. The Design-Builder shall be aware for traffic heading North that the pavement area is more than required. The Design-Builder based on the design shall be required to properly channelize traffic with, as a minimum proper striping, cross hatching, and signage to ensure the proper and safe passage of traffic heading North to through the mainline gantry or Exit 16.

21.5 KAPSCH REQUIREMENTS

The Authority has selected Kapsch TrafficCom USA Inc. (Kapsch) to supply, install and monitor the Cashless Tolling system at all Mainline Gantries. The Design-Builder shall coordinate activities with Kapsch for installation at each Mainline Gantry site as per the following requirements:

Kapsch will provide a maximum of six (6) teams that will be able to install and test the Cashless Tolling Equipment at each Mainline Gantry and Communication Building. Kapsch will install all tolling equipment/server/additional racks for each lane/all wiring and cables from the Communication Building to the Mainline Gantry to the Mainline Gantry equipment with the exception of the Network rack supplied by the Design-Builder.

Kapsch will complete their installation and test their system in 30 calendar days not including major holiday weekends. The Design-Builder shall notify Kaspch 30 calendar days prior to the expected completion of the Mainline Gantry so that Kapsch can secure resources for installation. Kapsch will need one (1) week prior to commencement of Kapsch work in order to deliver

equipment and supplies for the Communications Building and Mainline Gantry. The Design-Builder shall prepare an area for the delivery of this equipment. Kapsch shall supply the size of the area based on the Design-Builder's design. Each Kapsch Team will need one (1) week after a Mainline Gantry site has been tested, adjusted, and/or modified to re-stage at another requested Mainline Gantry site.

For Kapsch to do this work, and meet the thirty (30) calendar day window, to install the cashless tolling equipment, wiring, Communications Building racks, and test all of the equipment, the following work shall be done prior to Kapsch beginning work at the site. The Design-Builder shall ensure that the following work is complete:

Road Surface

- Treadle Frame installed as per specifications and requirements
- Shoulders reconstructed as specified
- 100 ft. of concrete slabs (30 ft. after the treadle slab and 70 ft. before the treadle slab) installed at correct superelevations

Mainline Gantry

- Mainline Gantries, Communications Buildings, Trenching and Conduit Installation fully complete including, but not limited to Mainline Gantry walkways with railings in place, all associated arms and brackets, nVDC access, retractable equipment mechanisms, fiber connecting to the Communications Building, electrical power to the Communications Building, lightning protection, back-up generators, etc.
- Cable lengths shall not exceed 250' which includes service loops from the furthest rack in Communications Building to piece of equipment.
- All equipment shall have overhead access except the antenna.
- Further details are found later in this section and in the confidential information that was provided the Design-Builders that required the nondisclosure agreement to access.

Communications Building

- Purpose is to house specialized computer equipment provided by Kapsch to operate the AET toll system and the Authority's network equipment
- Kapsch to provide computer cabinets
- Design-Builder to provide both vertical and horizontal cable trays within the Communications Building.
- Power outlets to be provided on the ceiling and walls
- Fiber access to the Thruway network rack provided by the Design-Builder shall be provided

Pre-Installation Requirements

Kapsch will install their system when the following conditions have been met:

- ☑ Mainline Gantry Installed with brackets, conduit, pull boxes and accessible stairs in place
- ☑ Concrete slabs with treadle frame and dummy treadle installed
- ☑ Shoulder pavement in final condition with shoulder pull box installed
- ☑ Conduit from gantry, treadles, shoulder pull box to Communication Building installed

- Communications building operational with permanent power, secondary generator power (backup) and terminated fiber connectivity, HVAC in place and operational.
- Communications building vehicular access and parking area installed

Kapsch shall test each individual site separately. Prior to the AETC "go live" date, Authority shall test the entire system after all individual locations have already been tested. The test of the entire system requires 30 calendar days. The Design-Builder shall provide two weeks' notice for Authority to commence the testing of the entire system.

21.6 RESPONSIBILITY MATRIX

Item	Design-Builder	Kapsch	Thruway
Install gantry	X		
Install Bracketry	X		
Install Stairway	X		
Gantry-Comm-Bldg Conduit	X		
Communication Bldg	X		
Power	X		
Generator	X		
Fiber Communications	X		
Fiber Connectivity to Network Rack			X
Treadle Frame Installation	X		
HVAC	X		
Lighting Protection	X		
Overhead Access to Equipment			
Install overhead equipment		X	
Cabling		X	
Kapsch Equipment Racks		X	
Network Equipment	X		
Network Rack	X		
MPT	X	X	

21.7 KAPSCH SYSTEM INFORMATION AND REQUIREMENTS

21.7.1 Design-Builder Requirements to Support Kapsch System

21.7.1.1 Overview

The Communications Building is used to house computers, switches, power supplies and other electronics in racks.

The lanes have the peripheral devices that are used to detect and process vehicles. Lasers, treadles, cameras, and nVDC sensors are examples of lane peripherals.

21.7.2 Communications Building Requirements

All travel lanes and full shoulders (>=6') are fully instrumented. Un-instrumented lanes < 6' wide do not have lane hardware, in such cases the shoulders are not included in the lane count for the toll zone. Three travel lanes and two full shoulders (>=6') in both directions which share a Communication Building will have a maximum of eight racks (See Figure 1) not including the rack provided by the Design-Builder for the network communications.
Communications Building Requirements:

- The Design-Builder shall include a workbench, minimum size of 4 feet x 2 feet, that can support 200 pounds. Electrical outlets shall be installed in close proximity to the workbench.
- Kapsch to install APC NetShelter SX 42U Server Rack Enclosures. 23.62"w, 42.13"d and 78.39"H
- All racks are installed side by side including the Network Rack
- Design-Builder shall provide clearance of 36" on all 4 sides of each group of racks
- Design-Builder shall provide air conditioned, heated and humidity controlled environment
- Design-Builder shall provide wiring racks from gantry conduit entrance, vertically up the wall and horizontally across the top center of all frames (See Figure 1 for reference)
- An earth ground termination is required within 10' of the nearest rack (See Figure 1 for reference)
- Design-Builder shall install the Network Rack as listed in Figure 1. Note that racks can be moved up or down as per the minimums listed in Figure 1. In addition the doorway can be switched.
- Design-Builder to provide a 1" PVC conduit through the exterior of the building and a 4 in. x 4 in. x 2 in. PVC Junction Box (Mfg: Carlon Model # E989NNJ-CAR) mounted on the exterior. Kapsch will be responsible for running cabling for a GPS antenna to synchronize time.

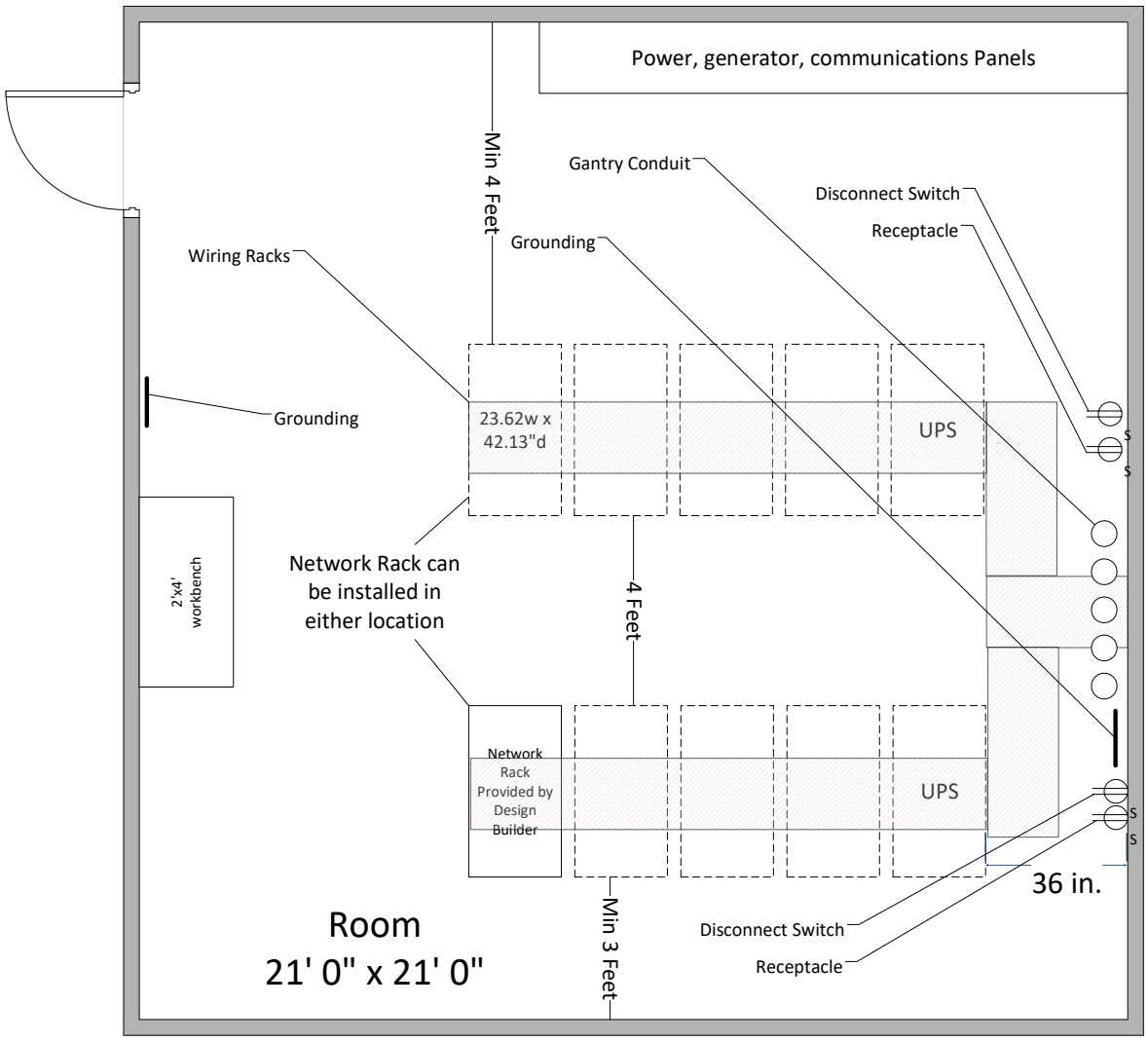


Figure 1

21.7.3 Power

The Kapsch will provide an online UPS system which will power its system

The Design-Builder will provide an electrical panel with a 70A breaker which is downstream of the transfer switch, such that the system has to be fed by grid power with backup generator power in case of power interruptions. The UPS powers the system when the grid power suffers an outage. The Design-builder will provide a two separate disconnect switches and a receptacles in close proximity (within 3 feet) from Kapsch provided UPS (See Figure 1). The Design-Builder is required to provide the pigtail and plug to connect the Kapsch system to the above mentioned receptacle.

The Design-Builder shall provide separate conduits connecting the gantry to Communications Building for power and communication.

21.8 LANE REQUIREMENTS

21.8.1 General

The Kapsch system is designed as a lane based transaction processor. Each lane is handled individually, it has sensors and cameras that are installed specifically for the lane. There is one exception, which is the nVDC subsystem, which is designed to cover a toll zone (typically one subsystem for north and another for south).

- Equipment heights specified in this section are relative to the pavement in the lane over which the equipment is mounted.
- Concrete slabs containing the treadle, trench drain, and loops shall be 22 inch reinforced Portland cement concrete (PCC) utilizing fiber reinforced polymer (FRP) reinforcing bars.
- Conduit shall not impede access to equipment for installation or maintenance purposes.
- The Gantry shall be grounded.
- A pull-box shall be installed off the shoulder to facilitate installation of the fiber cabling.

The following section contains a summary of each device, followed by a detailed section showing the mounting requirements.

Treadle

Figure 2

The Design-Builder shall install the Treadle frame in each 12 foot travel lane per specification Installation of Treadle Frame.
Treadle frames shall be centered in each 12 foot lane.
A “dummy treadle” supplied by the Design-builder shall be installed into the treadle to allow traffic to travel over the treadle frame and remains until Kapsch installs their treadle during their installation period.

Laser

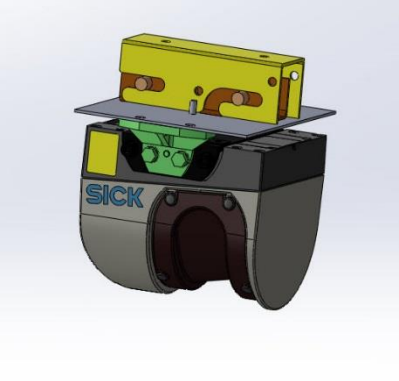


Figure 3

The laser is mounted on the gantry and is used primarily for vehicle height and separation. Figure 3 shows all of the assorted adapters that are provided with the laser.

Note: the adapters do not provide any form of adjustment.

See drawing 238908-007 in Part 7 - Engineering Data, Section 21 for detailed mounting requirements.

nVDC

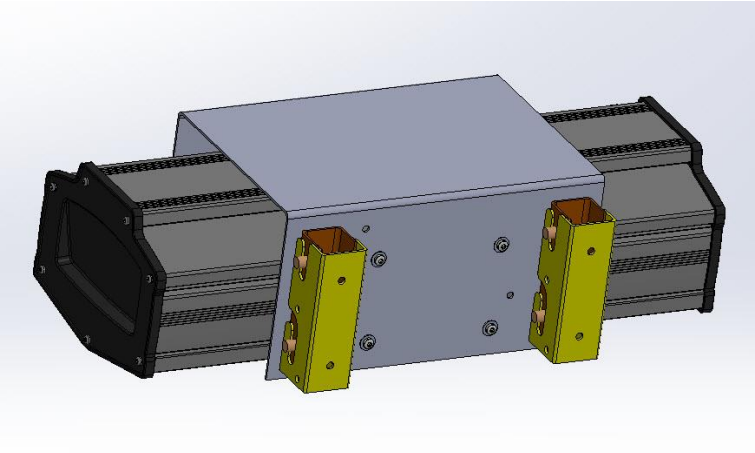


Figure 4

The nVDC sensor shown in Figure 4, is a stereoscopic camera subsystem that is used to track vehicles as the travel through the toll zone

Note: the adapters in figure 4 do not provide any form of adjustment.

See drawing 238908-008 in Part 7 - Engineering Data, Section 21 for detailed mounting requirements.

nVDC Illuminator

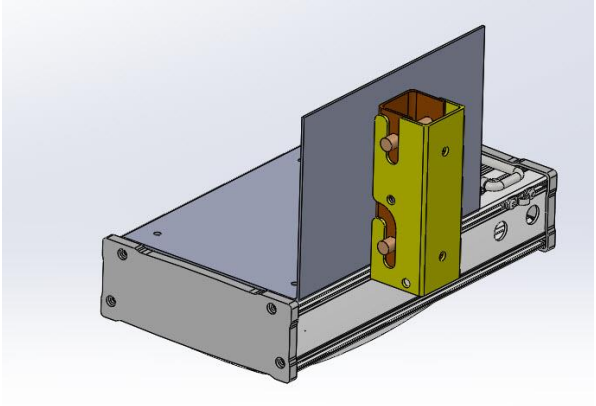


Figure 5

The nVDC illuminator shown in Figure 5, provides light for the above mentioned sensor.

See drawing 238908-009 in Part 7 - Engineering Data, Section 21 for detailed mounting requirements.

Cameras

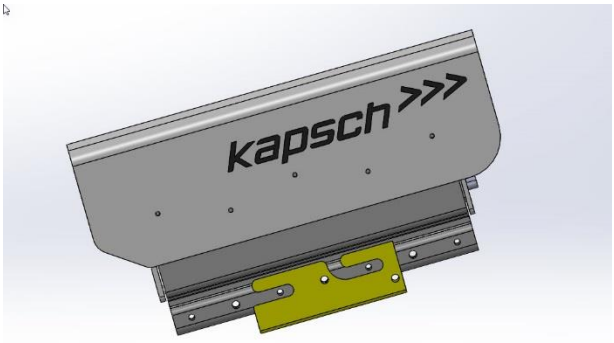


Figure 6

Kapsch will utilize 3 different types of cameras in the toll zone.

- ALPR camera for capturing license plates
- DVAS camera for capturing video
- OV camera for capturing an overview picture for each vehicle.

The OV and ALPR cameras utilize external illuminators (shown in Figure 6) See drawing 238908-010 in Part 7 - Engineering Data, Section 21 for Front Camera detailed installation requirements.

See drawing 238908-011 in Part 7 - Engineering Data, Section 21 for Front Camera detailed installation requirements. Note – the installation requirements for Rear ALPR, Overview, DVAS, ALPR Illuminators and Overview Illuminators have identical elevation view requirements.

Antennas

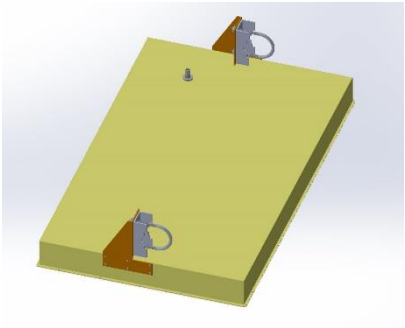


Figure 7

Figure 7 depicts the IAG-3 antenna that is mounted upstream from the treadle.

See drawing 238908-012 in Part 7 - Engineering Data, Section 21 for detailed antenna mounting requirements.

21.9 LANE PLAN VIEW

21.9.1 Typical toll zone

The drawing below is indicative of the typical toll zone, in this example there are 3 lanes with one shoulder instrumented.

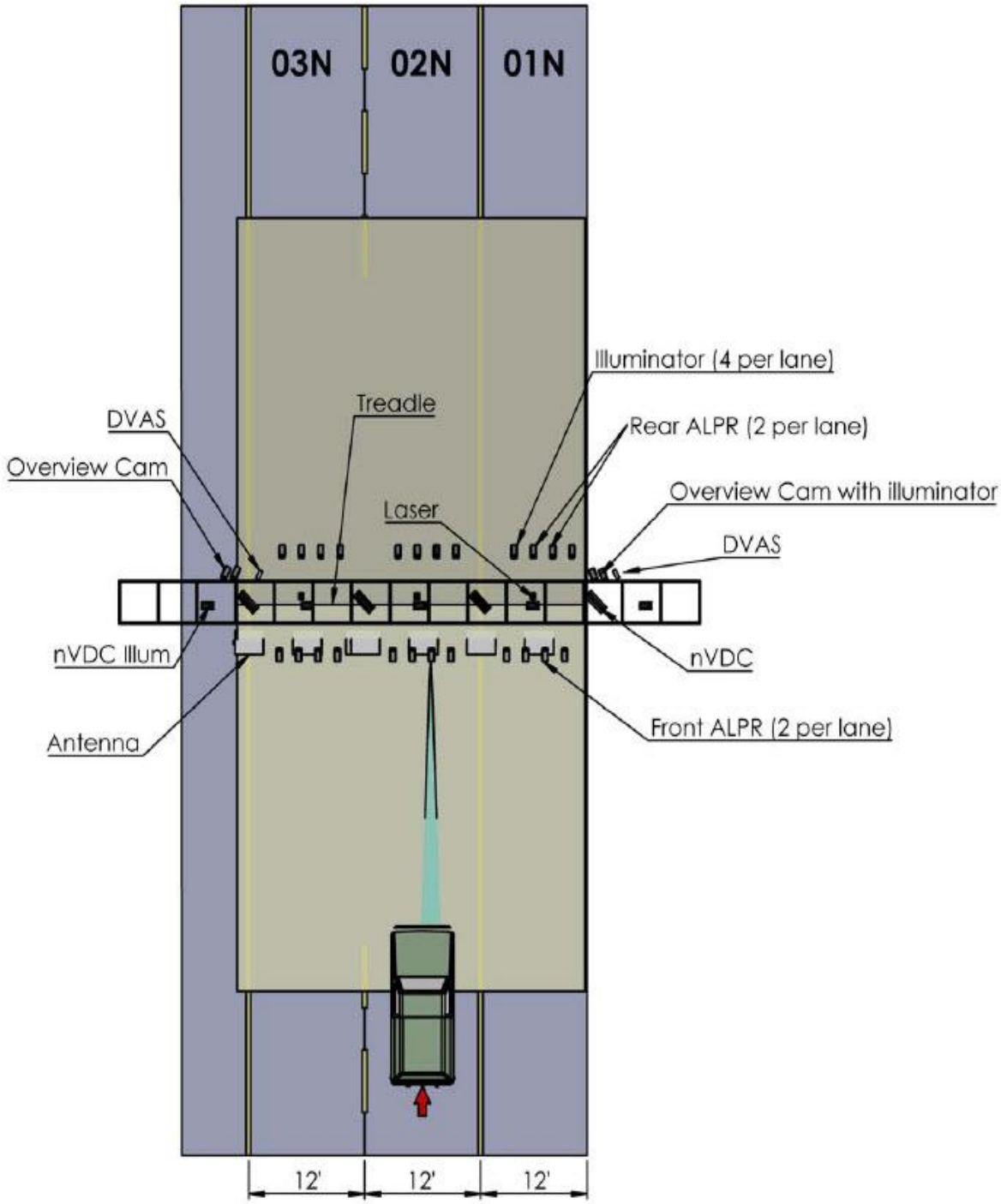
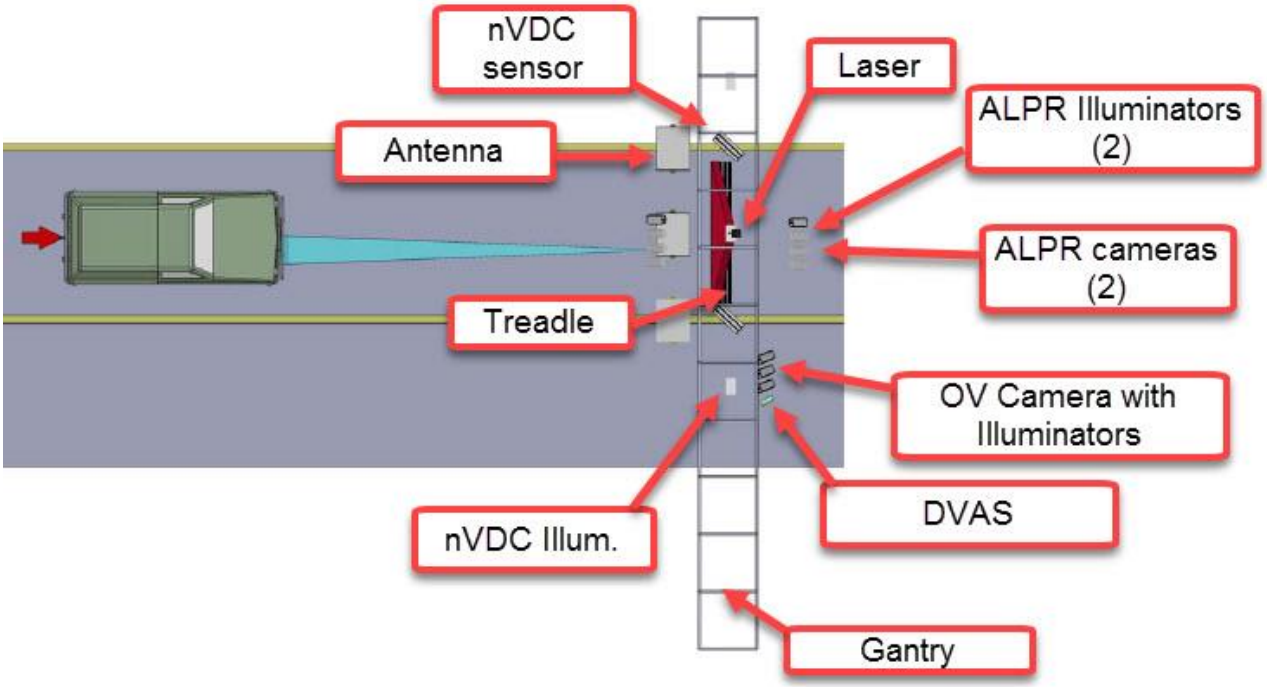


Figure 8



Note:
In the plan view in Figure 8 there is a required established relationship between all of the components. Most importantly, the treadle and the nVDC sensors are mounted on a center line. All measurements are made from this center line.

Kapsch Gantry Devices:

1. nVDC sensors are mounted above the lane dividers (N lanes have N+1 sensors)
2. nVDC Illuminators are centered between the nVDC sensors, and 6' outside instrumented shoulders or instrumented travel lane where the shoulder in un-instrumented (N sensors have N+1 illuminators)
3. ALPR cameras and illuminators are mounted over the lane center, on both the upstream and downstream sides of the gantry (4 cameras & 4 illuminators per lane)
4. OV & DVAS cameras are mounted over the shoulder on the downstream side only. There are 2 illuminators for each OV camera (DVAS has no illuminator). These cameras are mounted 6 feet outside of the instrumented lanes to capture the side view of exiting traffic.
5. Lasers are mounted in the lane center, 18" behind the nVDC illuminator. 1 laser per lane.
6. Antennas are mounted in the lane center and on the lane dividers.

Kapsch Cabling Information:

1. Each device that is used in the lane, is connected to the Communications Building with two cables, one power and one network.
2. Antennas are connected with a single and/or dual coax cables, based on tag reader configuration.
3. The cables are routed from the rack, to the ceiling across a wiring rack, and down the exterior wall to the conduit.
4. The conduit connects the gantry and the Communications Building.

5. If the cables are routed inside the gantry structure, hand holes and access holes are to be provided by the Design-Builder along the gantry to allow the cables to exit the tubes and connect to the lane hardware.
6. Typically the furthest device is the Overview camera on the far side of the highway (see Figure 8).
7. The maximum cable length is 250 feet, measured from the farthest rack to the device, with a 3' service loop on the device end.
8. In general, conduits should take the shortest path, using large sweeps where necessary.

Tolerances

The lane hardware is designed to function at the specified heights, with the proper left right positioning in the lane. See the detailed drawings in Part 7 - Engineering Data, Section 21.

SECTION 22 OPEN ROAD TOLLING (ORT) GANTRIES (ORT SITES – 34 LOCATIONS)

22.1 SCOPE

The Design-Builder shall construct 34 toll collection points located on the ramps at certain Thruway exits. These 34 sites will be referred to as ORT Gantry sites, and their specific requirements are documented below.

The Design-Builder shall design and construct Cashless Tolling Gantries and modify Toll Plazas at the following locations: B1 (Post Road), B2 (Taconic), 18 (New Paltz), 19 (Kingston), 20E (Saugerties E.), 20W (Saugerties W.), 21 (Catskill), 21B (Coxsackie), 22 (Selkirk), 26 (Rotterdam), 27 (Amsterdam), 28 (Fultonville), 29 (Canajoharie), 29A (Little Falls), 30 (Herkimer), 31 (Utica), 32 (Westmoreland), 33 (Verona), 34 (Canastota), 37 (Electronics Parkway), 38 (Liverpool), 40 (Weedsport), 41 (Waterloo), 42 (Geneva), 43 (Manchester), 48 (Batavia), 48A (Pembroke), 49 (Depew), 56 (Blasdell), 57 (Hamburg), 57A (Eden-Angola), 58 (Silvercreek), 59 (Dunkirk), and 60 (Westfield).

The Design-Builder shall be responsible for modifying the footprint from exit ramps to other (local roads or state roads) connections and from entry ramps (local roads or state roads) connecting to the Thruway System potential positive separation of opposing traffic flow, pavement work, Toll Plaza removal, mini Gantry construction to support the Thruway ORT Tolling System, potential modification or reduction of conflicting traffic moves such as “Park and Ride” Lots, tandem Lots, Thruway Maintenance vehicles ingress and egress to Maintenance Yards, and State Police ingress and egress to State Police facilities. Project also includes signing, placement of barrier/guiderail to delineate active lanes, striping, drainage, etc.

Toll Plazas shall be demolished at the following locations: B1 (Post Road), B2 (Taconic), 18 (New Paltz), 19 (Kingston), 20E (Saugerties E.), 20W (Saugerties W.), 21 (Catskill), 21B (Coxsackie), 22 (Selkirk), 26 (Rotterdam), 27 (Amsterdam), 28 (Fultonville), 29 (Canajoharie), 29A (Little Falls), 30 (Herkimer), 31 (Utica), 32 (Westmoreland), 33 (Verona), 34 (Canastota), 37 (Electronics Parkway), 38 (Liverpool), 40 (Weedsport), 41 (Waterloo), 42 (Geneva), 43 (Manchester), 48 (Batavia), 48A (Pembroke), 49 (Depew), 56 (Blasdell), 57 (Hamburg), 57A (Eden-Angola), 58 (Silvercreek), 59 (Dunkirk), and 60 (Westfield).

The Design-Builder shall not place any Mainline Gantries beyond the specified limits defined above. ORT Gantries shall not span over the acceleration or deceleration ramps.

22.2 STANDARDS

The Design-Builder shall perform the Work in accordance with the Contract Documents and the Applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

22.3 GENERAL REQUIREMENTS

The Open Road Tolling Gantries shall be located to ensure that the Authority can capture where vehicles enter the Thruway system at one of the exits or depart the Thruway system at one of the exits. This is imperative and required so that the Authority can accurately bill motorists by providing the entry and exit locations of each vehicle. It also ensures proper and accurate revenue collection.

All Open Road Tolling Mini-Gantry Components shall have a protective coating system such as galvanizing or metalizing to ensure long term durability and resistance to corrosion or degradation of the initial design strength. Painting is not an acceptable solution.

The span length of each Open Road Tolling Mini-Gantry shall be determined by the Design-Builder. The Mini-Gantries may span across traffic in both directions or they could be two separate Mini-Gantries each handling traffic in opposing directions. Regardless of span choices the vertical supports of the Open Road Tolling Mini-Gantry shall be protected via an appropriate barrier system in compliance with the design standards. Under no circumstance, even if the vertical supports are outside the clear zone, can they be unprotected.

Open Road Tolling Mini-Gantries shall not be located within 150 feet before overhead roadway signage. If within those locations, the Design-Builder shall be required to remove the overhead sign structures and replace with ground mounted signs per the MUTCD, whether dictated by the Authority or the Design-Builder's choice.

Provide supplemental or new generator backup with 100% generator redundancy for a minimum of 48 hours of continuous operation of ORT Cashless Toll Collection facilities. Diesel generators shall be utilized for this purpose in accordance with requirements described in Part 7 – Engineering Data, Section 12 - Generator Capacity for ORT.

22.3.1 Overview

Each ORT Gantry site will include both software and hardware to enable the Authority to collect tolls electronically.

Software to operate the toll collection system for ORT shall be provided by the Authority.

Hardware to operate the toll collection system for ORT shall be provided by the Design-Builder or the Authority as specified in the following pages. Hardware includes the following:

Overhead E-ZPass antennas, laser scanners, and cameras mounted on the top of the gantry.

Treadle frames and loops installed in concrete pavement.

Various computer servers, uninterruptable power supplies, and networking equipment to be installed in the ORT Communication Building.

Design-Builder shall provide and install all conduit, cabling, cabinets, and mounting apparatus for the toll collection system for ORT.

Design-Builder shall provide gantries to mount overhead equipment.

Design-Builder shall provide ORT Communication Building to install toll collection equipment for ORT.

Design-Builder shall ensure that on-site / construction radio frequency device(s) will not interfere with the Authority's toll collection system for ORT. The E-ZPass system uses equipment operating in the 915 Mhz band.

Equipment heights specified in this section are relative to the pavement in the lane over which the equipment is mounted.

A schematic of the ORT Gantry with various lane configurations is provided in the Part 7 – Engineering Data, Section 4.

22.3.2 ORT Toll Lane Requirements

Travel lanes shall be 12 feet wide.

Exit lanes shall be constructed of concrete, as described below. Entry lanes shall be constructed of full depth asphalt.

For sites where there are two or more travel lanes in one direction, right shoulders shall be a minimum of 6 feet wide. For sites with only one travel lane in a given direction, right shoulders shall be a minimum of 10 feet wide. Shoulders with a width greater than 6 feet shall be fully instrumented with toll equipment for ORT.

Concrete slabs containing the treadle, trench drain, and loops shall be 22 inch reinforced Portland cement concrete (PCC) utilizing fiber reinforced polymer (FRP) reinforcing bars so as to not interfere with the Authority's toll collection system for ORT.

In exit lanes, each loop must be contained in a single concrete slab.

If the treadle slab is constructed within pavement super elevation transitions, the maximum cross slope shall not exceed 3 degrees.

Treadle approach pavement shall be a minimum of 18-feet long of new, full depth concrete pavement.

Treadle departure pavement shall be a minimum of 18-feet long of new, full depth concrete pavement.

Cross-slope through the plaza shall not exceed 3% and shall be 1.5% minimum continuous through the shoulders.

22.3.3 Gantry Requirements

The Design-Builder shall provide an overhead structure functionally consistent with the ORT Gantry Schematic.

The Design-Builder shall procure and install equipment mounts as specified below. The ORT gantry shall support flexible placement of equipment mounts. All supports in the vicinity of the equipment shall not interfere with the placement or field of view of the equipment. Supports shall not be placed on the center lines or split lines of the lanes.

Conduit shall not impede access to equipment for installation or maintenance purposes.

The ORT Gantry shall be grounded.

22.3.4 Electromagnetic Loops

The Design-Builder shall procure and install all loops in all ORT Entry and Exit lanes.

The Design-Builder shall install loops on the shoulders in asphalt per specification 680.5860—25.

The Design-Builder shall install loops in 12 foot lanes in concrete per specification 680.5830—25.

The loop dimensions in shoulders with width < 12 feet shall be 4 feet by 4 feet.

The loop dimensions in 12 foot travel lanes shall be 6 feet x 6 feet.

Loops shall be centered.

The Design-Builder shall install pull boxes off the shoulder to facilitate loop wire installation.

The Design-Builder shall install an appropriately sized conduit from the pull box to the ORT Communication Building. The lead-in wire from the pull boxes to the ORT Communication Building is 14 gauge Belden Part #8720.

When installed in asphalt pavement, loops shall be installed 5 inches deep. When installed in concrete pavement, loops shall be fastened to the top of the reinforcing mat.

22.3.5 Treadle

The Design-Builder shall procure and install all Treadle Frames and fiber optic strips in all 12 foot exit lanes. See NYSTA Standard sheets TR-1 and TR-2 for 10 foot treadle frame details.

The Design-Builder shall install the Treadle frame and fiber optic strips in each 12 foot exit travel lane per specification Installation of Treadle Frame and Insert. The Design-Builder shall install the MSI Fiber strips, part # SL 3 EZ TREADLE3042-3-1-XX, where XX is one of 50, 75, or 100 and denotes in the length in meters. These strips shall be installed in each treadle frame per the specification.

Treadle frames shall be centered in each 12 foot lane.

A “dummy treadle” must be installed into the treadle frame when the MSI Fiber strips are not yet installed to allow traffic to travel over the treadle frame.

In the pavement area where the treadle frames are installed, there shall be no transverse or longitudinal joints in the travel lane.

If there is a change in cross slope in the pavement, the change in cross slope shall be located between treadle frames.

For instrumented shoulders, the Design-Builder shall cut two individual fiber strips, part # SL PUR 215-1-XXX-PE (XXX = length in meters), into each shoulder. Each strip shall be installed in the same location as the 1st and 3rd strip in the adjacent 12 foot exit travel lane.

A pullbox shall be installed off the shoulder to facilitate installation of the fiber cabling.

The Design-Builder shall ensure that any extra fiber cable will be coiled inside the ORT Communication Building.

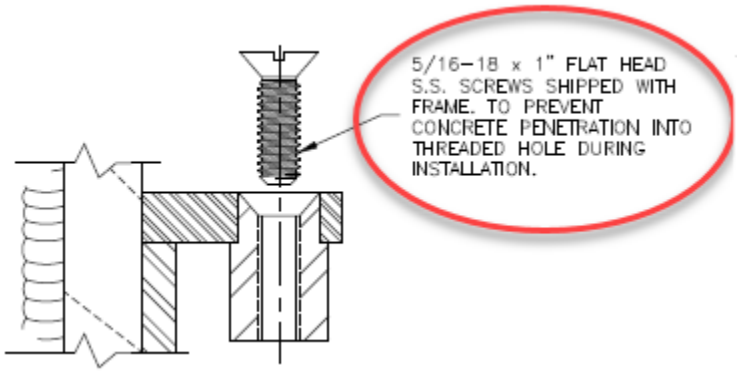
There shall be no splicing of fiber cables. They shall be ordered sufficiently long to reach from the lane to the ORT Communication Building, plus a minimum additional 30 foot length inside the building.

The Design-Builder shall install an appropriately sized individual conduit from the pullbox to the ORT Communication Building.

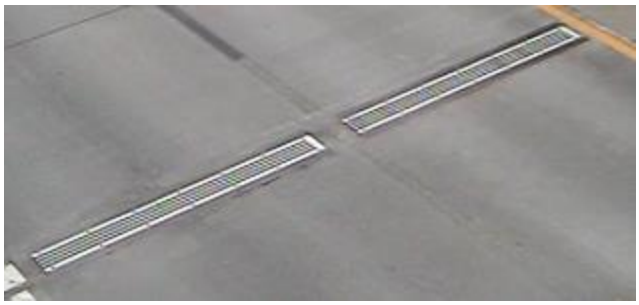
The Design-Builder shall ensure that the following steps are observed during installation of the fiber treadle:

- Use 5/16-18 by 1.5" full thread stainless bolts to secure the treadle frames (McMaster P/N: 93190A587)
- Install a single Belleville washer, with the crown side up on each bolt. (McMaster P/N: 91235A115)
- Use Loc-tite #214 thread locker on the side of the mounting hole, not the bolts.
- Do not substitute any other mounting bolts
- Bolts are torqued to 138 inch pounds, starting with the bolts closest to the leads and working outward to the opposite end.
- Bolt holes are filled with 100% silicone sealant after all of the bolts have been torqued
- Fibers are labelled 1, 2 and 3. Strip 1 is the strip that is contacted first when vehicles are travelling in the forward direction.

The Design-Builder shall ensure that flat head screws shipped with the treadle frame remain installed during treadle frame installation to prevent accidental plugging with concrete, as shown below:



The picture below depicts a typical fiber treadle installation in treadle frames embedded in concrete pavement:



22.3.6 E-ZPass Antennas

Kapsch IAG-3 antennas shall be used in the ORT lanes. Dimensions are: 34.5 x 21.25 x 3.13". Weight: 20.5 lbs. Kapsch part # 802344-203, which include both an IAG-3 antenna and an RF-module, shall be procured by the Authority. The Design-Builder shall install the antenna.

The Design-Builder shall purchase and install supports on the structure above the ORT lanes, as well as conduit and pull cables for installation of the E-ZPass Antennas. All conduits shall contain only sweeps, no condulet fittings shall be used, no Tees or LBs, etc. Connections between straight runs of conduit may be made using flexible metallic conduit. Such lengths of flexible conduit shall be no longer than five (5) feet or 15 times the outside diameter of the conduit, whichever is smaller.

The antenna shall be mounted on a 2-inch round galvanized tube using stainless steel pipe clamps that are provided in the antenna lane kit.

The Design Builder shall install two 4” conduits from the ORT Communication Buildings to the ORT gantry to service antennas used in the ORT lanes. Conduit shall service antennas from the center of the center lane to the right shoulder, the other conduit shall service the remaining lanes.

The mounting supports shall allow for the adjustment of the angle of the antenna. The antennas shall be installed at a 10 degree angle. For the rightmost ORT shoulder lane, the mounting support must allow for adjusting the location of the antenna laterally +/- 1 foot relative to the center of the shoulder lane.

The E-ZPass antenna mounting shall support the antenna at a height of 17.5 feet from the pavement to the lowest point of the antenna.

The E-ZPass antenna shall be mounted as depicted ORT Gantry Schematic.

The antenna cable shall be installed by the Design-Builder, and shall be one of the following:

- *Times* LMR-400-DB: The maximum run length of this cable is 150 ft. from the antenna to the Kapsch reader in the ORT Communication Building, with part #EZ-400-NMH-X “N” male connector and part # WSB-400 outdoor weatherproofing kit
- *Times* LMR-600- D: The maximum run length of this cable is 250 ft. from the antenna to the Kapsch reader in the ORT Communication Building, with part # EZ-600-NMH-X “N” male connector and part # WEB-600 outdoor weatherproofing kit
- *Andrews LDF4-50A:* The maximum run length of this cable is 250 ft. from the antennas to the Kapsch reader in the ORT Communications Building, with appropriate weather-proof connectors.

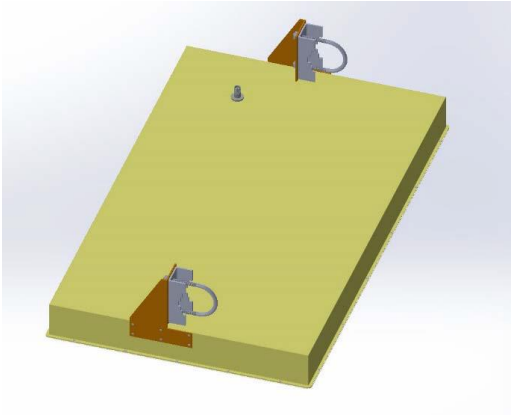
The Design-Builder shall hang the antenna and pull the antenna cable. Authority personnel will terminate the cable and set the antenna angle.

The Design-Builder shall include a six foot service loop at each antenna end.

The Design-Builder shall procure a Lightning Protector Part # L-Com AL-NFNFB-9 for each antenna cable, and provide them to Authority personnel for installation in the ORT Communication Building.

If E-ZPass antennas at the ORT plaza are located within 600 feet of E-ZPass antennas at an existing Authority toll plaza, the Design-Builder shall install a synchronization cable between the ORT Communication Building and the existing Authority toll plaza reader. Cabling shall be Belden 9730 or 89730 cable or approved equivalent. The Design-Builder will route the cable in an appropriately sized conduit.

The picture below depicts a typical E-ZPass antenna with mounting brackets:



22.3.7 Laser Scanner

The Design-Builder shall procure and install the laser scanner, mounting brackets, and all required cabling. Dimensions for the laser scanner are 17.9 x 9.6 x 6.1 inches. Weight is 20.5 lbs.

The Design-Builder shall install supports to mount the laser scanner at a location as depicted in NYSTA Standard Specification CD-1.

The Laser Scanners are able to withstand a maximum vibration of 5 to 30Hz, 0.5G for 3 minutes in each axis. The Design-Builder shall ensure that the vibration is within these vibration specifications at the laser mounting location.

There shall be no structural support, cables, or other obstructions that interfere with the Laser Scanner's beam pattern.

The laser scanner shall be mounted so that the lower lens shroud shall be 3" to 9" downstream of the steel treadle frame flange and at a height of 20' from the pavement.

The laser scanners shall be mounted at the center of the toll lanes.

The laser scanner shall be an OSI LaserScan, Model AS615-UDK Hybrid. Design-Builder shall use the Mounting Kit # 19471022-9 from OSI LaserScan which includes both a mounting plate and mounting hardware. The mounting plate shall be fastened to a 1 ¼" pipe.

The Design-Builder shall provide power cable # 9291011-9-XXX (where XXX = 50, 100, 125, 150, or 200 feet) manufactured by OSI LaserScan. Refer to the cut sheet for details.

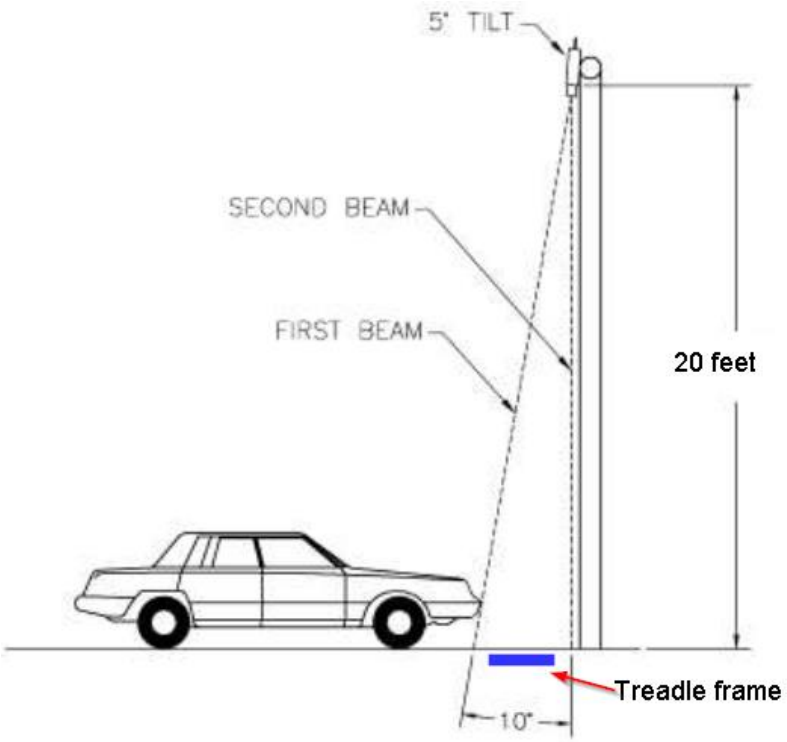
The Design-Builder shall provide two communications cables for each laser scanner, which may be contained within the same conduit:

- 9291010-29-XXX (where XXX = 50, 100, 125, 150, or 200 feet) manufactured by OSI LaserScan. Refer to the cut sheet for details.
- Cat5e cable terminated on the gantry side using Amphenol Connector PT06P-12-10S with the following pins wired:

ETH RX-	K(ORG)	CAT6 Twisted Pair	ETH TX-	These connections must be made using a CAT5e or CAT6 cable. Color Code represents TIA/EIA 568A standards
ETH RX+	H(WHT/ORG)		ETH TX+	
ETH TX-	J(GRN)	CAT6 Twisted Pair	ETH RX-	
ETH TX+	E(WHT/GRN)		ETH RX+	

The Design-Builder shall provide an RS422 Surge Supressor for each laser scanner. OSI LaserScan part # 81000143-9.

The Design-Builder shall procure quantity 10 of OSI Beam Finder, part # 9301000-9. The Design-Builder shall use a Beam Finders to properly align the laser scanner beams during laser scanner installation. For a properly mounted and aimed laser scanner, the two beams emanating from the laser scanner should be detected on either side of the treadle frame, as depicted below:



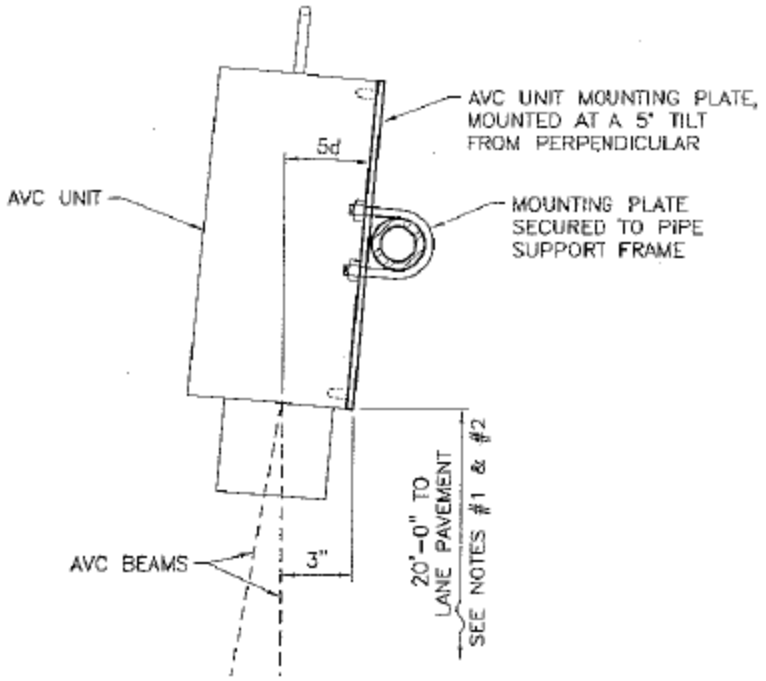
The Design-Builder shall also use these beam finders in entry lanes and all instrumented shoulders to determine the appropriate locations for pavement stripes to enhance reflectivity, as described in the specification entitled Road Augmentation for Reflectivity.

Upon completion of the installation of laser scanners at all ORT sites, the Design-Builder shall provide the Beam Finders to the Authority.

The diagram below depicts how the laser scanner is wired once mounted on the gantry:

1 = Power connector using OSI LaserScan cable # 9291011-9-xxx
2 = Communication connector using OSI LaserScan cable # 9291010-29-XXX
3 = Communication connector using CAT5E cable and Amphenol Connector PT06P-12-10S

The diagram below depicts how a typical laser scanner is mounted:



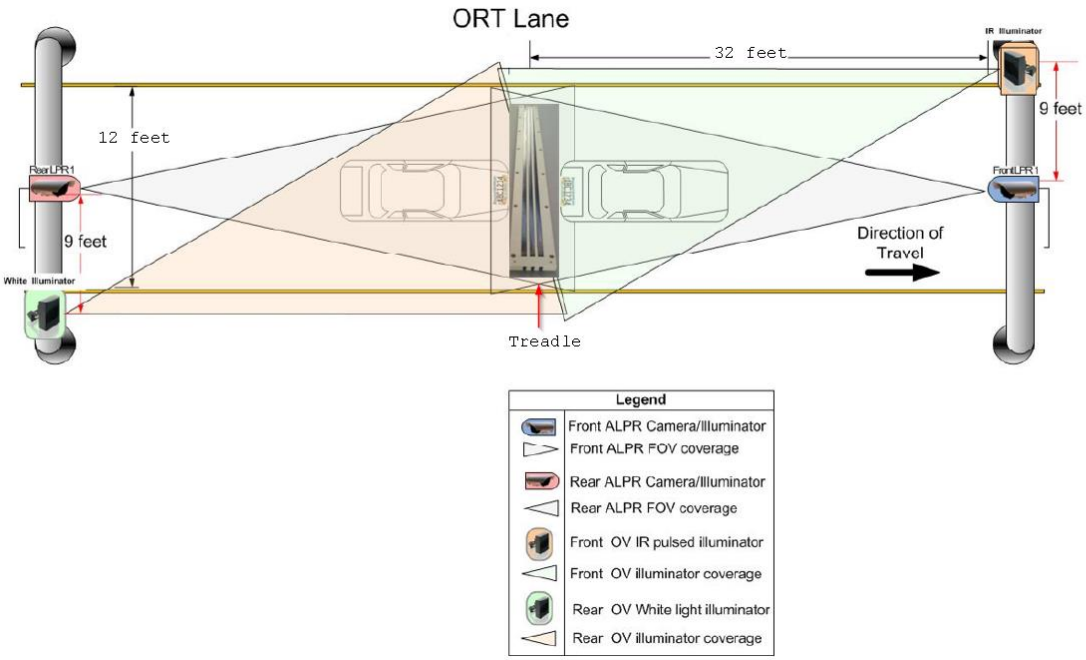
22.3.8 Cameras and Camera Illuminators

The Design-Builder shall install supports to mount the camera at a location as depicted in the specification entitled ORT Ramp Gantry Schematic. The Design-Builder shall install the mounting brackets, conduit, junction boxes, and cabling. Authority staff will install the cameras and illuminators.

There shall be no structural support, cables, or other obstructions that interfere with the camera or illuminator field of view.

The cameras shall be mounted in the center of each toll lane at a height of 17.5 feet above the pavement.

Each camera has an associated camera illuminator. Each camera illuminator shall also be mounted at a height of 17.5 feet and 9 feet away from its associated camera. A typical installation is depicted below:



The camera shall be Inex part # IZA-800ORT-L-TWY. Dimensions for the camera are 17.7 x 6.7 x 4.6 inches. Weight is 5 lbs.

The camera shall be mounted using Inex part # MNT-GL-UCAIZ. There shall be one front and one rear camera in each lane.

The rear camera illuminator shall be Inex part # IZ-SW2-20 (white light illuminator). The rear camera illuminator shall be mounted using Inex part # MNT-GL-UIL.

The front camera illuminator shall be Inex part # IZ-S2-20 (infrared light illuminator). The front camera illuminator shall be mounted using Inex part # MNT-GL-UIL.

The Design-Builder shall provide and install three appropriately sized conduits for power cables, communication cables, and possible future addition of a second front camera in each instrumented lane. Power cables and communication cables shall be routed through separate conduits. The Design Builder shall provide a hinged, stainless steel junction box for D.C. power and communications within 5 feet of each camera to support the “whip” cables from the camera/ illuminator to the junction box. The enclosure is to be NEMA 4x rated and have a minimum size of 12”H x 12”W x6”D. The enclosure must include a removable back panel and no conduit connectors shall impede the installation and removal of the back panel. The design builder shall install 4 weather tight connectors for ¼” diameter cables in the enclosure to support the whip cables. No penetrations are permitted through the top of the enclosure.

The Design-Builder shall provide:

- A separate power cable for each camera.
- A separate power cable for each illuminator.
- A separate communication cable for each camera.

Each cable will be terminated in the junction box.

The camera shall be a mounted at a 25.8 degree downlook angle.

The picture below depicts a typical camera and illuminator installation. Each camera illuminator is associated with the camera furthest away:

22.3.9 General Maximum Distances and Part Requirements for ORT Toll System Wiring and Conduit

Antenna cable – 150 feet (Times LMR-400-DB) or 250 feet (Times LMR-600-DB) cable

Cat5e cable – 328 feet - Belden Multi-Conductor - Category 5e DataTuff® Twisted Pair Cable, part #7918

Power cable – Belden Part # 5100UE, 2 Conductor, 14 Gauge

When routing the equipment cables into the ORT Communication Building, each cable shall have a minimum length of 30 feet that is contained within the ORT Communication Building. The cable end in the ORT Communication Building shall be unterminated.

Power cables and communication cables shall be routed through separate conduits.

For power and communication cables for the cameras, there shall be a 4 foot service loop going into the junction box.

Conduit in the ground or cast in concrete shall be schedule 40 PVC. Above-ground conduits shall be galvanized rigid steel. Before conduits exit encasements or the ground they shall be transitioned to galvanized rigid steel conduit.

22.3.10 ORT Communication Building

The Design-Builder shall provide an environmentally controlled 10-foot by 14-foot ORT Communication Building that maintains ORT toll equipment computers, uninterruptable power supplies, transfer switches, and network equipment to support the toll collection system for ORT. The quantity and types of equipment are specific to the number of instrumented toll lanes.

Due to limited space, transfer switches shall be installed in a Nema 4X cabinet outside the ORT Communication Building where applicable.

The ORT Communication Building ceiling height shall be 9 foot minimum.

The Design-Builder shall provide all computer racks, cabling, and conduits.

Provide a minimum of 2 parking spaces within 15 feet of the ORT Communications Building for light maintenance service vehicles.

Provide HVAC equipment sized and designed for proper conditioning and ventilation of electronic equipment with an estimated heat load of 18,000 BTUs per hour with a maximum power consumption of 7200 watts.

Anti-static resilient flooring.

Power: Normal convenience power standards

Lighting: General LED

Receptacles: Standard convenience outlets

Exterior Door Size: 36” x 84” minimum to be located on a 10 foot, not the 14 foot wall. Door must open out of the ORT Communication Building.

The Design-Builder shall procure and install two of the following equipment racks (or approved equivalent) in the ORT Communication Building. The racks shall be installed side-by-side, and there shall be 3 feet of space from the ORT Communication Building walls to the front and rear of the cabinets. Access is required to the front and rear of all racks. The racks cannot be arranged back to back.

- Part # AR2507 - NetShelter SV 48U 600mm Wide x 1200mm Deep Enclosure with Sides Black

The ORT Communication Building shall provide a mechanism to ground all installed components and equipment racks.

The ORT Communication Building shall include cable ladders for running cables, both vertically from the conduit, and horizontally to the top of the racks.

The ORT Communication Building shall include a workbench, minimum size of 4 feet x 2 feet, that can support 200 pounds. Electrical outlets shall be installed in close proximity to the workbench.

22.3.11 ORT Communication Building Components

The Design-Builder shall procure ORT system components for installation in the ORT Communication Building. The installation will be performed by Authority personnel. See the section entitled Component List and Responsibility Matrix for details.

22.3.12 Items with Long Manufacturing Lead Times

Orders will be placed for the following items upon Design-Builder receiving Notice to Proceed (NTP) from the Authority.

1. Inex camera part # IZA-800ORT-L-TWY
2. OSI LaserScan part # AS615-UDK
3. MSI Fiber strips, part # SL 3 EZ TREADLE3042-3-1-XX, where XX is one of 50, 75, or 100 and denotes in the length in meters.
4. MSI Individual Fiber strips, part # SL PUR 215-1-125-PE

Upon receipt of the cameras, laser scanners, and E-ZPass Readers from the manufacturers, Design-Builder will deliver these components to the Authority.

22.3.13 Installation and Inspection Schedule

Design-Builder shall include within its schedule sufficient time for Authority personnel to install, connect, and test the toll collection system for ORT before it becomes operational.

The Authority will have one installation team for each Division. Each installation team requires 14 calendar days, not counting major Holiday weekends, to complete an installation and can only work on one installation at a time. Installation teams require two workdays, not counting weekends, prior to moving to the next ORT Gantry location.

The Design-Builder must take the Authority's installation schedule into consideration prior to announcing that all work is complete and ready for the final 30-day test before go-live. A Division with twelve ORT Ramp Gantry locations will require, at a minimum, 192 calendar days for completion. The number of ORT Gantry Locations by Division are:

- New York Division: 1
- Albany Division: 12
- Syracuse Division: 12
- Buffalo Division: 9

The Design-Builder shall notify the Authority 30 calendar days prior to the expected completion of the ORT Gantry so that the Authority can schedule resources for installation.

Design-Builder shall provide all lane closures for Authority personnel to complete their work.

Authority staff / Authority Quality Assurance Firm will be performing inspection of all components installed by the Contractor at the ORT sites. The Authority can support inspection at a maximum of four ORT gantry sites per division simultaneously. The Design-Builder shall provide any lane closure and equipment required for Authority personnel to complete this inspection.

To facilitate system testing, the Design-Builder at a minimum shall construct the first ORT Gantry site at Interchange 22 – Selkirk, NY by the end of 2019. The Authority and Authority's Quality Assurance Firm will inspect this site frequently during construction to insure that the first installed ORT Gantry location meets the requirements for quality workmanship, RFP intent, and design standards, before additional ORT Gantry sites are installed throughout the Thruway.

For the Authority to do this work and meet the fourteen (14) calendar day window to install the tolling equipment for ORT, and test all of the equipment, ALL work described in this section shall be completed prior to the Authority beginning work at the ORT site.

22.3.14 Component List and Responsibility Matrix

This chart provides the parts and quantities required per lane and per ORT Gantry site. DB denotes the Design-Builder, and TA denotes the Thruway Authority, and these abbreviations specify who has installation responsibility for a particular component.

The SUB column indicates whether or not the Design-Builder is allowed to propose an alternate component approved by the Authority that is equal to or better than the specified component.

Mfg part #	SUB	Description	Source	Quantity Required	Installation Responsibility
802260-101	N	Kapsch MPR 2.3 Redundant Reader	Provided by Authority	2 Per ORT Gantry site	TA
802344-203	N	MPR 2.3 Lane Kit	Provided by Authority	- 1 per toll lane - 1 per instrumented shoulder - 1 per skip line between instrumented lanes	DB (antenna and antenna mount), TA (RF module)
LMR-400-DB, EZ-400-NMH-X , WSB-400 OR LMR-600-DB, EZ-600-NMH-X , WSB-600 OR Andrews LDF4-50A	Y	Antenna Cable, Connector, and Outdoor Weatherproofing kit	TIMES MICROWAVE SYSTEMS or Commscope	1 per antenna, cable length to be determined by Design-Builder	DB
AL-NFNFB-9	Y	Lightning Protector	L-Com, Inc.	1 per antenna	TA

Mfg part #	SUB	Description	Source	Quantity Required	Installation Responsibility
CT-FAN3-QTRK-B	Y	Cable Tronix cabinet cooling fan	cabletronix.com	2 per ORT Gantry site	TA
ZADR1620PROXR_WEB-I	Y	Web Relay Board 16-Channel 20-Amp ProXR	relaypros.com	2 per ORT Gantry site	TA
iBoot-PDU8-2N20	Y	Remote Power Switch, 8 outlets, 20 Amps	dataprobe.com	2 per ORT Gantry site	TA
iBoot-PDU8-N20	Y	Remote Power Switch, 8 Outlets, 20 Amps	dataprobe.com	1 per ORT Gantry site	TA
BASE-WIRED	Y	Base Unit (SensorGateway)	serverscheck.com	1 per ORT Gantry Site	TA
BASE-PWR	Y	Power Adapter for SensorGateway	serverscheck.com	1 per ORT Gantry Site	TA
ADDON-CELLALERT	Y	Cellular Alerting Add-On	serverscheck.com	1 per ORT Gantry Site	TA
PWR-FAIL-AC	Y	AC Power Failure Sensor Probe (110v-240v)	serverscheck.com	1 per ORT Gantry Site	TA
GXT4-3000RT120	N	LIEBERT UPS STATION W/BATTERY RACK/TOWER	Anixter Inc.	3 per ORT Gantry site	TA

Mfg part #	SUB	Description	Source	Quantity Required	Installation Responsibility
GXT4-72VBATT	N	BATTERY PACK FOR LIEBERT UPS STATION	Anixter Inc.	3 per ORT Gantry Site	TA
MP2-130P	N	Liebert 2U MicroPod Maintenance Bypass for Liebert PSI and Liebert GXT 3000VA, 120V UPS	Anixter	2 per ORT Gantry Site	TA
MP2-130E	N	Liebert 2U MicroPod Maintenance Bypass for Liebert PSI and Liebert GXT 3000VA, 120V UPS	Anixter	1 per ORT Gantry site	TA
ER1-17N8-IP	Y	w/ 8-Port KVM; 2-User (1 Active) [1 x Local, 1 x IP]; Combo (PS/2 or USB); VGA	eclipserackmount.com	1 per ORT Gantry Site	TA
PowerEdge R330	Y	Toll System Server. Server must be certified to run the Ubuntu Server operating system (see https://certification.ubuntu.com/server)	Dell, Inc.	6 per ORT Gantry Site	TA

Mfg part #	SUB	Description	Source	Quantity Required	Installation Responsibility
		and include components equal or better to those specified in the cut sheets for the PowerEdge R330. Server side MUST be 1U.			
HGLN-CAT6-HP	Y	Shielded CAT6 Hi-Power Lightning Surge Protector	L-Com, Inc.	1 per camera	TA
DPP100-24-1	Y	TDK-Lambda Power Supply; AC-DC; 24V; 2.1A; 85-264V In; Enclosed; DIN Rail Mount; 100W; DPP Series	Allied	1 per camera and its connected illuminator	TA
Reference Design Specifications	N	Treadle Frame	TRMI, Inc.	1 per 12 foot toll lane	DB

Mfg part #	SUB	Description	Source	Quantity Required	Installation Responsibility
SL MD-220	N	SL MD-220 Optical Transmittance Analyzer	TE Connectivity	1 per toll lane	TA
SL-3 EZ TREADLE304 2-3-1-XX, where XX is one of 50, 75, or 100 meters	N	MSI Fiber Strip inserts for installation in treadle frame	TE Connectivity	1 per treadle frame	DB
SL PUR 215-1-125-PE	N	MSI Individual Fiber Strips	TE Connectivity	2 per instrumented shoulder	DB
AR2507	Y	NetShelter 48U 600mm Wide x 1200mm Deep Enclosure with Sides Black	APC, Inc.	2 per ORT Gantry Site	DB
AS615-UDK Hybrid	N	Single Lane Overhead Vehicle Classifier, 120V, Hybrid	OSI LaserScan.	1 per 12' lane, 1 per instrumented shoulder	TA
19471022-9	N	AS Mounting Kit	OSI LaserScan.	1 per laser scanner	DB
9291011-9-XXX	N	AS Power Cable, 120V, XXX feet. Part number depends on gantry design.	OSI LaserScan	1 per laser scanner	DB

Mfg part #	SUB	Description	Source	Quantity Required	Installation Responsibility
9291010-29-XXX	N	AS RS422 Communications Cable, 120V, XXX feet. Part number depends on gantry design.	OSI LaserScan	1 per laser scanner	DB
81000143-9	Y	RS422 Surge Supressor	OSI LaserScan	1 per laser scanner	TA
9301000-9	N	Beam Finder	OSI LaserScan	10 for entire project	DB
Reference Design Specifications	Y	Loops	Never-Fail Loop System Inc. or Patriot Detection, Inc.	2 per lane, 2 per instrumented shoulder	DB
EDI LMD301 TS	Y	SINGLE CHANNEL LOOP DETECTOR WITH DELAY & EXTENDING TIMING & SOLID STATE OUT	Eberle Design, Inc.	1 per loop	TA
IZA-800ORT-L-TWY	N	ORT Camera	Inex Zamir	2 per instrumented lane	TA
IZ-SW2-20	N	Illuminator-white	Inex Zamir	1 per instrumented lane	TA

Mfg part #	SUB	Description	Source	Quantity Required	Installation Responsibility
IZ-S2-20	N	Illuminator-Infrared	Inex Zamir	1 per instrumented lane	TA
MNT-GL-UIL	N	Illuminator Mount	Inex Zamir	2 per instrumented lane	DB
MNT-GL-UCAIZ	N	Camera Mount	Inex Zamir	2 per instrumented lane	DB
#7919A	Y	Cat5e cable – 328 feet - Belden Multi-Conductor - Category 5e DataTuff® Twisted Pair Cable, part	Belden	TBD by DB	DB
# 5100UE	Y	Belden, 2 Conductor, 14 Guage	Anixter	TBD by DB	DB

22.3.15 Spare Parts

The Design-Builder is to procure and provide to the Authority the following additional parts in the quantities specified:

Mfg Part #	Quantity
Inex camera part # IZA-800ORT-L-TWY	20
Inex White Light illuminator part # IZ-SW2-20	20
Inex Infrared illuminator part # IZ-S2-20	20
Inex White Light Illuminator part # IZ-SW1-30(white)	8
Inex Infrared Illuminator IZ-S1-30 (IR)	8
OSI LaserScan part # AS615-UDK	35
MSI Fiber strips, part # SL 3 EZ TREADLE3042-3-1-100	20
Dell PowerEdge R330	20
MSI SL PUR 215-1-125-PE	10

22.4 OPEN ROAD TOLLING (ORT) WORK AT EXIT SITES

22.4.1 General Requirements

Directive Requirements for the construction of the Open Road Tolling (ORT) system at each interchange shall be as specified below and elsewhere in this RFP. Refer to the corresponding concept plans for details found in Part 7 – Engineering Data, Section 2:

- ORT Zones shall be installed within the "Potential Tolling Area" locations shown on the concept plans
- Locations for access to the Maintenance Facilities, Tandem Lots, Commuter Parking Lots and State Police Facilities as shown on the concept plans.
- A single lane access driveway with two (2) parking spots shall be provided within 15 ft. of each communications building door.
- All TUBs are to remain in place.

General Design Requirement for the construction of the Open Road Tolling (ORT) system at each interchange shall be as specified below (Refer to corresponding concept plans for details):

- Ramp lane widths – 12 ft minimum
- Ramp shoulder widths – A single lane access driveway with two (2) parking spots shall be provided. Vehicle access to within 15 ft. of each communications building door shall be provided as well so that equipment can be unloaded~~The ramp shoulder outside the Tolling Area shall meet existing widths and maintain a uniform width for the full length of ramps, with 6 ft minimum and 10 ft maximum width~~.
- Ramp shoulder widths within the ORT Zones shall be in accordance with the graphics posted.
- Design vehicle for tandem truck movements – WB-109D
- Design vehicle for Thruway Maintenance facility driveways – WB-62 unless shared with tandem truck lot, then use WB-109D
- The alignments shown in Part 7 – Engineering Data, Section 2 and those alignments are conceptual (not engineered) and the Design-Builder is responsible for alignment design but with meeting the requirements below.
- Design Speed of 40 MPH – Semi-direct Connecting Ramp
- The Design-Builder based on design speed stated is responsible for proper superelevation or cross section of highways.
- Pavement repairs are required at some ORT sites and can be found in Part 7 – Engineering Data, Section 14.
- All Gantry supports shall be protected with some level of guiderail per current standards. Even if the Gantry supports are outside the clear zones a guiderail protective system is still required to protect the Thruway's Tolling revenue.

- New signing and striping shall be in accordance with the latest edition of the MUTCD and the NYSDOT Supplemental with the addition of specified sign packages found in Part 7 – Engineering Data, Section 8.

The Authority will maintain and operate the toll system equipment during and after construction. The Design-Builder shall be responsible for working and coordinating closely with Authority staff in the design and construction phases to ensure that operations are continuously maintained at all times throughout the duration of the Project without any interruptions.

Exit 18 New Paltz

The Design Builder shall construct an ORT zone at the south end of the toll plaza tangent location where the ramps merge with 2 lanes and a shoulder in each direction and positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp. Prior to the Go Live Date the Design Builder shall:

A. Stripe a 6 foot wide hatched pattern along the Tandem Lot, stripe a right out only tandem (WB-109D) exit driveway at the south end of the tandem lot.

B. Construct a new connection for a two-way driveway between the existing commuter lot access road and the tandem lot at the west edge of the tandem lot Design Vehicle WB-109D.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 299 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- The entering lanes shall transition from the existing 1 lane and shoulder entering from Rte 299 to 2 lanes with shoulder at the north limit of the existing toll plaza. The second lane shall come on from the tandem lot southbound right out only lane to be striped.

C. Exiting Traffic

- The 2 northbound exit lanes shall widen to 3 lanes after the toll zone with 2 through lanes and a left turn storage lane for the Commuter Parking Lot/Tandem/ Maintenance Access Drive and the two through lanes directed with one lane for the signal and one lane connecting to the slip ramp to Rte 299.
- Positive protection shall be carried to just north of the right out only lane from the tandem truck lot. Delineators shall be placed from that point to the driveway for the Commuter Parking Lot/Tandem/ Maintenance Access Drive. Provide turn lane storage for WB-109D vehicle.

D. Complete installation of positive protection barrier and delineators.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 19 Kingston

The Design Builder shall construct an ORT zone at the north end of the existing toll plaza with 2 lanes and a shoulder in each direction with positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp. Prior to the Go Live Date the Design Builder shall:

A. Retain the existing northern most Maintenance Driveway. Provide a temporary access If conflicts with Toll Zone Construction.

B. Construct a new two-way driveway for Tandem Access (WB-109D) vehicles from NYS RTE 28 into the Maintenance Facility, connecting to the Tandem lot and Maintenance Yard.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 28 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Construct a driveway connection from the parking lot south of the TUB to the maintenance yard, employee parking lot, and the tandem truck lot Close the driveways from the ramp to the maintenance facility, tandem truck lot and the employee parking lot.

C. Entering traffic

    a. The northbound entering lanes shall transition from the existing 3 lanes and shoulder entering the plaza from Rte 28 and transition to 2 lanes with shoulder at the south limit of the ORT zone.

D. Exiting Traffic

    a. The 2 southbound exit lanes shall widen to 3 lanes after the toll zone and continue as 3 lanes to meet the existing 3 lanes at the slip ramp to RTE 28 west

E. Complete installation of positive protection barrier and delineators.

F. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 20E Saugerties East

The Design Builder shall construct an ORT zone within the limits shown on the concept plan a minimum of 1 lane and a shoulder in each direction and a 4 foot median with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 32 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- Provide 1 lane and shoulder.

C. Exiting Traffic

- The 1 northbound exit lane shall widen to 2 lanes to meet the existing 2 lanes for the intersection with RTE 32.

D. Complete installation of delineators.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 20W Saugerties West

The Design Builder shall construct an ORT zone at the east side of the toll plaza with 1 lane and a shoulder in each direction with 4 foot median and delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 32 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes, to manage the peak hour traffic flow, for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- Provide 1 lane and shoulder.

C. Exiting Traffic

- The 1 southbound exit lane shall widen to 2 lanes after the toll zone and continue as 2 lanes to meet RTE 32.

D. Complete installation of delineators.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 21 Catskill

The Design Builder shall construct an ORT zone at the north end of the toll plaza where the ramps merge with 2 lanes with a shoulder in the exiting direction and 1 lane with shoulder in the entering direction with positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp. Prior to the Go Live Date the Design Builder shall:

A. Eliminate the northern Maintenance driveway, remove the existing driveway pavement.

B. Reconfigure the existing Maintenance Driveway to the south of the toll booths as a 2-way driveway. The left turn movement out will be for Authorized Vehicles (Thruway Maintenance vehicles) only.

C. Construct new 2-way access driveway from Rte 23B to the Maintenance yard with a connection to the commuter parking lot.

D. Reconfigure Commuter lot to relocate Handicap Parking spaces impacted by the access drive. Close access to the ramp from the parking area.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 23B as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic

- The lanes shall connect to the 1 lane and shoulder entering the plaza from Rte 23B to meet the 1 lane with shoulder at the south limit of the ORT zone.

C. Exiting Traffic

- The 2 lanes from the ramps shall continue through the toll plaza with the right lane dropping to meet the Maintenance and Parking Lot Driveway

D. Complete installation of positive protection barrier and delineators as shown on the concept plan.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 21B Coxsackie

The Design Builder shall construct an ORT zone at the west side of the toll plaza with 1 lanes and shoulder in each direction with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 9W as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- The entering lanes shall transition from the existing 1 lane and shoulder entering the plaza from Rte 9W to meet the 1 lane with shoulder at the west limit of the ORT zone.

C. Exiting Traffic

- The 1 lane through the toll zone shall widen to 2 lanes after the toll zone to meet the existing 2 lanes at the slip ramp to Rte 9W.

D. Complete installation of delineators

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit B1

The Design Builder shall construct an ORT zone at the south side of the existing toll plaza where the ramps merge with 2 lanes and a shoulder in each direction with positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp. Prior to the Go Live Date the Design Builder shall:

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte I-90 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- The southbound entering lanes shall transition from the existing 3 lanes and shoulder entering the plaza from Rte I-90 and Rte 9 ramp and transition to 2 lanes with shoulder at the north limit of the ORT zone, dropping the right lane as a traditional acceleration lane.

C. Exiting Traffic

- The 2 northbound exit lanes shall continue to meet the 2 I-90 Mainline lanes, restripe the plaza to develop a deceleration lane and taper for the exit to NYS Rte 9 with 1 lane and a shoulder.

D. Complete installation of positive protection barrier.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit B2

The Design Builder shall construct an ORT zone just south of the existing toll plaza with 2 lanes and a shoulder in the northbound direction and one lane with a shoulder in the southbound direction including a median turn lane with Delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

A. Close the existing Maintenance Driveway on the north side of the toll plaza.

B. Widen the existing Maintenance Driveway south of the toll plaza.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to the Taconic State Parkway as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- The northbound entering lanes shall continue the existing 2 lanes and develop a shoulder to meet the 2 ramp lanes at the north limit of the existing toll plaza.

C. Exiting Traffic

- The 2 southbound exit lanes shall transition to 1 through lane and a median lane prior to the north limit of the toll zone. The through lane shall meet the existing 1 SB lanes at the Taconic State Parkway. A 12 ft median with turn lane should be developed for the access to the Maintenance Driveway.

D. Complete installation of Delineators.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 22 Selkirk

The Design Builder shall construct an ORT zone to the west of the existing toll plaza where the ramps merge, with a 1 lane and a shoulder in each direction with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 144 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal

B. Entering traffic

- Provide a single entrance lane and shoulder

C. Exiting traffic

- Provide one lane with a shoulder to the split for the Rte 144 intersection.

D. Complete installation of delineators and striping.

E. Remove driveway to the west of the existing toll building.

F. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 26 Rotterdam

The Design Builder shall construct an ORT zone to the west of the toll plaza where the ramps merge with 1 lane and a shoulder in each direction with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to the I-890 interchange as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic

- The configuration of the lanes from the I-890 ramps entering the Thruway shall be maintained. Carry the two lane ramp to the area of the existing booth and then taper to a single lane prior to the toll zone and continue with a single lane to the entrance ramp split.

C. Exiting traffic

- The single exit lane under the railroad overpass shall be widen after the overpass to provide 2 lanes prior to the split for the I-890 ramps.

D. Complete installation of delineators and striping.

E. Remove driveway to the east of the existing toll building.

F. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 27 Amsterdam

The Design Builder shall construct an ORT zone to the east of the toll plaza and Maintenance driveway where the ramps split with 2 lanes and a shoulder in each direction with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

A. Stripe the tandem parking lot to show the driveway connection to the Maintenance area.

B. Close the Maintenance driveway to the east of the toll plaza.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 30 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic

- install striping from northbound Route 30 onto and along the entrance ramp to the tandem truck/maintenance driveway so only one lane is provided for Rte 30 entering traffic.
- Starting at that driveway provide two lanes to the ramp split.

C. Exiting traffic

- maintain two through lanes and develop a left turn lane into the tandem truck/ Maintenance driveway.
- after the driveway entrance widen to three lanes approaching the intersection with two for right turns and the other for through traffic and left turns.

D. Complete installation of delineators and striping

E. Remove the parking on the east side of the toll building.

F. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 28 Fultonville

The Design Builder shall construct an ORT zone to the south of the existing toll plaza between where the ramps merge and the State Police driveway with 2 lanes and a shoulder for exiting traffic and 1 lane with a shoulder for entering traffic with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

A. Reduce the width of the driveway to the State Police building, providing one lane in each direction.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Riverside Drive as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic – provide a single lane to the ramp split

C. Exiting traffic – provide two lanes to the split approaching the Riverside Drive intersection.

D. Complete installation of delineators, with a break for the driveway to the State Police facility, and complete the striping.

E. Remove the parking on the south side of the toll building.

F. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 29 Canajoharie

The Design Builder shall construct an ORT zone to the east of the existing toll booths with 2 lanes and a shoulder for the entering traffic and a single lane with shoulder for exiting traffic, and provide delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

A. Remove the parking area on the east side of the existing toll building.

B. Install cross hatching for the Tandem Lots.

C. Remove the pavement and regrade and seed the outside of the curve leading to Rte 5S.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 5S as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic – at the east side of the entrance to the tandem truck lot begin taper to two lanes.

C. Exiting traffic – taper the ramps to one lane prior to entering the toll zone.

D. Complete installation of delineators and striping.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 29A Little Falls

The Design Builder shall construct an ORT zone on either side of the toll plaza with one lane and a shoulder in each direction with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

- Retain the park and ride lot and employee parking lot from the north side of the TUB.
- Remove the employee parking lot from the south side of the TUB.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to existing ramp and local road connections as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic – provide one lane and shoulder through the former toll plaza and through the toll zone.

C. Exiting traffic - provide one lane and shoulder through the toll zone and through the former toll plaza.

D. Complete installation of delineators and striping.

E. Remove the parking on the south side of the toll building.

F. Maintenance driveway to remain.

G. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 30 Herkimer

The Design Builder shall construct an ORT zone to the east of the existing toll plaza where the ramps merge with one lane and a shoulder in each direction with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

- Connect east and west driveways to provide access to employee parking.
- Close west driveway.
- Define construction lot access point with cross hatching and striping.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte. 28 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal

B. Entering traffic – provide one lane and shoulder through the former toll plaza and through the toll zone.

C. Exiting traffic - provide one lane and shoulder through the toll zone and begin taper after the toll zone to provide two lanes on the approach to the intersection

D. Complete installation of delineators and striping.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 31 Utica

The Design Builder shall construct an ORT zone to the at the east of the the existing toll plaza where the ramps merge with 2 lanes and a shoulder in each direction with positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

- Remove the park and ride lot and employee parking lot from the west side of the TUB.
- Build one-way driveway into the tandem truck lot from Route 5.
- Provide access to the maintenance facility/tandem truck lot/Welcome Center as shown.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to existing ramp and local road connections as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic – provide two lanes and shoulder through the former toll plaza and through the toll zone.

C. Exiting traffic - provide two lanes and shoulder through the toll zone and through the former toll plaza.

D. Complete installation of positive protection barrier and striping.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 32 Westmoreland

The Design Builder shall construct an ORT zone to the north of the toll plaza where the ramps merge with 2 lanes and a shoulder for exiting traffic and one lane and a shoulder for entering traffic with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

A. Relocate the existing park and ride lot to within the tandem truck lot and separate with positive barrier protection.

B. Remove the employee parking lot from the north side of the TUB.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to County Rte 32 (Cider Street) as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic – retain the single entrance lane to the ramp split.

C. Exiting traffic – after the toll zone begin taper to add a decel lane into the tandem truck lot/park and ride lot. Carry two lanes to the intersection.

D. Complete installation of delineators and striping.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 33 Verona

The Design Builder shall construct an ORT zone to the east of the toll plaza where the ramps merge with 2 lanes and a shoulder in each direction with positive protection barrier park and ride lot for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.
Prior to the Go Live Date the Design Builder shall:

A. Relocate the existing park and ride lot to the area between Route 365 and the Maintenance building. Provide striping through the tandem truck lot defining the access drive to the park and ride lot and the Maintenance facility.

B. Remove the employee parking area from the west side of the TUB.

C. Close the east driveway to the Maintenance facility

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 365 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic – retain two lanes through the tolling area to the ramp split.

C. Exiting traffic

- Retain the two lanes through the tolling area to the split for Route 365.

D. Complete installation of positive protection barrier and delineators, and striping.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 34 Canastota

The Design Builder shall construct an ORT zone to the east of the existing toll plaza where the ramps currently merge with 2 lanes and a shoulder for exiting traffic and one lane and shoulder with positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

A. Remove the employee parking area east of the TUB.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 13 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes, to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic – provide a single lane through the toll area to the ramp split

- install a left turn lane into the park and ride lot

- Stripe/delineate the entrance to the tandem truck lot/ employee parking area for the TUB.

C. Exiting traffic
    - Install a left turn lane into the tandem truck lot / TUB parking area.
    - Install a right turn lane into the park and ride lot.
    - Install a left turn lane at the Rte 13 intersection.

D. Complete installation of positive protection barrier and striping.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 37 Syracuse Electronics Parkway

The Design Builder shall construct an ORT zone to the east of the existing toll plaza where the ramps merge with 2 lanes and a shoulder in each direction with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

- Remove the employee parking area from the west side of the TUB.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to County Rte 148 (Electronics Parkway) as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes, to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic
    - provide two lanes through the tolling area to the ramp split.
    - remove excess pavement along the right side through the toll plaza.

C. Entering traffic
    - provide two lanes through the tolling area to the ramp split.
    - remove excess pavement along the right side through the toll plaza.

D. Exiting traffic
    - provide two lanes through the toll area to the split for CR 148.
    - install new pavement through the existing toll plaza area

E. Complete installation of delineators barrier and striping

F. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 38 Syracuse Liverpool

The Design Builder shall construct an ORT zone west of the existing toll plaza where the ramps merge with one lane and a shoulder in each direction with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

- Remove the parking area on the west side of the TUB.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to County Route 57 (Oswego Street) as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes, to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic

- continue to provide a single lane through the toll area to the ramp split
- close the eastern most drive to the park and ride lot.
- widen the pavement as necessary to provide a shoulder through the toll plaza.

C. Exiting traffic

- provide a left turn lane for the park and ride lot
- provide a single lane through the toll area to the split for the intersection
- provide a shoulder through the toll plaza area.

D. Complete installation of delineators and striping.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 40 Weedsport

The Design Builder shall construct an ORT zone west of the existing toll plaza where the ramps merge with one lane and a shoulder entering and two lanes and a shoulder exiting with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

A. Install a new driveway east of the toll booths to serve the Maintenance facility and the tandem truck lot.

B. Close the existing Maintenance driveway west of the toll plaza

C. Close the existing tandem truck lot entrance to the east of the toll plaza.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 34 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic

   a. carry the single lane to the ramp split.

   b. remove the employee parking area to the west of the TUB.

C. Exiting traffic

   a. carry two lanes from the ramp merge to the intersection split, including providing pavement widening.

   b. install a left turn lane for the new combined driveway.

D. Complete installation of the delineators and striping.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 41 Waterloo

The Design Builder shall construct an ORT zone to the west of the toll plaza where the ramps merge with one lane and a shoulder entering and two lanes and a shoulder exiting with positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.
Prior to the Go Live Date the Design Builder shall:

- Close the parking area on the east side of the TUB.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 414 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes, to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic

- maintain a single entrance lane from the intersection to the ramp split.

C. Exiting traffic

- after the toll area, shift the two lanes to the south to install a left turn lane into the Maintenance facility
- close the driveway to the Maintenance facility at the west side of the toll plaza

D. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 42 Geneva

The Design Builder shall construct an ORT zone to the east of or to the west of the toll plaza where the ramps merge with one lane and a shoulder entering and two lanes and a shoulder exiting with positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.
Prior to the Go Live Date the Design Builder shall:

A. modify the park and ride lot to clearly show its limits.
B. close and remove the driveway from the ramp to the tandem truck lot

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 14 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes, to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic

- maintain a single entrance lane to the ramp split
- remove the parking area to the west of the TUB.

C. Exiting traffic

- maintain two lanes from the ramp split to the intersection
- remove excess pavement in the toll plaza area

D. Complete installation of positive protection barrier and striping.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 43 Manchester

The Design Builder shall construct an ORT zone to the east of or to the west of the existing toll plaza where the ramps merge with 1 lane and a shoulder entering and two lanes and a shoulder exiting with positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

A. install new two-way driveway from the tandem truck lot to Route 21.

B. connect the maintenance facility to the tandem truck lot

C. remove the driveway to the Maintenance facility.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 21 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes, to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering traffic – maintain a single lane entry to the ramp split.

- maintain a single lane entry to the ramp split
- remove the parking area to the west of the TUB.

C. Exiting traffic

- maintain two lanes from the ramp split to the intersection split

D. Complete installation of positive protection barrier and striping.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 48 Batavia

The Design Builder shall construct an ORT zone to the east of where the ramps merge with 2 lanes and a shoulder exiting direction and 1 lane and a shoulder in the entering with positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

A. Relocate the existing Maintenance/Tandem Lot Driveway to the west of the toll plaza and remove the existing driveway pavement. Connect the driveway to the Tandem Trailer Parking Lot and the existing Maintenance Driveway to the facility.

B. Remove the existing Maintenance Driveway just west of the ramp merges.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 98 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- The entering lane shall maintain the existing 1-12 ft lane and 8 ft shoulder entering the plaza from Rte 98 and transition to 1 through lane and a median/turn lane for the Maintenance/Tandem Access Driveway. Then taper back to 1 through lane with shoulder.

C. Exiting Traffic

- The 2 westbound exit lanes shall continue as 2 lanes with shoulder after the toll zone to meet the existing 2 lanes at the slip ramp to RTE 98.

D. Complete installation of positive protection barrier.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 48A Pembroke

The Design Builder shall construct an ORT zone to the east of or to the west of the existing toll booths with 3 lanes and a shoulder in the exiting direction and 2 lanes and a shoulder in the entering direction with positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

A. Relocate the existing Commuter Parking Lot driveway to the west side of the parking lot a minimum of 305 ft from Rte 77 intersection and remove the existing driveway pavement

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 77 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes, to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- The entering lane shall transition from the existing 1 lane and shoulder entering the plaza from Rte 98 and transition to 1 ft lane through lane and a median/turn lane for the Commuter Parking Lot Driveway, and then transition to 2 lanes with shoulder as shown.

C. Exiting Traffic

- The 3 exit lanes shall taper to 2 lanes with shoulder as shown to meet the existing 2 lanes at the Rte 77 intersection.

D. Complete installation of positive protection barrier.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 49 Depew

The Design Builder shall construct an ORT zone on the tangent section of the ramps east of where the ramps merge with 3 lanes and a shoulder in the eastbound exiting direction and 2 lanes and a shoulder in the westbound entering direction with positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

A. Develop a second entering lane with shoulder from the existing toll plaza to the ramp diverge to meet the two ramp lanes at the diverge.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 98 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes, to manage the peak hour traffic flow, for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- The 2 westbound entering lanes shall continue to meet the two lanes constructed prior to ORT Go Live.

C. Exiting Traffic

- The 3 eastbound exit lanes shall continue as 3 lanes with shoulder after the toll zone to meet the existing 3 lanes at the intersection RTE 78.

D. Complete installation of positive protection barrier.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 56 Blasdell

The Design Builder shall construct an ORT zone to the north or south of the existing toll booths with 2 lanes and a shoulder in each direction with positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp. Prior to the Go Live Date the Design Builder shall:

A. Install U-turn as shown for Official Use Only.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 179 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow, for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- The 2 entering lanes shall continue through the ORT zone to the ramp split.

C. Exiting Traffic

- The 2 exiting lanes shall continue as 2 lanes with shoulder to the intersection with RTE 178.

D. Complete installation of positive protection barrier

E. Retain the excess pavement on the west side of the toll plaza for emergency vehicles staging area.

F. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 57 Hamburg

The Design Builder shall construct an ORT zone to the west of where the ramps merge with 2 lanes and a shoulder in each with positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

A. Connect the employee parking lot to the Maintenance facility. Remove the western most maintenance driveway, TUB driveway and existing tandem lot driveways.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 75 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes, to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- The eastbound entering lanes shall transition from the existing 2 lanes and shoulder entering the plaza from Rte 75 and transition to 2 lanes with shoulders at the west limit of the ORT Zone.

C. Exiting Traffic

- The 2 westbound exit lanes shall continue as 2 lanes with shoulder after the toll zone and widen to develop a median/turn lane for the Maintenance/Tandem Access Driveway. And then taper back to 2 lane with shoulder to meet the existing 2 lanes at the slip ramp for Rte 75.

D. Complete installation of positive protection barrier.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 57A Eden-Angola

The Design Builder shall construct an ORT zone on either side of the toll booths with 1 lane and a shoulder, or 2 lanes and a shoulder in each direction, depending on the selected location of the zone, with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Eden Evans Center Road as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- The entering lane shall transition from the existing 1 lane and shoulder to 2 lanes at the ramp split.

C. Exiting Traffic

- The 2 exit lanes shall taper to 1 lane with shoulder after the ramps merge.

D. Complete installation of delineators.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 58 Silvercreek

The Design Builder shall construct an ORT zone to the south of the existing toll plaza with 2 lanes and a shoulder in each direction with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp. Prior to the Go Live Date the Design Builder shall:

A. Remove the existing Maintenance Access Drive just south of the ramp merge from Rte 5/20 and before the existing toll plaza.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 5/20 interchange as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- The 2 entering lanes shall continue from the existing 2 lane at the Rte 5/20 ramp merge to meet the 2 lanes past the existing toll plaza.

C. Exiting Traffic

- The 2 exiting lanes shall taper to 1 lanes with shoulder after the Ramps merge to meet the existing lane configuration and through the Toll Zone and then widen to 2 lanes to meet the 2 lane ramp diverge at Rte 5/20.

D. Complete installation of delineators.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 59 Dunkirk

The Design Builder shall construct an ORT zone to the west of where the ramps merge with 2 lanes and a shoulder in each direction with positive protection barrier for a Design Speed of 40 MPH – Semi-direct Connecting Ramp. Prior to the Go Live Date the Design Builder shall:

A. Remove the existing westerly Tandem Truck Driveway.

B. Reconfigure the existing eastern Tandem Truck Driveway as a 2 -way single access point for the Tandem Lot, State Police Access and Maintenance access. Stripe a 4 foot hatched area to delineate an access road at the south edge of the existing tandem lot to create connections from the single driveway to the existing Tandem lot, Maintenance and State Police Driveway. Construct new pavement connections as shown on the concept plans.

C. Remove the existing State Police and Maintenance Access driveway located just to the west of the mainline ramp merge.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 60 as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- The entering lanes shall transition from the existing 1 lane and widen to develop a median/turn lane for the Maintenance/Tandem Access Driveway. And then transition to 2 lanes with shoulder to meet the west edge of the Toll Zone.

C. Exiting traffic

- The 2 exit lanes shall continue as 2 lanes with shoulder after the toll zone to meet the 2 existing lanes at the slip ramp for Rte 80.

D. Complete installation of positive protection barrier.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

Exit 60 Westfield

The Design Builder shall construct an ORT zone on either the east side or the west side of the existing toll plaza with 1 lane and a shoulder in each direction with delineators for a Design Speed of 40 MPH – Semi-direct Connecting Ramp.

Prior to the Go Live Date the Design Builder shall:

A. Remove the existing Maintenance Access Drive to the east of the toll plaza.

B. Improve the radius for the maintenance driveway ot the west of the toll plaza.

After the ORT toll system becomes functional Design Builder shall remove the existing toll plaza and connect the ORT Toll Zone to Rte 5/20 interchange as follows:

A. Restripe the plaza to align the lanes with the appropriate number of toll lanes to manage the peak hour traffic flow for temporary traffic control prior to and during the toll plaza removal.

B. Entering Traffic

- The entering lane shall continue from the existing 1 lane at the Rte 394 slip ramp through the toll zone to meet the existing ramp lane after the toll zone.

C. Exiting Traffic

- The exit lane shall continue as 1 lane with shoulder after the intersection with Rte 394

D. Complete installation of delineators.

E. Remove pavement to provide footprint reduction areas and these areas should be top soiled and seeded.

22.5 HIGHWAY REQUIREMENTS AT OPEN ROAD TOLLING GANTRY LOCATIONS:

Requirements of the Highway at the Open Road Tolling Gantry Locations is as follows:

- Treadle Frame shall be installed as per Specification Item 690.6202—25

- The Treadle Frame shall be located under the center of the Mini-Gantry on the exit side only of the units for all Mini-Gantry locations.

- The Design-Builder shall reconstruct the pavement shoulders (both sides) at least within the ORT Toll zone where concrete pavement limits are required at the exits of the Thruway system. The shoulders to be reconstructed shall be full depth asphalt to allow for loops to be cut into the asphalt.

- The Open Road Tolling Mini-Gantries shall be fully completed and conduits (for electricity and communications) from the new Communication Building to the Open Road Tolling Mini-Gantries along with all the mounting hardware, brackets or arms shall be in place so that cameras, antennas, laser scanners and illuminators can be attached by Thruway Authority personnel and adjusted.

Cashless ORT Toll lanes and shoulders shall as a minimum match the maximum number of approach lanes and shoulders entering the Cashless ORT Toll Collection Zone. Ensure the slab containing the concrete treadle section and trench drain shall be a minimum of 22 inch in thickness, heavily reinforced Portland Cement Concrete (PCC) utilizing fiber reinforced polymer (FRP) reinforcing bars so as not to interfere with the Authority's toll collection system.

SECTION 23 INTERCHANGE WORK

23.1 SCOPE

The Design-Builder shall be responsible for the design and construction of all work in the interchanges of Exit 23, 24, 25, 25A, 34A, 36, 39, 44, 45, 46, and 47. The concept plans can be found in Part 6 Indicative/Concept Plans. The Concept Plans provide an overview of the idea and scope of work the Thruway wants to see in the proposals. The number of lanes of opposing traffic is shown which corresponds to the information provided in Part 7 – Engineering Data Section 18. The volume of traffic and the hour by hour data of traffic can be found in Part 7 – Engineering Data Sections 19. Section 18 also provides other information relative to positive separation, design speeds, etc. that the Design-Builder shall use in the design and modifications of these interstate to interstate connections.

23.2 STANDARDS

The Design-Builder shall perform the Work in accordance with the Contract Documents and the Applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirement(s) or otherwise applicable to the Project.

23.3 GENERAL REQUIREMENTS

Concept plans for all eleven interchanges are found in Part 6 Indicative/Concept Plans. Pavement repairs and the required minimal limits to those repairs are provided in Part 7 – Engineering Data Section 14. Requirements for these interchanges include the sealing of concrete cracks, full depth isolated repairs, toll booth removal to the limits defined in Section 14 and the addition of the proper superelevations or cross slopes for the design speeds. At some interchange to interchange connections, significant reconstruction of entire previous tolling areas are required. The Design-Builder is responsible for the Toll Plaza removals and those requirements are in other sections of Part 3. Signage packages, Tandem Lot work, pavement repairs and pavement design and construction, Work Zone Traffic Control, TUB removals, and other relevant information are found in other sections of Part 3 – Project Requirement sections, and other Part 7 – Engineering Data Sections. Positive Separation at all Interchanges (required) shall be Concrete Barrier.

All these Interchanges require positive separation and the Authority is requiring reinforced concrete barrier as the positive separation. The TUBS and all Toll Booths shall be removed at all these interchange locations. The traffic data for these locations can be found in Part 7 – Engineering Data, Section 19. The Work Zone Traffic Control, Section 15 of Part 3 is applicable at all these locations. The signage package associated with transition before and after AETC ‘opens live” and then after the Toll Booths are removed can be found in Engineering Data, Part 7 - Section 8. The Design-Builder is responsible for the improvements to the proposed legislation routes for Tandems, which are shown in Part 7 - Engineering Data, Section 3. All turning movements shall be improved, where required, to ensure the Tandems can properly remain in the correct travel lanes. The concept plans are not fully engineered however, the plans do show the required/intended number of lanes that are necessary when the interchange work is completed. Those requirments can be found in Engineering Data, Part 7 – Section 18. Refer to Section 12 of Part 3 – Project Requirements for specifics relative to signage, pavement markings and signals (if required). The actual sign sizes and text for the transition and final signage where Toll Booths are eliminated are also found in Engineering Data, Part 7 - Section 8. While the Toll Booths are operational, prior to AETC “going live”, work within the Toll Booth areas is governed by Engineering Data, Part 7 – Section 16, which is the number of Toll Booths required to be operational based on time of day. The Design-Builder shall notify the Authority’s Project Manager

two (2) weeks prior indicating what Toll Booths require closure based on the Design-Builder's work. The details of work and Work Zone Traffic Control shall be complete and reviewed with Released for Construction stamped and dated at that 2 week notification lead time requirement.

Interchange 23 – This is a complicated short interchange area and has a short merge opportunity. Additional signing to enable motorists to properly align with the lanes leading from the Thruway system to 9W South, 9W North and I-787 is a requirement and responsibility of the Design-Builder. This additional signage shall be placed well enough in advance so travelers know they must move left or right to avoid last minute potential non-safe moves attempting to get into the correct lanes to either access 9W North, South or access I-787 North. In addition, the Thruway has accident issues (rear end accidents) at the slip ramp to 9W South after exiting the Thruway. The Thruway is requiring the slip ramp be extended utilizing NYSDOT property and Authority property on the right side of Route 9W South. The salt shed shall be removed so that the Design-Builder has almost a blank slate to design and construct. Lighting, drainage adjustments, curb, striping, stop bars and any other items that may interfere with the Design-Builder designing and constructing the improvements is the responsibility of the Design-Builder. A preliminary layout (see concept plans) revealed no conflict with utilities (exception light poles, and drainage infrastructure). None of Thruway buildings conflict once the Salt Shed is removed which should be completed no later than September 1, 2019, if not sooner. A preliminary investigation into underground utilities revealed utilities should be deep enough to not prevent the construction of this extended slip ramp. In addition, the Thruway is requiring that the ramp leading to 9W North become a two-lane left turn lane as opposed to the one lane that exists now. Tandem Lot is to be closed and the Tandem Lot shall be removed, then top soiled and seeded.

Interchange 23 also requires the installation of an emergency break in concrete barrier to facilitate the "U-turning" of vehicular traffic should the Thruway close and traffic is queued at the interchange site. Refer to Part 8 for the Special Specification Item 606.9575—25 Median Barrier Gate System (installed). The location of this item shall be (on entering the Thruway) as close as possible to the gore area where North and South ramps split, and the location allows enough area for vehicles to essentially U-turn.

Interchange 23 requires a new signal configuration with the addition of the two (2) lane left turn from the Thruway exit to the 9W North. The Design-Builder is responsible for the design and construction of the complete new signal system with new supports, foundation, and new signals to align properly with all traffic movements, along with new traffic cabinet. See Section 12 for Traffic Signal details.

The two lane left turn shall be striped along with performed pavement symbol. These requirements apply only to the exit ramp intersecting with 9W leaving the Thruway system. Striping on the slip ramp to 9W South and a new stop bar placement at Noonan Lane is also required. All work shall meet current standards.

Interchange 24 – One of the largest Interstate-to-Interstate connections in this project. The uniqueness of this site is the large usage of the Tandem Lot, the necessary legislation proposed to provide safe movement of Tandems to reenter the Thruway system. Due to the anticipated higher speeds through the interchange area the Design-Builder is required to design and construct an acceleration lane for the Tandems so that their entering speeds can be reasonable for entering and merging with I-90 Eastbound traffic. The Design-Builder should pay close attention to the overhead signage and the placement location of the current overhead sign structures. When the interchange is complete of all work the Design-Builder is responsible to ensure the signage is in compliance with the MUTCO. Other Part 3 requirements pertain to this

particular Interchange work as well as other Parts of Engineering Data. A gated controlled access is required from the Washington Avenue driveway entrance to the Tandem Lot.

Interchange 24 also requires the installation of an emergency break in concrete barrier to facilitate the "U-turning" of vehicular traffic should the Thruway close and traffic is queued at the interchange site. Refer to Part 8 for the Special Specification Item 606.9575—25 Median Barrier Gate System (installed). The location of this item shall be (on entering the Thruway) as close as possible to the gore area where West and South ramps split, and the location allows enough area for vehicles to essentially U-turn.

Interchange 25 – The Authority expects a low level of service when All Electric Cashless Tolling "goes live" at this location. The Thruway entering the I-890 interstate narrows and the Curry Road ramp onto I-890 presents issues. Once again, the Design-Builder shall design additional signage to attempt to properly alert motorists in advance so that there may be a reduction in merge movements. No Tandem Lot here. Additional work such as crack sealing, pavement repairs, etc., as with all these interchange locations may be required as per of Engineering Data, Part 7 - Section 14.

Interchange 25A – Issues with Tandem Lot access and single trailer trucks accessing the local roads is problematic. As shown on the proposed legislative Tandem routes, this location is different. Due to limited ROW the proposed route shown in Part 7 – Engineering Data, Section 3 is the only avenue to provide access for Tandems to the Tandem Lot. The Design-Builder is responsible for this design and construction. An acceleration lane must be incorporated so that Tandems entering I-88 to enter the Thruway system can merge at reasonable speeds. Also, the Tandem Lot driveway entrance requires modification.

Interchange 34A - At this location there is concern with the Tandem Lot entrance to access the proposed legislative Tandem Route. An acceleration lane shall be designed and constructed so that Tandems do not present a safety concern and Tandems can reach a reasonable speed to merge into anticipated higher speeds of traffic. The Park and Ride at this location is scheduled to be closed and the access to and from the Park and Ride lot shall be removed. A minimum of 15' shall be removed between the shoulder and the closed Park and Ride Lot.

Interchange 36 – This location is similar to other interchanges. There is required legislation to accommodate Tandem movements. The Tandem Lot entrance to the traffic accessing I-81 is anticipated to be at higher speeds requiring an acceleration lane leading into traffic to allow Tandems to reach reasonable speeds to merge with free flowing traffic to utilize the proposed legislative route.

Interchange 39 - This location is somewhat unique in that the Exiting Tandem Lot is to be closed and a new Tandem Lot constructed in the location as shown on the concept plans in Part 6. This new Tandem Lot is a requirement, as well as a proper driveway entrance and exit, lighting, an area in the Tandem for a Park and Ride accommodations requiring 52 parking spaces properly striped. The Park and Ride Lot and the Tandem Lot shall be properly delineated with signing, striping and/or other means to minimize the mixing of cars and Tandems.

Interchange 44 – This location appears to be relatively straight forward. The Design-builder shall design and construct proper tapers, merge conditions, striping to provide clear and distinct signage so travelers can properly align with roadway alignments (lanes) to reduce merging

movements in a confined (short) area. No Tandem Lot is at this location. With TUB removal, the pavement areas shall be reduced, if not eliminated.

Interchange 45 – This location has a Tandem Lot and requires an acceleration lane from the Tandem lot so Tandems can merge at reasonable speeds to access the proposed legislative route to reenter the Thruway System. A modified driveway into the Tandem Lot is also required.

Interchange 46 – This location has a Tandem Lot and requires an acceleration lane/transition so that the Tandems can reach reasonable speeds to safely merge with higher speeds in the interstate-to-interstate connection. Design-Builder shall do modifications within the Authority's Maintenance/ State Police areas such as closure of and removal of driveway entrance, and installation of gate-controlled access.

Interchange 47 – This location requires more work within the Authority Maintenance area than most other interchange(s) due to Tandem Lot access and Maintenance facilities access. Driveway access improvement for access to the Tandem Lot and Maintenance facilities is required. An acceleration lane/transition for Tandems to access and merge appropriately into anticipated higher speed traffic to utilize the proposed legislative routes is required. Backside gated control access is required at this location.

All interchanges listed above have concept plans, and other requirements in Part 3 – Project Requirements and it is the responsibility of the Design-Builder to assemble all information to provide for a complete solution, meeting all applicable current standards.

SECTION 24 SPECIAL EXIT WORK 16, 17 AND 35

24.1 SCOPE

The Toll-in-Place at Newburgh shall require the Design-Builder to install protective barrier installations, striping modifications, possibly limited attenuator installations, and new signage packages, including new VMS installations on the canopy on entry to the Thruway only.

Also at Exit 35 (Thompson Road), there is no new equipment or Mainline Gantry or Mini-Gantry installation required. The work at this location will involve Toll Booth removal, potential concrete repairs, and possibly new superelevation or cross section and signage package(s), during transition to All Electronic Tolling, and permanent conditions after the Toll Booths are removed.

Lastly, Exit 16 (Harriman) shall require the removal of special Tolling Booths at certain exit points. This work needs to be completed after All Electronic Cashless Tolling goes live. Additional signage package is expected.

24.2 STANDARDS

The Design-Builder shall perform the Work in accordance with the Contract Documents and the Applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

24.3 REQUIREMENTS

24.3.1 Exit 16 Harriman Entering and Exiting Thruway Ticketed System at Woodbury Tolling Point

Exit 16 Entering Thruway Ticketed System at Woodbury Tolling Point

Traffic entering I-87 northbound from Exit 16 Harriman tolling point shall be separated from I-87 northbound mainline traffic entering the Thruway ticketed system at the Woodbury tolling point. I-87 northbound entering traffic from Exit 16 Harriman shall be merged into I-87 northbound mainline traffic beyond (north) of the proposed Woodbury mainline gantry tolling point. The separation to that point of merging north of the Woodbury Gantry shall be physical. Refer to Woodbury Terminus location Concept Plans for proposed layout found in Part 7 - Engineering Data, Section 5. Refer to Woodbury mainline gantry limits for proposed tolling point location found in Part 7 - Engineering Data, Section 1. Tolling point for I-87 northbound entering traffic from Exit 16 Harriman will be the responsibility of the Authority and will be coordinated with the Design Builders proposed AETC “go live” date for the mainline ticketed system. The Design Builder is responsible for staging the Woodbury toll plaza removal and separately maintaining I-87 northbound entering traffic from Exit 16 Harriman and I-87 northbound mainline traffic.

Exit 16 Exiting Thruway Ticketed System at Woodbury Tolling Point

Traffic exiting I-87 southbound to Exit 16 Harriman shall exit I-87 southbound mainline traffic prior (north) of the proposed Woodbury mainline gantry tolling point. Refer to Woodbury Terminus location Concept Plans for proposed layout found in Part 7 - Engineering Data, Section 2. Refer to Woodbury mainline gantry limits for proposed tolling point location found in Part 7 - Engineering Data, Section 1. Tolling point for I-87 southbound traffic exiting at Exit 16 Harriman will be the responsibility of the Authority and will be coordinated with the Design Builders proposed AETC “go live” date for the mainline ticketed system. The Design Builder will be responsible for removal

of I-87 southbound Exit 16 Harriman toll plaza. The Design Builder will be responsible for transitioning one (1) I-87 southbound off lane ramp with two (2) I-87 northbound off lane ramps to three (3) Route 17 Westbound lanes per MUTCD requirements.

24.3.2 Exit 17 Newburgh (Entry)

The Design-Builder is responsible for the design and construction of the following for Exit 17 Entry and Exit locations. The concept drawings (google image) can be found in Part 7 – Engineering Data, Section 15. The concept plans relative to number of lanes that must pass through the interchange area and under the canopy is directive. The Design-Builder shall provide for that requirement when completed. This concept has to be engineered by the Design-Builder. The protective barrier as shown on the concept plans is required but the Design-Builder has to design and construct the protective barrier to at least the limits shown to allow the Maintenance, State Police, and Tandems separated access and Entry Tolling location. The transition of the protective barrier to the Tie-ins or limits of the protective barrier is the Design-Builders responsibility, and shall meet current standards.

Toll Booth removal for the entry to the Thruway System is the Toll Booth between lanes 3 and 2. Toll Booth removal for the exit of the Thruway System is the Toll Booth between lanes 4 and 3.

The work relative to all the Tolling equipment will be done by Thruway personnel and the Design-Builder is not responsible for that aspect of the project at this location.

Additional protection of the Toll Booth next to lanes 2 and 3 is required by the Design-Builder. Positive protection of the right side of lane 2, protecting the exposed Toll Booth on the right side is required. Concrete protection shall tie into the existing concrete barrier (bull nose) that currently exists on the entry side and provide a smooth vertical surface and constant height through the existing Toll Booth and canopy area.

Design-Builder shall be responsible for all striping both interim and final during the course of work at this location.

A VMS is also required on the entry to the Thruway system. That VMS shall be located between lanes 3 and 4 of the entry to the Thruway system. Use specification 645.4520XX25. The Design-Builder is responsible for the design of the support system or modification thereof of the existing signage supports for the VMS to be used. The VMS connection via fiber and electric will be done by Thruway resources. The size of the VMS shall be a minimum of 9 characters per line and 3 lines.

Once the Toll Booth is removed separation of traffic lanes is still required and delineators shall be placed to preserve the separation of traffic. The delineators at this location shall be the same as those used elsewhere in this Design-Build contract. See Part 8 of the RFP for the specification.

Any impact attenuator removals shall be provided to Thruway Maintenance Facility located at Exit 17.

Signage package installs are the responsibility of the Design-Builder. Signage packages for this location can be found in Part 7 - Engineering Data, Section 8.

24.3.3 Special Toll Exit 35

Tolling for Exit 35 will be collected at the tolling points for Interchange 34A and 36 and will not require a separate Tolling point at Exit 35. After the AETC "go live" date the Design Build will be responsible for the following scope of work at Exit 35:

1. Install appropriate signing and striping to provide the required number of entry and exit toll lanes for peak directional hourly volumes. See Traffic Data in Part 7 – Engineering Data, Section 19.
2. Safely disconnecting all electrical and fiber optic connections to the Toll Booths and ITS equipment.
3. Install two 2 inch diameter conduits through the tunnel under the toll lanes and encase with controlled low strength material.
4. Remove toll plaza canopy, Toll Booths, toll islands, toll lane pavement and south driveway to TUB.
5. Perform full depth pavement replacement at pavement removal locations and pavement repairs locations identified in Part 7 - Engineering Data, Section 14.
6. Following project requirements found in Part 3 connect the two entry lanes from Route 298 to the two I-90 entrance ramps (eastbound and westbound) and the two I-90 exit ramps (eastbound and westbound) to the two Route 298 lanes. Refer to Special Toll Exit 35 Concept Plans in Part 7 – Engineering Data, Section 15 for additional details.
7. Maintain and improve driveway access to existing tandem lot.
8. Install new striping and signing in accordance with the latest edition of the MUTCD and the NYSDOT Supplemental, and as provided in Section 7 – Engineering Data, Section 8 and in conformance with Section 12 of Part 3 – Project Requirements.
9. The Design-Builder is responsible for the relocation of the intersection of Thompson Road and Tarbell Road. The Design-Builder shall reconstruct this intersection, so that the intersection lines up with the private driveway leading into and out of the restaurant, Tandem Lot, etc. The Design-Builder shall design and construct this relocated intersection primarily to reduce conflict locations and eliminate the offset that currently exists for travelers, truckers heading west out of the private driveway. It shall also be designed to accommodate Tandems so that access to the DeWitt Service Area is safely obtainable for those Tandems and single trailers to reenter the Thruway system. See Part 7 – Engineering Data, Section 15. The private driveway is Thruway owned property, as is the property that exists immediately across Thompson Road, where Tarbell Road needs to be relocated. All necessary signing, striping and drainage is the responsibility of the Design-Builder.

SECTION 25 DEMOLITION OF TOLL PLAZAS

25.1 SCOPE

The Design-Builder shall demolish Toll Plazas at the following terminus locations: 15 (Woodbury, MP 45.03), B3 (Canaan, MP 17.83), Williamsville (MP 419.69, Lackawanna (MP 430.51), Ripley (MP 494.51) and interchange Locations 23 (Boulevard), 24 (Washington Ave.), 25 (Schenectady), 25A (Duanesburg), 34A (Collamer), 36 (Mattydale), 39 (State Fair), 44 (Canandaigua), 45 (Victor), 46 (Henrietta), 47 (Leroy), B1 (Post Road), B2 (Taconic), 17 (Partial Demolition) (Newburgh), 18 (New Paltz), 19 (Kingston), 20E (Saugerties E.), 20W (Saugerties W.), 21 (Catskill), 21B (Coxsackie), 22 (Selkirk), 26 (Rotterdam), 27 (Amsterdam), 28 (Fultonville), 29 (Canajoharie), 29A (Little Falls), 30 (Herkimer), 31 (Utica), 32 (Westmoreland), 33 (Verona), 34 (Canastota), 35 (Thompson Road),37 (Electronics Parkway), 38 (Liverpool), 40 (Weedsport), 41 (Waterloo), 42 (Geneva), 43 (Manchester), 48 (Batavia), 48A (Pembroke), 49 (Depew), 56 (Blasdell), 57 (Hamburg), 57A (Eden-Angola), 58 (Silvercreek), 59 (Dunkirk), and 60 (Westfield).Standards.

The Design-Builder shall perform the Work in accordance with the Contract Documents and the Applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

25.2 REQUIREMENTS

25.2.1 General

The Design-Builder shall not remove the Toll Booths until the Cashless Tolling System is activated. The removal of the Toll Booths shall be completed in stages and traffic lanes shall be maintained to avoid congestion at the Toll Booths.

The Design-Builder shall demolish the existing Toll Plazas in stages and remove the demolished material. Refer to Section 15 for specifics of Work Zone Traffic Control to avoid traffic congestion.

The Design-Builder shall salvage for the Authority the following items:

- LED canopy lights;
- Lane indicator lights; and
- Drum sign/structures.

The Design-Builder shall relocate the salvaged equipment to a location to be identified by the Authority that will not be more than 10 miles from the demolition site.

25.2.2 Exit 17 (Newburgh) Partial Toll Booth Demolition

The only location in this Project that does not require complete Toll Booth removal is Exit 17 (Newburgh). At Newburgh (entry) and Newburgh (exit), one Toll Booth removal per location is required.

The Toll Booths shall not be removed by the Design-Builder until all electronic cashless tolling is activated. Refer to Part 3 – Project Requirments, Section 15 for specifics on Work Zone Traffic Control.

The Design-Builder is responsible at all locations where full Toll Plaza removal is required to provide in the tunnel under those toll plazas to install 2-4 inch conduit capped at both ends for future use by Authority Resources. Upon completion of that installation of the Thruway special specification conduit, the tunnel is to be filled with low strength fill.

The Design-Builder is responsible for capping or repairing the highway pavement void after the Toll Booths are removed. The Design-Builder shall design and construct an appropriate reconstructed section of pavement for this voided section as indicated in Part 7 - Engineering Data, Section 14 prior to the necessary normal crown or super elevated highway section (the final pavement highway section for these locations being applied).

One week prior to the beginning of the removal of the Toll Booths at each location, the Design-Builder shall notify the Authority's Project Manager so that Thruway personnel can remove tolling equipment. It shall take Thruway personnel a maximum of three (3) days to remove the equipment.

If the first Toll Booth removals are not to occur until a time greater than 1 month after the AETC "go live" date than the previous paragraph does not apply as the equipment at all locations shall be removed within that one month period.

Prior to Toll Booth removal, all electric and fiber connected to the Toll Booths shall be appropriately terminated at the existing TUB locations by the Design-Builder.

25.2.3 Hazardous Materials

The Design-Builder shall test for the presence of Hazardous Materials in all structures to be removed to ensure the removal and disposal is done in accordance with all applicable laws and standards.

The abatement of all Hazardous Materials shall be completed to the greatest extent possible prior to any demolition taking place unless a legal variation from related laws, rules and regulations can be obtained. If the Hazardous Material has been identified through the Hazardous or Asbestos Screening document and/or the record plans, the Design-Builder is responsible for all costs. Should Hazardous Material or Asbestos be found and information related to its presence was not previously available to the Design-Builder, all costs associated with abatement, containment, removal, and disposal shall be covered under the Fixed Force Account item.

The Design-Builder shall perform all Work with care so that any materials that are to remain in place, or that are to remain the property of the Authority shall not be damaged. If the Design-Builder damages any materials that are to remain in place or which are to become or to remain the property of the Authority, the damaged materials shall be repaired or replaced in a manner satisfactory to the Authority at no cost to the Authority.

The Design-Builder shall ensure that no aspects of the Works have a detrimental effect on public safety or the environment.

The Design-Builder shall assume responsibility for safety and maintenance of all existing structures within the Project Limits, identified for removal in accordance with DB §105-12.

Utility connections shall be discontinued and capped in accordance with the requirements of the utilities companies or the Authority prior to demolition works.

25.2.4 Deliverables

A Demolition and Removal Plan, signed and stamped by a Professional Engineer, registered in the State of New York, shall be submitted to the Authority for review and written comment.

25.3 TOLL BOOTH REMOVAL INCENTIVES

The Authority has determined that there is value in the removal of the Toll Booths as soon as possible after the AETC "go live" date. Based on volumes of traffic, incentives are being offered in an attempt to remove the Toll Booths at these higher traffic volume locations. The Interchange and Terminus locations involved and the associated incentives are shown below:

Location	AADT	Incentive
Interchange 24	≈ 75,600	$1,000,000
Williamsville	≈ 54,200	$720,000
Lackawanna	≈ 49,200	$655,000
Interchange 25	≈ 40,300	$535,000
Interchange 45	≈ 36,800	$490,000
Canaan	≈ 23,600	$315,000
	Potential Incentives	$3.715 M

To be eligible for the incentive payment the following conditions have to be met:

1. The final lane configurations shall be in place (travel lanes and shoulders)
2. Positive separation shall be in place, either permanent or temporary concrete barrier, for the median and right side to channelize traffic through the Toll plaza area.
3. Pavement repairs are complete
4. Construction of temporary asphalt pavement where Toll Booths were removed and meet the existing Toll plaza elevations of roadway surface.
5. Temporary striping and temporary directional signage shall be in place. The temporary striping can be reflectorized paint, or epoxy.
6. The work at the individual locations shall be complete by January 15, 2021.

The temporary conditions defined above shall comply with Standard Specifications.

25.4 TOLL BOOTH REMOVAL DATE

The Design-Builder is responsible to have all Toll Booths removed and the final lane configurations in place by August 4, 2021. Failure to meet this dateline shall result in a loss of the project completion incentive of one calendar day incentive ($20,000)/per calendar day late/per each Toll Booth removal location. If the Design-Builder is not pursuing the incentive this value constitutes the liquidated damages associated with not meeting the defined deadline date.

SECTION 26 COMMUNICATIONS BUILDINGS

26.1 SCOPE

The Design-Builder shall design and construct a Communications Building and Building Foundations at each Gantry location and provide three parking spaces adjacent to each Communications Building.

The Design-Builder shall install all conduits and electrical service for electrical power to the Communications Buildings and the Gantries..

The Design-Builder shall provide backup diesel powered generators capable of providing a minimum of 96 hours of continuous operation of Cashless Tolling Facilities.

The Design-Builder shall install all Fiber Optic inner-duct to Communication Buildings and Gantries for Fiber Optic cable to be provided and installed by Adesta.

The Design-Builder shall install all equipment cabinets and mounting components in the Communications Buildings for the Cashless Tolling Equipment to be provided and installed by Kapsch.

The Design-Builder shall be responsible for designing and implementing the structural, mechanical, electrical and plumbing (the “SMEP”) and the fire and life safety aspects of the design in accordance with this Project Requirement and ensure that on-site / construction radio frequency device(s) shall not interfere with the Authority’s toll collection system;

26.2 STANDARDS

The Design-Builder shall perform the Work in accordance with the Contract Documents and the Applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

26.3 REQUIREMENTS

Each Communication Building shall meet all code requirements and shall be 21 ft. X 21 ft. The Design-Builder shall be responsible for coordinating with the Authority via the Authority’s Project Manager to ensure that the relevant design requirements of the Authority are met.

The Design-Builder shall be responsible for providing electric service to the Communications Building. Coordination and payment with and to the Electric Company/Supplier for providing electrical service, power pole placement, or other necessary work will be the responsibility of the Design-Builder

The electric service to the Communications Building shall be 225-amp service from their selected pole to the interior of the Communications Building entering through the foundation up into the backside wall to the rack. Power receptacles shall be provided on ceiling to support the cashless tolling and network equipment.

A single lane access driveway with three (3) parking spots shall be provided. Vehicle access to within 15 ft. of each communication building door shall be provided as well so that equipment can be unloaded~~Parking for three vehicles within 50 ft. of the Communications Building shall be provided~~.

The Design-Builder is responsible for supplying and installing fiber optic inner-duct from an Authority specified hand-hole/splice location to and through the Communication Building foundation and concrete floor to a junction box located 4 to 5 feet above finished grade and located on the interior side of the exterior wall (but not the front exterior wall). The Design-Builder is also responsible for transitioning the inner-duct to interior fire rated inner-duct at the interior wall junction box to the service rack supplied by the Design Builder via a ladder rack.

Adesta shall pull and install the fiber optic cable line within the Design-Builders installed inner-duct. The inner-duct installation shall be laid straight without multiple bends. Bends shall only be allowed for change in direction points. The inner-duct shall be laid straight within the trench (no small bends or ripples in the conduit). Adesta shall supply, install and test the fiber for full functioning and connectivity. Adesta shall connect/splice the fiber into the Thruway's fiber backbone. The Design-Builder is responsible for back filling the trenches when Adesta completes the tests of fiber connection from the splice locations to the racks.

Refer to the document "Fiber Optic Communications for Mainline Gantries" provided separately to each Design-Builder for additional requirements.

Design-Builder shall be responsible for all the outlets, lighting, HVAC system (for climate control) and other misc. work as required by the building codes as stated in Section 1 of Part 3.

The Design-Builder is also responsible for the installation of the conduit from the Communication Building to the gantry foundation and up out of the foundation to the center of the Gantry vertical support. The conduit should end 12 inches above the top of the Gantry foundation.

Kapsch is responsible for all the cabling (supply and install) from the Communications Building to all pieces of equipment on the gantry. Each piece of equipment has a separate independent run of cabling (cameras/illuminators/nVDC unit/antenna/lasers). The independent cabling runs from Communication Building to Gantry equipment (total length) shall not exceed 250 feet including service loops.

Available hand-hole/splice locations within Gantry limits are provided in the document "Fiber Optic Communications for Mainline Gantries" provided separately to each Design Build team.

26.3.1 Mechanical Requirements

26.3.1.1 Indoor Air Quality

The Design-Builder shall minimize to the fullest extent possible the use of materials that emit VOCs and similar pollutants.

26.3.1.2 Mechanical Ventilation

As a means to monitor air quality, carbon monoxide monitoring systems shall be installed within the ventilation systems.

26.3.1.3 Mechanical Equipment and Systems

Communication Buildings shall be climate controlled. The HVAC system shall have a Rated Cooling/Heating Capacity (BTU/h) of 22000/24000 and a Total Capacity (W) (High/Standard/Low) for cooling of 9000/6420/1980 and for heating of 9480/6960/1980.

HVAC systems and components shall be selected on the basis of long-term operations and maintenance costs. The design of these systems shall ensure efficiency and ease of operation and allow for easy and cost effective repair during the service life of the facility.

For main HVAC systems and HVAC components requiring servicing and maintenance, there shall be knowledgeable local presence of both vendors and mechanical contractors for the particular brand and model of equipment installed. Equipment installed shall have a demonstrable track record for requiring low maintenance along with energy efficient performance.

Mechanical room layouts shall take account of servicing clearances and maintenance requirements.

26.3.1.4 Mechanical Equipment Vibration Isolation and Seismic Restraint

Vibrating mechanical equipment shall be housed on-slab wherever possible. Provide adequate isolation for vibrating equipment (including fans, pumps, compressors) in order to minimize transmission of through-floor vibration and noise, as well as to maximize equipment life.

Follow local and state codes for providing seismic restraints on mechanical pieces of equipment and mechanical systems.

26.3.2 Electrical Requirements

26.3.2.1 Energy Efficiency

The facility electrical and lighting systems shall meet the requirements of New York State Executive Order 111.

26.3.2.2 Panelboards

A) Panel-boards shall have copper phase, neutral and ground buses.

B) General requirements for panel-boards:

i. Indoor dry and clean locations: NEMA 250, Type 1.

ii. Outdoor locations: NEMA 250, Type 4X.

iii. Wet or wash-down areas: NEMA 250, Type 4X.

iv. Indoor locations subject to dust, falling dirt and dripping non-corrosive liquids: NEMA 250, Type 12.

26.3.2.3 Low Voltage Conductors and Cables

Feeder and branch circuit conductors and cables shall be copper with insulation types THHN-THWN, XHHW. Multi-conductor cable shall be metal-clad cable, type MC and mineral-insulated, metal-sheathed cable, Type MI.

Conductor and insulation applications:

A) Service entrance: Type XHHW, single conductors in raceway, mineral-insulated, metal-sheathed cable, Type MI or Type SE or USE multi-conductor cable, or as approved by power utility;

B) Exposed feeders: Type THHN-THWN, single conductors in raceway;

C) Feeders concealed in ceilings, walls, partitions, and crawlspaces: Type THHN-THWN, single conductors in raceway;

D) Exposed branch circuits, including in crawlspaces: Type THHN-THWN, single conductors in raceway or metal-clad cable, Type MC; and

E) Branch circuits concealed in ceilings, walls, and partitions: Type THHN-THWN, single conductors in raceway.

26.3.2.4 Raceways

A) Metal conduits, tubing, and fittings: GRC, PVC-coated rigid steel conduit, EMT and LFMC.

B) Nonmetallic conduits, tubing, and fittings: ENT, RNC, LFNC and HDPE.

C) Raceway application:

i. Outdoors exposed: GRC.

ii. Outdoors concealed, above ground: EMT.

iii. Outdoors underground: RNC, Type EPC-40-PVC, concrete encased.

iv. Indoors exposed, not subject to physical damage: EMT.

v. Indoors exposed and subject to severe damage: GRC.

vi. Indoors concealed: RNC, Type EPC-40-PVC.

vii. Indoors connection to vibrating equipment: FMC, except LFMC in damp or wet locations.

viii. Indoors damp or wet locations: GRC.

26.3.2.5 Enclosed Switches and Controllers

A) Fusible switches shall be: heavy duty, single throw, 240-V or 480-V ac, UL 98 and NEMA KS 1, Type HD.

B) Non-fusible switches: heavy duty, single throw, 240-V or 480-V ac, UL 98 and NEMA KS 1, Type HD.

C) Full-voltage controllers: ‘quick-make, quick-break’ toggle or push-button action; non-reversing.

D) Fractional horsepower manual controllers: 'quick-make, quick-break' toggle or push-button action; non-reversing.

26.3.2.6 Variable Frequency Motor Controllers

A) Manufactured units: pulse-width modulated; constant torque and variable torque for Design A and Design B motors; three-phase; 10 to 60 Hz, with voltage proportional to frequency throughout voltage range; maximum voltage equals input voltage.

B) Unit operating requirements - internal adjustability:

C) Minimum speed: 5 to 25% of maximum revolutions per minutes (rpm).

D) Maximum speed: 80 to 100% of maximum rpm.

E) Acceleration and deceleration: 0.1 to 999.9 seconds.

F) Unit to have input line conditioning, output and EMI/RFI filtering.

G) Bypass controller: two-contactor style, with bypass and output isolating contactors and isolating switch. Bypass shall be reduced-voltage (autotransformer) type.

26.3.2.7 Emergency Power Engine Generator

Generator shall be suitable for loads involving sensitive electronic equipment, adjustable frequency drives, or uninterruptible power supply systems. Size generator for all critical loads, emergency loads and 20% spare expansion capacity. The generator shall –single phase or three phase (to match electrical service is to the building) as follows:

A) Fuel: Diesel Fuel.

B) Governor: adjustable isochronous, with speed sensing.

C) Fuel storage: base-mounted fuel tank, capacity for 96 hours operation.

D) Engine exhaust system: critical-type muffler.

E) Combustion-air intake: heavy-duty, engine-mounted air cleaner with replaceable dry-filter element.

F) Outdoor generator-set enclosure: vandal-resistant, weatherproof steel housing.

26.3.2.8 Transfer Switches

A) Automatic transfer switches: NFPA 110, Level 1. Double throw, with molded-case switch or molded-case circuit breaker. ATS shall be solid-state controls, resistant to damage by voltage transients; designed for continuous-duty, repetitive transfer of full-rated current.

B) Bypass/isolation switches: NFPA 110, Level 1; manual type, arranged to connect either source of power directly to load, isolating transfer switch from load and from both power sources; factory-installed copper bus bars interconnected with automatic transfer switches.

26.3.2.9 Wiring Devices

A) Receptacles: duplex, straight blade, 125 V , 20 A. Provide ground fault circuit interrupter (GFCI) non-feed through receptacles in all wet locations and as required by code.

B) Toggle switches: 120/277 V, 20 A. Provide pilot-light and key-operated switches where required.

C) Indoor occupancy sensors: dual-technology type, with separate, externally mounted relay unit.

D) Lighting control shall be time-switch type, photo sensor type or motion sensor type, electronic, programmable units.

26.3.2.10 Interior Lighting

See Project Requirement 15 – Lighting.

26.3.2.11 Data Communications

The Design-Builder shall provide all data communication wiring to each device required at the communication building. This shall include; security equipment, generator monitors, designated work bench or desk area and cameras. The wiring shall consist of a minimum of Category 5e (enhanced) cable and shall be terminated in patch panels at the top of the Authority designated network rack, wall receptacle (jack) location(s), communication panels (generator and security), as required.

26.4 DELIVERABLES

See Project Requirements13 – Lighting; and 26 – Toll In Place Modifications.

SECTION 27 STANDARDS

27.1 GENERAL REQUIREMENTS

The Design-Builder shall identify the specific version of each Standard it uses. It is the Design-Builder's responsibility to obtain clarification of any apparent error, omission, ambiguity or conflict regarding any Standard in accordance with *DB §102-2*.

27.2 SPECIFIC REQUIREMENTS

The Design-Builder shall assume that all provisions of the Standards, including the figures and tables, are mandatory and guidelines contained therein shall be assumed to be requirements. All words such as "should," "may," "must," "might," "could," and "can" shall mean "shall" unless the context requires otherwise, as determined in the sole discretion of the Authority. It shall be in the Authority's sole discretion to determine when the context does not require a provision to be mandatory.

When a Standard refers to an action being necessary, needed, or recommended, the Design-Builder shall construe the action as required unless the context requires otherwise, as determined in the sole discretion of the Authority.

Except with respect to any Work for which Design-Builder is to be paid on a unit price or force account basis, any references in the Standards related to payment, pay items or quantities, measurement for payment, method of measurement, basis of payment, extra work, adjustment of unit prices, or similar phrases, shall be disregarded by the Design-Builder, since the Contract Price is full compensation for the Work;

Where reference is made in the Standards to items that are indicated in the plans or special provisions or required in the plans or special provisions, the plans or special provisions shall mean the Design-Builder's Plans or the Special Provisions.

References in the Standards to approved products or materials shall mean approved by the Department and/or the Authority.

All references in the Standards to the inspector, the field inspector, the project engineer, the engineer, the materials engineer, the district materials engineer, the survey crew, the project supervisor, the agency certified technician, the certified plant technician, and the representative of the Office of Materials shall mean the Design-Builder, except as otherwise expressly provided in the Contract Documents or otherwise directed by the Authority.

When a Standard uses the term "engineer" relating to highway signals, such term shall mean the Authority;

When approval or authorization by the "engineer", "NYSDOT" or "the Department" is required in a Standard for the use of alternative or substituted processes or components, this shall mean the Authority;

When a Standard requires actions, dimensions, spacing, design information, materials as designed, means, or methods that are "either as indicated in the Plans or as designated by the engineer," the Design-Builder shall disregard the phrase "or as designated by the engineer";

When a Standard refers to the “engineer” ordering work beyond the scope of work in the Contract, “engineer” shall mean the Authority;

Wherever references to “engineer” result in testing or acceptance procedures being assigned to the engineer, acceptance will be on behalf of the Authority. The Authority reserves the right to perform additional tests and inspections as necessary to confirm that the work is in conformance with Contract requirements and will be the only party authorized to accept or approve the Work on behalf of the Authority;

When a Standard refers to unauthorized work or to acceptance of non-conforming work by the “engineer,” the “engineer” shall mean the Authority;

When a Standard refers to “Department,” “departments” or “divisions” within NYSDOT or NYSTA, or to specific job titles within NYSDOT or NYSTA, such reference shall mean the Authority;

Any acceptances on behalf of NYSDOT, NYSTA, the Department of State shall be performed by the Authority;

When any references occur in a Standard to the “engineer” that refers to the time period after Final Acceptance, the term “engineer” shall mean the Authority;

When a Standard requires notifications to the “engineer”, the “engineer” shall mean the Authority;

When a Standard refers to an approval of any correction or repair that deviates from the Contract requirements, the Acceptance must be by the Authority.

When a Standard refers to items that will be performed or provided by NYSDOT/Authority or by a Region/Division or employee of NYSDOT or of the Authority, the Design-Builder shall construe the requirements as applying to the Design-Builder unless otherwise specified in the Contract Documents, or unless the context requires otherwise. It shall be in the Authority’s sole discretion to determine when the context requires otherwise.

The Design-Builder shall follow all standards, laws and rules necessary to perform its Work regardless of whether an applicable standard, regulation, law or rule is specified in Part 3 – Project Requirements.