



CASHLESS TOLLING

DESIGN-BUILD PROJECT

TA 19-1, Contract No. D800002

Request for Proposals

Addendum #8

April 19, 2019

Modification to the Request for Proposals

CASHLESS TOLLING

Design-Build Project

TA 19-1, Contract No. D800002

Note to Proposers

Differences between the deleted pages and the revised pages have been identified as follows:

- Brackets have been inserted on the left-hand margin of the pages to indicate where changes have been made to the documents; and
- Text additions have been shown in underlined red font and text deletions have been shown in crossed out red font.

General Instructions

Delete Pages 62, 63, 66, 78, 79, 80, 82, 85, 93, 94, 95 and 96 of the DB Contract Documents, Part 3, Project Requirements and substitute the attached revised Pages 62, 63, 66, 78, 79, 80, 82, 85, 93, 94, 95 and 96. Please note, there are no tracked changes on Pages 63, 79, 80, 94, 95 and 96 but the pages are included due to the shift of text resulting from the additions to Pages 62, 78 and 93.

Delete Drawings Interchange 25 Concept, Interchange 45 Concept, Interchange 46 Concept and Ripley Terminus Location of the DB Contract Documents, Part 6 – RFP Plans – Indicative/Concept Plans and replace with the attached revised Drawings Interchange 25 Concept, Interchange 45 Concept, Interchange 46 Concept and Ripley Terminus Location.

Note to Design Build Proposers, the following changes have been made to Final RFP Part 7 – Engineering Data since Amendment #7 was posted on April 18, 2019:
Part 7, Section 8 – Signage: Replaced AET sign layout package – 4/19/19

Delete Pages ii and iii of the DB Contract Documents, Part 8, Special Specifications and substitute the attached revised Pages ii, iii and iv. Please note, there are no tracked changes on Page iv but the page is included due to the shift of text resulting from the additions to Pages ii and iii.

Add the attached specifications for the following items to the DB Contract Documents, Part 8, Special Specifications:

ITEM 206.0312--25 – CONDUIT INSTALLATION ON ABOVE GRADE STRUCTURES

ITEM 206.04000001 – TEST HOLES

ITEM 627.50140008 – CUTTING PAVEMENT

ITEM 680.25000001 – SHIELDED MAGNETOMETER, MICROWAVE AND ULTRASONIC
DETECTOR LEAD-IN CABLE

ITEM 680.51200001 – CAST ALUMINUM PULL BOX

ITEM 680.58010009 – MICROWAVE VEHICLE DETECTOR WITH 12 VOLT AC POWER SUPPLY-
DETECTOR CARD

ITEM 680.78050008 – INSTALL 3 NPS DIAMETER WEATHERHEAD ON EXISTING TRAFFIC POLE
SIGNAL

ITEM 680.80324515 – INSTALL MICROCOMPUTER CABINET

ITEM 680.80324708 – MICROCOMPUTER CABINET BASE (ALUMINUM)

ITEM 680.81310109 – ACCESSIBLE PEDESTRIAN SIGNAL (APS) WITH POLE

ITEM 680.81990008 – TRAFFIC SIGNAL BACK PLATES WITH YELLOW REFLECTIVE TAPE

ITEM 680.82250401 – REMOVE STEEL ANCHOR BASE TRAFFIC SIGNAL POLE

New York State Thruway Authority

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- ITEM 680.82250501 – REMOVE TRAFFIC SIGNAL SPAN WIRE ASSEMBLY WITH TRAFFIC SIGNAL HEADS AND/OR OVERHEAD LANE USE SIGNS
 - ITEM 680.82250601 – REMOVE POLE MOUNTED SIGNAL CONTROL CABINET
 - ITEM 680.82250801 – REMOVE TRAFFIC SIGNAL PULLBOXES
 - ITEM 680.90920008 – ELECTRIC METER SOCKET, 200 AMP, SINGLE PHASE, 240/120 VOLT W/ BYPASS SWITCH FOR SIGNAL INSTALLATIONS
 - ITEM 680.94000015 – RAIN TIGHT DISCONNECT BOX
 - ITEM 680.94997008 – FURNISH AND INSTALL ELECTRICAL DISCONNECT / GENERATOR TRANSFER SWITCH
 - ITEM 680.94998008 – INSTALL ELECTRICAL DISCONNECT / GENERATOR TRANSFER SWITCH – STATE SUPPLIED
 - ITEM 680.95010415 – SERVICE CABLE 1 CONDUCTOR, NO. 04 AWG

No other provision of the solicitation is otherwise changed or modified.

timing for removal and/or coverage is the same as stated for the ORT Exit Sites and the ultimate removals as well.

At Terminus locations, the Design-Builder shall be responsible for the removal of all signs as indicated in Part 7, Section 8 – Sign Removals. The timing and requirements are also provided in Part 7, Section 8.

Special Exits:

For Exit 35, the Design-Builder shall follow the requirements as stated for the ORT Exit Sites.

For Exit 17, the Design-Builder shall follow the requirements as states for the Terminus location sites.

For Exit 16, the Design-Builder shall be responsible for the removal of all toll related signs on the ramps from the Thruway Mainline to the furthest project limits from the Mainline Thruway. The timing of removals and/or coverage shall be the same as the ORT Exits and the ultimate removal of same signs.

Terminus location Woodbury has numerous overhead sign structures with overhead sign panels that have to be removed. These signs/sign structures are specifically called out/indicated in Part 7, Engineering Data, Section 8. Some signs that are required in the Mainline Gantries/Terminus locations array are called for to be located and/or to replace signage on current overhead sign structures. These are directive and may not meet the distance requirements as shown on the Mainline Gantries/Terminus locations array. The Authority wishes to reuse the existing overhead sign structures for the placement of these signs. The remaining arrays as shown still applies and the Design-Builder is responsible for meeting those requirements.

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) Permanent 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 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.

The Authority will secure a Statewide permit from NYSDOT so that the VMS/DMS locations identified are available for the Design-Builder to install the signs required, along with the WZTC required to install them.

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.

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 Ground Mounted Sign Structures

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

12.3.3.4 Traffic Signals

Design-Builder shall comply with NYSDOT Plan Sheets as noted, Notes, Special Notes, Special Specifications and Standard Specifications associated with signal rebuild of #2A and 2.1A at the intersection of Rte 9W and NYS Thruway Exit 23. Plans noted above are found in Part 7, Engineering Data, Section 24.

Provisions listed below shall apply to the signalized intersections 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).

Loop detectors shall be installed per plans.

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.

15.3.8.1 Closure Restrictions on the NYSDOT System

As a general rule, all the general rules outlined for the Authority's system apply on the NYSDOT system.

More specifically, for work on the Interstate system of NYSDOT, no physical traffic control shall be out on the NYSDOT Interstate system between the hours of 6 AM to 9 AM nor 3:30 PM to 6 PM Monday through Friday. Overhead sign panels that are required to be removed and/or installed by the Design-Builder shall be removed at night, beginning no earlier than 9 PM. Advance warning of work zone traffic control on the interstate system is required via portable VMS devices one week in advance of intended work. Work zone traffic control shall be off the NYSDOT interstate system by 5 AM each morning.

Relative to the NYSDOT non-interstate system roads, the basic restrictions still apply and no work zones shall be on the roadways between the hours of 6 AM to 9 AM nor 3:30 PM to 6 PM Monday through Friday. As normal course of work for VMS placements on the non-interstate systems requiring shoulder closures, work zone traffic control can begin at 9 AM and end with complete removal by 3:30 PM. Work zone traffic control on the shoulders can also begin at 6 PM and shall be off the roadway system by 5 AM. This applies to VMS placements, guiderail modifications, ground mounted sign removals and/or placements.

As a general rule, single lane closures on NYSDOT non-interstate roads on roadways with multiple lanes heading in one direction can occur between 9 AM and 3:30 PM and also between 6 PM and 5 AM. On single lane roads on the NYSDOT system, the Design-Builder shall assume that work cannot occur (except shoulder closures) until after 6 PM and prior to 5 AM. Once the contract is awarded, there may be opportunities to negotiate some flexibility at specific sites. That negotiation (or request) shall have to be justified and shall have to be passed through the Authority's project manager. The request for deviation shall be presented in excess of 3 weeks in advance of the scheduled work effort.

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. Grinding for removal of pavement markings shall not be allowed on new pavement surfaces.

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. 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 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.

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(s) at the project limits varies from the standards applicable for new or resurfaced sections, the roadway features (lane & shoulder widths, superelevation and/or 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. The Authority is allowing one exception to this 8" limitation and that exception is allowed at Interchange 25 where the limitation is set at 12". 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. The exceptions to this requirement are the widened shoulders or turning radii to accommodate tandem truck routing as shown in Part 7 – Engineering Data, Section 3.

16.3.2 Existing Concrete to Remain

16.3.2.1 Existing Concrete Pavement to Remain at ORT Exit Locations

Where full depth reconstruction is not required, all existing concrete pavement to remain as permanent with travel lanes at ORT Exit locations shall be repaired, crack sealed, tack coated and overlaid with a minimum 2" Binder course and minimum 1" Top course.

16.3.2.2 Existing Concrete Pavement to Remain at Interchanges and Terminus Locations

Where full depth reconstruction is not required, all existing concrete pavement to remain as permanent travel lanes at interchange and terminus locations shall be repaired, crack sealed, tack coated and overlaid with a minimum 2 ½ " Binder course and 1 ½ " Top course.

16.3.3 Gantry Approach Pavement

Non-metallic reinforced concrete pavement installed at the Gantry treadle detector slabs shall be placed at locations in accordance with Part 7, Engineering Data, Sections 4 and 25. Other new or reconstructed pavement within the Project limits that are not required to be non-metallic reinforced shall be designed and installed in accordance with Section 16.3.1.

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.

16.3.11 Subsurface Drainage System

The Design-Builder shall design and construct edge drains, where stipulated within this Project Requirement, and 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.

16.3.12 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.

16.4 PROJECT LIMITS

Project limits are defined as follows:

- A. For the ORT Exit Sites and Special Exit 35 the minimum project limits are from the existing Authority gore areas to the intersecting NYSDOT Road or the existing intersecting local roads. The Design-Builder shall meet all current standards, including proper cross slopes and proper drainage. See Part 7, Section 2 for display of project limits.
- B. For the interchange locations (11 locations) the minimum project limits are from interstate gore areas to interstate gore areas. Essentially from the existing Authority gore area to the interstate gore areas of the NYSDOT interstate system. In these applications, the gore areas are not defined as the striped gore area but rather the gore areas are defined by the grassy area or where no grassy areas exist, where existing ramp guiderail ends and concrete barrier (positive barrier separation) is required.
- C. The mainline gantry locations project limits are defined by the Design-Builder, as required by Section 18 of Part 3 and the requirements under this Section of Part 3.
- D. The two remaining special exits are Exits 16 and 17. At Exit 17, the proposed limits are identified by the limits of new guiderail required to be placed. At Exit 16, Harriman, the Project Limits are defined by the Toll Booth removal to the straightening of the alignment via potential striping.

In all situations defined above, project limits do not include necessary guiderail replacements on existing ramps or Work Zone traffic limits or new signage, replacement signage, temporary signage, signage removals, rumble strips, delineator placement/replacement or pavement striping. These effects constitute the work limits at each location, not the project limits.

To provide better clarity relative to project limits; the Terminus locations, the Interchange locations, the ORT Exit Site locations, and the Special Exits 35, 16, and 17 Google images will display the project limits (directive). For any contradiction with the text above, the Google images shall dictate.

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 for the design and construction of a new Tandem Lot at the service area (Dewitt) to be located as shown in the RFP Plans. The design and construction of the Tandem Lot at 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.

The Design-Builder is responsible for the improvements to the proposed legislation routes for Tandems. While encroachment of vehicles cannot always be eliminated, reducing the encroachment is a goal of this aspect of this project without the need for right of way and minimizing the impact to traffic flow both during the improvements and after the improvements. Prior to any work beginning on the NYSDOT system or work that directly connects to the NYSDOT system, written authorization from the Authority's project manager shall be obtained. This is to ensure that all stakeholders, state agencies, and officials are satisfied with the Tandem routes and the necessary legislation has been passed or granted.

The proposed legislative routing at Ripley is being removed. However, single axle tractor trailers need to use Shortman Road, the intersection improvements to the Thruway off ramp to Shortman Road, and the improvements to the intersection of Shortman Road to the Thruway on ramp to travel Northeast. These intersections shall be designed to accommodate a design vehicle of WB-67.

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.

20.3.4 Protections of Existing Utilities at Tandem Lot Locations

The Design-Builder is responsible for ensuring that all existing utility structures, utilities or utility facilities are properly protected by appropriate guiderail systems depending on driveway designs or driving modifications.

Table 20-1

Tandem Locations

INTERCHANGE/LOT	OPEN/CLOSE/ RELOCATE/NEW	ADDITIONAL 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 - Extend* 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)	OPEN	Y	Y	N

New York State Thruway Authority

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	Y	Y	N

* The Design-Builder can extend or replace or etc. to provide necessary coverage per RFP.

20.3.5 Tandem Lot Barrier Gate System

The Design-Builder shall provide and install 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. In addition to the BGS, the Design-Builder shall provide a pole so that the Authority can mount a side fired antenna and install a reader and server in a cabinet provided by the Design-Builder. A single lane shall be instrumented with a BGS at each of these locations.

BGS shall include:

- Gate
- Embedded loops
- Controller

BGS System Requirements:

- 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.)

Door King Model # 1601 is provided as an example BGS that satisfies 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.

20.3.6 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 cabinet shall be adjacent to the BGS.

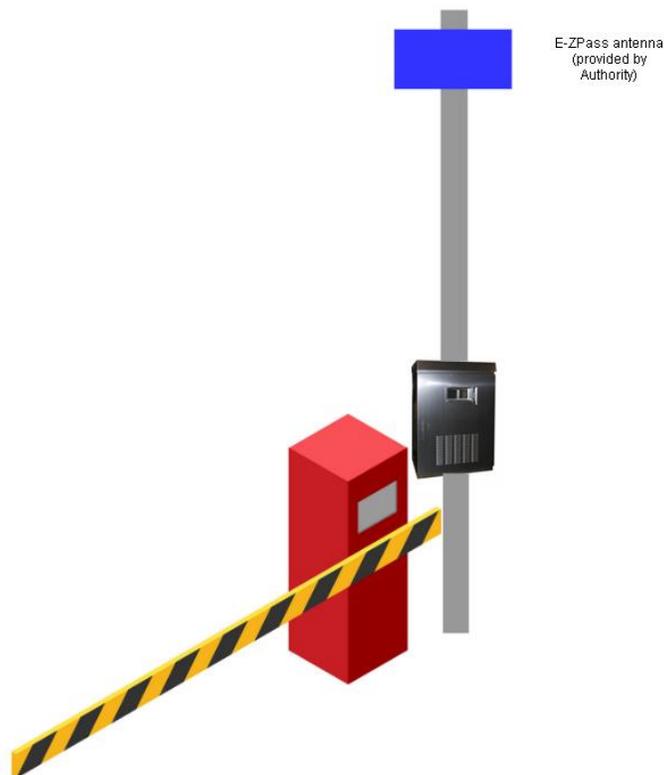
The Design-Builder shall provide power and fiber optic communications to the equipment cabinet. The fiber optic communications cable shall be terminated "SC".

The Design-Builder shall install an appropriate sized 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 Kapsch VRC 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.

Plotted By: scdusers
 Design File: scdfiles
 Plot Date: 8/21/18
 DRAFTED BY: P. FITZGERALD
 CHECKED BY: K. CZORA
 DESIGNED BY: B. LAGRAVE
 CHECKED BY: K. CZORA
 DESIGN SUPERVISOR: B. DOHERTY



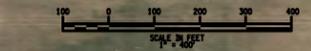
 NEW YORK STATE OF OPPORTUNITY.	Thruway Authority	TITLE OF PROJECT	CONTRACT NUMBER:
		CASHLESS TOLLING ON THE NYS THRUWAY	
		LOCATION OF PROJECT	DATE:
		EXITS 16 TO 61	3/22/2019
		TITLE OF DRAWING	DRAWING NUMBER:
		INTERCHANGE 25 CONCEPT	

DESIGNED BY: B. LAGRAVE
 CHECKED BY: K. CZORA
 DRAFTED BY: P. FITZGERALD
 CHECKED BY: K. CZORA
 Plotted By: scduars
 Design File: scduars
 Plot Date: 3/22/19



 Thruway Authority 	TITLE OF PROJECT CASHLESS TOLLING ON THE NYS THRUWAY	CONTRACT NUMBER:
	LOCATION OF PROJECT EXITS 16 TO 61	DATE: 3/22/2019
TITLE OF DRAWING INTERCHANGE 45 CONCEPT		DRAWING NUMBER:

Plotted By: scduars
 Design File: scduars
 Plotted: 8/31/18
 DRAFTED BY: P. FITZGERALD
 CHECKED BY: K. CZORA
 DESIGNED BY: B. LAGRAVE
 CHECKED BY: K. CZORA
 DESIGN SUPERVISOR: B. DOHERTY

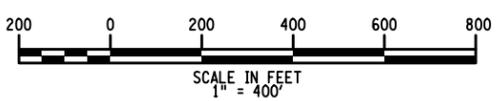


TITLE OF PROJECT CASHLESS TOLLING ON THE NYS THRUWAY	CONTRACT NUMBER:
LOCATION OF PROJECT EXITS 16 TO 61	DATE: 3/22/2019
TITLE OF DRAWING INTERCHANGE 46 CONCEPT	DRAWING NUMBER:

DESIGNED BY: B. LAGRAVE
 CHECKED BY: K. CZORA
 DRAFTED BY: P. FITZGERALD
 CHECKED BY: K. CZORA
 Plotted By: scdusers
 Design File: scdgnfiles
 Plot Date: 3/22/19



- CONCEPT KEY POINTS:**
- REMOVE TOLL PLAZA
 - 25 MPH WB RAMP IN AND OUT OF TANDEM LOT WITH DECELERATION AND WEAVING LANES
 - SHIFT WB RAMP TO SHORTMAN ROAD WEST TO INCREASE WEAVING LENGTH
 - INCREASE LENGTH OF EB ACCELERATION LANE FROM SHORTMAN ROAD FOR 70 MPH
 - REMOVE ADDITIONAL PAVEMENT AND REPLACE WITH GREEN SPACE



LEGEND:

PROPOSED PAVEMENT / PAVEMENT MARKING AREA

 Thruway Authority	TITLE OF PROJECT CASHLESS TOLLING ON THE NYS THRUWAY	CONTRACT NUMBER:
	LOCATION OF PROJECT EXITS 16 TO 61	DATE: 3/22/2019
	TITLE OF DRAWING RIPLEY TERMINUS LOCATION	DRAWING NUMBER:

The following Special Specifications are attached herein:

ITEM 206.0312--25 – CONDUIT INSTALLATION ON ABOVE GRADE STRUCTURES

ITEM 206.04000001 – TEST HOLES

ITEM 502.90010018 – CLEAN AND FILL CRACKS AND JOINTS IN PORTLAND CEMENT CONCRETE (PCC) PAVEMENT, ASTM D 6690 TYPE IV

ITEM 606.9575--25 – MEDIAN BARRIER GATE SYSTEM (INSTALLED)

ITEM 627.50140008 – CUTTING PAVEMENT

ITEM 637.11----25 – ENGINEER'S FIELD OFFICE TYPE 1

ITEM 645.4520--25 – TOLL LANE VARIABLE MESSAGE SIGN

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED - DB

ITEM 646.0603--25 – INSTALL DELINEATOR OR TENTH MILE MARKER ON POST

ITEM 646.0604--25 – INSTALL DELINEATOR OR TENTH MILE MARKER, BACK-TO-BACK ON POST

ITEM 646.0610--25 – INSTALL DELINEATOR OR TENTH MILE MARKER, BAND OR BRACKET MOUNTED

ITEM 646.0612--25 – INSTALL DELINEATOR OR TENTH MILE MARKER, BACK-TO-BACK, BAND OR BRACKET MOUNTED

ITEM 646.0626--25 – INSTALL MILE MARKERS

ITEM 646.0801--25 – INSTALL SNOWPLOW MARKER, SINGLE UNIT

ITEM 646.0802--25 – INSTALL SNOWPLOW MARKER, DOUBLE UNIT

ITEM 646.10320025 – RESET EXISTING DELINEATORS OR MARKERS

ITEM 646.50----25 – REMOVE AND DISPOSE DELINEATORS AND MARKERS

ITEM 651.02001525 – CCTV CAMERA MOUNTING POLE

ITEM 651.0201-25 – CAMERA LOWERING DEVICE

ITEM 651.9908XX25 – FIBER OPTIC COMPONENTS – DB

ITEM 662.74125325 – HDPE INNERDUCT 1.25 INCH ID – DB

ITEM 680.25000001 – SHIELDED MAGNETOMETER, MICROWAVE AND

ULTRASONIC DETECTOR LEAD-IN CABLE

ITEM 680.51200001 – CAST ALUMINUM PULL BOX

ITEM 680.58010009 – MICROWAVE VEHICLE DETECTOR WITH 12 VOLT AC POWER SUPPLY-DETECTOR CARD

ITEM 680.5830--25 – PREFORMED INDUCTANCE LOOP DETECTOR (CAST IN PLACE) INSTALLATION

ITEM 680.5860--25 – PREFORMED INDUCTANCE LOOP DETECTOR (ASPHALT OVERLAY) INSTALLATION

ITEM 680.78050008 – INSTALL 3 NPS DIAMETER WEATHERHEAD ON EXISTING TRAFFIC POLE SIGNAL

ITEM 680.8020XX25 – CABINETS FOR ITS EQUIPMENT

ITEM 680.80324515 – INSTALL MICROCOMPUTER CABINET

ITEM 680.80324708 – MICROCOMPUTER CABINET BASE (ALUMINUM)

ITEM 680.81310109 – ACCESSIBLE PEDESTRIAN SIGNAL (APS) WITH POLE

ITEM 680.81990008 – TRAFFIC SIGNAL BACK PLATES WITH YELLOW REFLECTIVE TAPE

ITEM 680.82250401 – REMOVE STEEL ANCHOR BASE TRAFFIC SIGNAL POLE

ITEM 680.82250501 – REMOVE TRAFFIC SIGNAL SPAN WIRE ASSEMBLY WITH TRAFFIC SIGNAL HEADS AND/OR OVERHEAD LANE USE SIGNS

ITEM 680.82250601 – REMOVE POLE MOUNTED SIGNAL CONTROL CABINET

ITEM 680.82250801 – REMOVE TRAFFIC SIGNAL PULLBOXES

ITEM 680.90920008 – ELECTRIC METER SOCKET, 200 AMP, SINGLE PHASE, 240/120 VOLT W/ BYPASS SWITCH FOR SIGNAL INSTALLATIONS

ITEM 680.94000015 – RAIN TIGHT DISCONNECT BOX

ITEM 680.94997008 – FURNISH AND INSTALL ELECTRICAL DISCONNECT / GENERATOR TRANSFER SWITCH

ITEM 680.94998008 – INSTALL ELECTRICAL DISCONNECT / GENERATOR TRANSFER SWITCH – STATE SUPPLIED

ITEM 680.95010415 – SERVICE CABLE 1 CONDUCTOR, NO. 04 AWG

ITEM 683.6730--25 – CCTV CAMERA SITE EQUIPMENT - PEDESTAL MOUNT

ITEM 683.9805XX--25 – TOLL FACILITY SECURITY SYSTEM SERIALIZED – DB

ITEM 685.17XX--25 – HIGHLY REFLECTORIZED TRIPLE DROP EPOXY PAVEMENT STRIPES, 6 INCH WIDTH

ITEM 690.6202--25 – INSTALLATION OF TOLL TREADLE FRAME 1

ITEM 697.0203--25 – FIELD CHANGE ORDER (THRUWAY)

ITEM 800.01000015 – DESIGN BUILD – DESIGN SERVICES

ITEM 800.02000015 – DESIGN BUILD – CONSTRUCTION INSPECTION SERVICES

ITEM 800.03000015 – DESIGN BUILD – QUALITY CONTROL SERVICES

ITEM 800.04000025 – DESIGN BUILD – FORCE ACCOUNT WORK

ITEM 800.05000015 – DESIGN BUILD – SITE MOBILIZATION

ITEM 800.0600NN15 – DESIGN BUILD – CONSTRUCTION WORK

In the event of a discrepancy between the version of any Special Specification attached herein and the version available from the NYSDOT/Authority web site listed above, the version included in these Contract Documents shall apply.

ITEM 206.0312--25 - CONDUIT INSTALLATION ON ABOVE GRADE STRUCTURES

1. DESCRIPTION:

1.01 The Contractor shall attach conduit to structures as shown on the plans and as directed by the Engineer including: overpasses, underpasses, retaining walls, bridge railings, and concrete barriers. The work shall include excavation and restoration in kind, as required and as shown by the Contract Documents and as directed by the Engineer.

2. MATERIALS:

2.01 Galvanized steel clamps, U-bolts, and backplates shall be in accordance with subsection 723-20. PVC coating shall be in accordance with Subsection 723-23. Stainless steel bolts shall be in accordance with Subsection 715-16.

3. CONSTRUCTION DETAILS:

3.01 The Contractor shall install conduit, at locations shown on the Contract Documents, utilizing one or more of the following attachment methods:

- Conduit clamps with expansion anchors and bolts
- Conduit clamps with bolts
- U-bolts with backplates
- Details shown on the plans.

3.02 Excavation and restoration of disturbed areas shall be performed in accordance with the details shown on the plans and as ordered by the Engineer.

4. METHOD OF MEASUREMENT:

4.01 The work shall be measured by the number of linear feet of conduit actually installed in accordance with the Contract Documents and as directed by the Engineer.

5. BASIS OF PAYMENT:

5.01 The unit price bid per foot shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work, as specified, including but not limited to: clamps, bolts, expansion anchors, U-bolts, excavation and restoration at conduit terminations.

ITEM 206.04000001 - TEST HOLES

DESCRIPTION:

This work shall consist of the excavation of all materials, backfill, and surface restoration for locating existing subsurface utilities, storage tanks, and other underground structures and obstructions as directed by the Engineer.

MATERIALS:

Backfill shall consist of suitable excavated material unless otherwise directed by the Engineer.

CONSTRUCTION DETAILS:

The provisions of Section 206-3 shall apply.

The Contractor shall take appropriate precautions while performing test hole excavations to not damage existing subsurface facilities. Such precautions may include, but are not limited to, hand digging.

METHOD OF MEASUREMENT:

The quantity of excavation shall be the number of cubic yards of material computed from neat lines established by the Engineer prior to performing the work or as modified by the Engineer during the exploratory excavations.

The elevation of the bottom payment line shall be the actual depth necessary to locate the subsurface obstruction, as determined by the Engineer. The top payment line shall be the existing ground surface at the center of the excavation at the time the test pit is performed. The side payment lines shall be vertical to the bottom payment line and shall be the actual bottom width necessary, as determined by the Engineer, to locate the subsurface obstruction.

BASIS OF PAYMENT:

The unit price bid for this work shall include the cost of labor, materials, and equipment required to satisfactorily complete the work, including the costs of excavation, backfill (except select backfill paid for separately), disposal of excavated material, keeping the site dewatered and free from earth, water, ice, and snow when necessary, and replacement of any pavement, shoulder, and sidewalk courses, subcourses, curbs, drives, and other top surfaces as required.

The cost for necessary guarding and protection required to protect the public from open trenches and, that required for the protection to ensure the safety of the workers shall be included in the bid price for Test Holes except that any support or protective system directed by the Engineer shall be paid for separately under the appropriate contract item.

ITEM 627.50140008 - CUTTING PAVEMENT

DESCRIPTION:

The contractor shall cut existing asphalt pavement, concrete pavement, asphalt surface course, or asphalt concrete overlay on concrete pavement at the locations indicated and detailed on the plans and as directed by the Engineer.

MATERIALS:

None specified.

CONSTRUCTION DETAILS:

Existing pavement and overlay shall be cut perpendicular to the roadway surface along neat lines, and to the depth indicated on the plans and typical sections, using appropriate equipment. After the pavement has been cut through, the Contractor may use pry bars, pneumatic tools or other methods, to pry loose the pavement to be removed from the pavement that is to remain. A pavement breaker may be used to break up the pavement to be removed after the pavement has been completely cut through and completely free from the pavement to remain.

When pavement cutting is called for in the Contract documents, if a neat vertical face with minimal shatter is obtained by performing an adjacent operation (such as milling) which eliminates the need to perform a separate pavement cutting operation, payment will be made for both the pavement cutting item and the item for the adjacent operation.

Any existing pavements and curbs not indicated to be removed that are damaged by the contractor's operations, shall be repaired at no additional cost to the State. Pavement cutting that the contractor chooses to do for his/her own convenience shall not receive any additional payment from the State.

METHOD OF MEASUREMENT:

The quantity to be measured will be the number of linear feet of pavement cutting satisfactorily completed.

BASIS OF PAYMENT:

The unit price bid per linear foot of pavement cutting shall include the cost of all labor, materials, and equipment necessary to satisfactorily complete the work.

Payment for prying, breaking, removal and disposal of cut pavement shall be made through other appropriate items.

**ITEM 680.25000001 - SHIELDED MAGNETOMETER, MICROWAVE AND
ULTRASONIC DETECTOR LEAD-IN CABLE**

DESCRIPTION

The Contractor shall furnish and install shielded lead-in cable for use with magnetometer probe, microwave and ultrasonic detectors as shown on the Contract Plans or where directed by the Engineer.

MATERIALS

The cable to be supplied shall be Canoga Cable Model 30003 - Home Run Cable or equivalent and shall consist of four #18 AWG stranded conductors spirally laid and enclosed in an aluminized polyester shield and arranged such that, as viewed from one end the conductors form an approximate square and the conductor insulation colors follow the sequence of black, red, white, and green. The conductors shall be enclosed in a chemical resistant, waterproof, UV stable, black high density polyethylene jacket with a nominal thickness of 0.032 inches. The polyethylene jacket and shield shall be filled with an amorphous material that encloses the conductors and fills the voids within the jacket. The amorphous fill shall act as a moisture penetration barrier which prevents hosing, siphoning or capillary absorption of water along cable interstices. The overall diameter of the cable shall be less than 1/4 inch.

The conductor to conductor capacitance shall be 30 pf. per foot between adjacent pairs with all others disconnected and 27 pf per foot between diagonal pairs with all others disconnected.

The capacitance shall not be altered more than 10% by 10 day immersion of the cable, with ends exposed, in a saturated brine solution. Capacitance shall be measured immediately after removed from brine solution and drying of the outer surface and ends of the cable.

The cable shall be suitable for conduit, direct burial or overhead installation. Cable properties shall not be degraded by prolonged exposure to typical soil and pavement run-off components or by prolonged exposure to the sun. The cable shall be suitable for prolonged exposure to temperatures in the range from -65°F to +176°F. Acceptance of material will be based on the manufacturer's certification of compliance with these specification requirements.

CONSTRUCTION DETAILS

The requirements of Subsection 680-3.15, Signal Control Cable and Shielded Communication Cable and Subsection 680-3.32, Tests shall apply with the following additions:

No splicing shall be permitted between the controller cabinet terminals and either the splice to the magnetometer probe cable or the terminals of the microwave or ultrasonic detector, as applicable.

The Continuity Test and the Insulation Test shall be performed prior to connection to the controller cabinet and either splicing in the magnetometer probe or connection to the terminals of the microwave or ultrasonic detector, as applicable. Failure of either test shall result in rejection of the entire run of cable. The Engineer may require a repeat of these tests if the completed detector and lead-in system fails to operate properly.

METHOD OF MEASUREMENT

**ITEM 680.25000001 - SHIELDED MAGNETOMETER, MICROWAVE AND
ULTRASONIC DETECTOR LEAD-IN CABLE**

Shielded magnetometer, microwave and ultrasonic detector lead-in cable will be measured by the number of feet of cable furnished and installed in accordance with the Plans, specifications and directions of the Engineer.

BASIS OF PAYMENT

The unit price bid per foot shall cover the cost of furnishing all labor, materials, tools and equipment necessary to complete the work in accordance with the Plans, specifications and directions of the Engineer.

ITEM 680.51200001 - CAST ALUMINUM PULL BOX

DESCRIPTION

Furnish and install a cast aluminum pull box where indicated on the plans or where directed by the Engineer.

MATERIALS

The cast aluminum pull box shall be approximately 9" long, 7⁵/₈" wide, and 5¹/₂" deep. The box shall be moisture proof and have a removable cover. The cover shall have holes threaded for 7/16" - 14 diameter bolts (7/16" diameter bolts are screwed into the cover and bear against the box to remove the cover); 5/8" - 11 diameter bolts shall be used to secure the cover to the box. Bolts, nuts and washers shall be non-magnetic and conform to Section 715-16 Stainless Steel Connecting Products of the Standard Specifications. The 5/8" bolt heads shall be recessed so that they are flush with or below the top of the cover.

The box shall have three service entrances threaded for 1¹/₄" diameter NPT conduit: one each on the 9" long sides and one in the bottom. The service entrances in the sides shall have the center line of the holes located approximately 4" from the top of the box. The junction box must be strong enough to withstand the shock transmitted by traffic.

The manufacturer must certify that the pull box meets this specification. Also, the manufacturer must certify that extension collars are available for the pull box. Concrete shall be Class D and conform to Section 501 Portland Cement Concrete - General. The surface areas of the box that will be in contact with concrete shall be treated with zinc chromate primer in accordance with Section 708-04.

CONSTRUCTION DETAILS

Section 680-3.01 Equipment List and Drawings applies. The cover shall be stamped to read "NYS TRAFFIC SIGNAL." The service entrances that are not utilized shall be capped with standard polyvinyl chloride plastic caps. The box shall be installed in a concrete foundation flush with the roadway, as shown in the plans, or as directed by the Engineer.

METHOD OF MEASUREMENT

The number of cast aluminum pull boxes furnished and installed.

BASIS OF PAYMENT

The unit price bid for furnishing and installing the pull boxes shall include the cost of all labor, materials, and equipment necessary to complete the work.

**ITEM 680.58010009 - MICROWAVE VEHICLE DETECTOR WITH 12 VOLT AC
POWER SUPPLY-DETECTOR CARD**

DESCRIPTION

The work shall consist of furnishing and installing an overhead microwave vehicle motion detector and a detector card with 12 Volt AC power supply at the locations indicated on the plans in accordance with these specifications, or where directed by the Engineer.

MATERIALS

All materials shall comply with the following specifications:

Detailed Specification - Microwave Vehicle Detector

Scope: This specification describes the requirements for an overhead microwave vehicle motion detector, capable of sensing vehicle movements in one direction only. The direction of detection desired shall be selectable by a switch.

1.0 General Technical Requirements:

- 1.1 The unit shall be capable of detecting directional motion (approach only or departing only), from overhead, for all directional motion of 2 miles per hour or more.
- 1.2 The unit shall be capable of detecting every type of vehicle that is licensed to date (including mopeds).
- 1.3 The range of the unit shall be from one three (3) feet to two hundred (200) feet for automobiles or smaller vehicles (including mopeds).
- 1.4 The pattern spread of the unit shall be determined by an antenna, acting as a wave guide, at a fixed cone of 16° (i.e. at two hundred (200) feet, the pattern will be fifty two (52) feet wide).
- 1.5 The unit shall have two switch adjustments. One being "range" (high-gain or low-gain) and the other being "directional selection" (approach or depart).

**ITEM 680.58010009 - MICROWAVE VEHICLE DETECTOR WITH 12 VOLT AC
POWER SUPPLY-DETECTOR CARD**

1.6 Operation and Maintenance Manuals shall be supplied with each unit. These manuals shall include the following information:

- (a) General Description
- (b) General Characteristics
- (c) Installation Procedure
- (d) Adjustments
- (e) Theory of Operation
- (f) Schematic and Logic Diagram
- (g) Parts List (to include part type, part number manufacturer and ratings)

"A minimum of two Operation and Maintenance Manuals shall be supplied"

2.0 Functional Requirements:

2.1 The microwave detector must have a Federal Communication Commission (FCC) identifier number assigned to it with the number affixed to the unit. The unit shall also comply with FCC rules, Part 15, and be labeled stating complicity to these rules.

2.2 The unit shall operate in the microwave region of the electromagnetic spectrum.

2.3 The unit shall be self contained with the exception that power will be supplied to the detector unit from an external source. The maximum power consumption of the unit shall be 4.5 watts at 12 VAC.

2.4 The unit shall have an electro-mechanical relay (rated at 5 amperes at 24 VDC) to provide an output signal to devices that interface with the unit. The output signal shall be at ground level when the unit has detected a valid vehicle movement and an open circuit for a nondetected condition.

2.5 The unit must employ a monitoring circuit to supervise the Gunn and mixer diodes and fail safe the relay to the closed position (ground level) in the event of a transceiver or power failure.

2.6 The unit shall be self tuning with the exception of the high low range selection switch. A five minute warm up period shall be allowed for the unit to stabilize and operate properly.

2.7 The unit shall have, on the PC board, a LED indicator to demonstrate activation of the electro-mechanical relay.

**ITEM 680.58010009 - MICROWAVE VEHICLE DETECTOR WITH 12 VOLT AC
POWER SUPPLY-DETECTOR CARD**

3.0 Mechanical Construction Requirements:

3.1 Each unit shall be enclosed in a corrosion and water resistant case without the use of silicone gel or any other materials that could deteriorate with exposure to ultra violet rays.

3.2 Size of detector shall be:

Height	4.3 inches (maximum)
Width	5 inches (maximum)
Depth	7.25 inches (maximum)
Weight	+/- 3 pounds

3.3 Each unit shall be supplied with a bracket designed for side-of-pole, overhead mast arm, or lag bolt mounting capabilities. All brackets and mounting hardware shall be corrosion resistant.

4.0 Environmental Operation Requirements:

4.1 The detector shall be capable of continuous operation over a temperature range of --35°F to 150°F.

5.0 Manufacturer Operations

5.1 The manufacturer shall test all units to FCC specifications (FCC rules, Part 15). Test reports to be furnished to NYSDOT upon request.

5.2 A minimum warranty of six months (6) shall start from date of receipt of equipment.

5.3 The manufacturer shall be required to supply a medical statement as to the safety of the unit to the general public, specifically to those persons who have medical implants, (i.e. pacemakers), when requested.

Detailed Specification - 12 VOLT AC Power Supply - Detector Card

Scope: This specification describes the requirements for a 12 Volt AC Power Supply -Detector Card Combination Unit. This card will be installed in a NYS Model 330 Traffic Control Cabinet Detector Rack.

**ITEM 680.58010009 - MICROWAVE VEHICLE DETECTOR WITH 12 VOLT AC
POWER SUPPLY-DETECTOR CARD**

1.0 General Technical Requirements

- 1.1 The components on this card shall be mounted on an edge connected printed circuit board that conforms to the specifications so that to work in the detector card rack of the model 330 system.
- 1.2 The module shall be provided with a hand pull to facilitate insertion and removal from the detector rack enclosure.
- 1.3 The module shall have a front panel mounted indicator to provide visual indication of each electrical contact closure. A test switch shall be provided to place an input to the controller unit. Both indicator and switch shall be on the input side of the optical coupler. The test switch shall be a single pole - double throw, three (3) position switch; momentary on, off and one maintained on position. The contacts shall be either silver or coin silver with gold over nickel plate rated for 5 amperes at 115 VAC.
- 1.4 The front panel of the module shall be labeled to indicate usage of all indicators and switches.
- 1.5 The unit shall be keyed (slotted) between pins B&C and M&N on the edge connector.
- 1.6 Operation and Maintenance Manuals shall be supplied with each unit. These manuals shall include the following information:
 - (a) General Description
 - (b) General Characteristics
 - (c) Installation Procedure
 - (d) Adjustments
 - (e) Theory of Operation
 - (f) Schematic and Logic Diagram
 - (g) Parts List (to include part type, part number manufacturer and ratings)

"A minimum of two Operation and Maintenance Manuals shall be supplied"

2.0 Electrical Requirements

- 2.1 The output channel of the detector circuitry shall be an opto-isolated NPN open collector capable of sinking 50 milliamperes at 30 volts. The output channel shall be compatible with New York State 170/179 controller inputs and shall present ground true logic to these inputs.

**ITEM 680.58010009 - MICROWAVE VEHICLE DETECTOR WITH 12 VOLT AC
POWER SUPPLY-DETECTOR CARD**

- 2.2 The detector circuitry shall be powered using the 24 VDC supplied in a New York State Model 330 traffic control cabinet detector rack. The detector circuitry shall not draw more than 100 milliamperes.
- 2.3 The module shall provide ground true logic to the controller when pins D & E of the edge connector are shorted and a logic high when pins D & E are opened.
- 2.4 The front panel shall be connected to chassis ground.
- 2.5 The input shall deliver no less than 15 or more than 20 milliamperes to a contact closure across pins D & E of the edge connector.
- 2.6 The unit shall be capable of supplying 12 VAC across pins F & H of the edge connector. This voltage shall be supplied by a transformer with a secondary rated at 12 volt amps. Power to the primary side of the transformer shall be provided by the Model 330 Cabinet through pins M & N of the edge connector. The primary shall be fused at 1/8 ampere with a time delay fuse.
- 2.7 Lightning protection shall be installed across all input pairs of the detector/input card. The protection shall be designed to enable the device to withstand a 10mF capacitor, charged to +/- 1000 VDC, being placed for a period of one (1) second, directly across the input pins or between either input pin and Chassis Ground of the detector/input card with no load present.
- 2.8 To avoid interference with the detector rack card guides, there shall be (3/32 inch)
minimum clearance between the entire top and bottom of the PC board and any protruding hardware such as washers, screws, front panel mounting brackets or circuit components.

CONSTRUCTION DETAILS

The detector unit shall be mounted at the locations as shown on the plans. Mounting per the manufactures recommendations. The wiring hole in the pedestrian pole shall be debured, insulation bushing installed and the hole ductsealed. When the Detector is mounted on a signal pole the wire shall be run from the poles weather head, to a riser assembly thru the riser to the Detector. Riser assembly paid for under that item. The 12 volt AC Power Supply Detector Card Combination Unit is to be installed in the NYS Model 330 Traffic Control Cabinet Detector Rack.

**ITEM 680.58010009 - MICROWAVE VEHICLE DETECTOR WITH 12 VOLT AC
POWER SUPPLY-DETECTOR CARD**

METHOD OF MEASUREMENT

The quantity to be paid for under this item shall be the number of detectors with 12 Volt AC Power Supply, installed in accordance with the manufactures recommendations or as ordered by the Engineer.

BASIS OF PAYMENT

The unit price bid per each shall include the cost of all labor, material and equipment necessary to complete the work. Wire and riser assembly shall be paid for under their respective items.

ITEM 680.78050008 - INSTALL 3 NPS DIAMETER WEATHERHEAD ON EXISTING TRAFFIC SIGNAL POLE

DESCRIPTION:

Under this item, the contractor shall install a 3 NPS diameter weatherhead as indicated on the plans or as directed by the Engineer.

MATERIALS:

The materials used in this work shall meet the requirements of Subsection 680-2 "Materials", and Section 724-03 "Traffic Signal Poles", of the Standard Specifications.

CONSTRUCTION DETAILS:

Under this item, the contractor shall install a 3 NPS diameter weatherhead as indicated on the plans or as directed by the Engineer. The removal of an existing weatherhead and/or any other modifications required for the proper installation of the new weatherhead will be included in this item. Care shall be taken to protect any existing wires from damage. Any damage shall be repaired at the contractor's expense.

All work under this item shall be performed in accordance with Section 680 "Traffic Signals" of the Standard Specifications and to Standard Sheet 680-07 for Weather Head Detail.

METHOD OF MEASUREMENT:

This item shall be measured for payment on an each basis.

BASIS OF PAYMENT:

This unit price bid for this item shall include the cost of furnishing all labor, materials and equipment necessary to complete the work in accordance with the contract documents and as directed by the Engineer.

ITEM 680.80324515 - INSTALL MICROCOMPUTER CABINET

DESCRIPTION:

Under this item the contractor shall install Microcomputer Cabinets, which are supplied by the State, at locations shown on the plans or where directed by the Engineer. The State will supply and install the microprocessor, peripheral equipment and software.

MATERIALS:

The State will supply the Microcomputer Cabinets to the Contractor to install. The Contractor shall provide conduit nipples, grounding bushing, L. B. fitting and mounting hub for wiring entrance interface panel between the steel pole and the aluminum cabinet base. The wiring entrance interface panel shall be of sufficient size to accommodate a minimum 4" conduit and may be larger if required to accommodate the traffic signal wiring. Cabinet features, dimensions and location of interface panel for field wiring are detailed in the NEW YORK STATE TRANSPORTATION MANAGEMENT EQUIPMENT SPECIFICATIONS.

CONSTRUCTION DETAILS:

The requirements of section 680-3 of the Standard Specification shall apply with the following additions:

1. The Contractor's request for delivery of the Microcomputer Cabinets supplied by the State shall be made, in writing, five weeks in advance, to the Engineer. The Microcomputer Cabinets will be delivered to the Contractor at the Regional Signal Shop. The Engineer will advise the Contractor of the location of the Regional Signal Shop. At least one week in advance of delivery, the Contractor shall make an appointment through the Engineer as to the time and date the Microcomputer Cabinets will be available to the contractor.
2. The Contractor shall mount the Microcomputer Cabinet to the steel signal pole as shown on the contract plans, Standard Sheets or as directed by the Engineer.
3. The Contractor shall enlarge the hole for conduit located in the bottom of the Microcomputer Cabinet, if necessary, to accommodate the traffic signal wiring.
4. In unpaved areas, the Contractor shall install a concrete work pad in front of the cabinet door as specified on the Standard Sheets or the plans. The work pad shall meet the requirements of section 608 of the Standard Specifications for concrete sidewalk, and include concrete, fill or excavation and all grading as necessary.
5. The Contractor shall establish ground as shown on the contract plan and further defined in the N.Y.S. Standard Specifications of Construction and Materials. The Contractor shall run number six copper stranded wire from the ground lug connection at the base of the pole to the EARTH ground bus within the Cabinet. The Contractor shall connect the power line common to the minus AC ground bus.
6. The Contractor shall arrange with the utility company and the Engineer to have the power hooked up to the Microcomputer Cabinet(s).
7. The Contractor shall perform all tests listed under Section 680-3.32, Tests, of the N.Y.S. Standard Specifications for Construction and Materials with the exception of the Functional Test, when all of his

ITEM 680.80324515 - INSTALL MICROCOMPUTER CABINET

traffic signal installation work on the entire project, has been complete. The State may, at its option, have the Contractor perform the required testing at each individual signal installation location as soon as he completes his signal installation work at that location. The State will assume responsibility for the Functional Test.

8. Within 30 days of the Contractor successfully completing the required testing on his installation work, the State will install the microprocessor, peripheral equipment and software into the Microcomputer Cabinet. The State may, at its option, perform tests on the traffic signal equipment before installing the microprocessor, peripheral equipment and software.

9. Upon completion of the microcomputer installation, the Engineer may, at his option, conduct a functional test of the signal system for a period not to exceed 14 days. During this testing period, the existing signal system may be turned off or on as directed by the Engineer.

METHOD OF MEASUREMENT:

This work will be measured as the number of Microcomputer Cabinets installed in accordance with the plans, specifications and directions of the Engineer.

BASIS OF PAYMENT:

The unit price for each Microcomputer Cabinet installed shall include the cost of all labor, material, testing and equipment necessary to complete the work.

The concrete work pad, if required, and any necessary fill, excavation or grading, is to be paid for under this item.

Payment for connecting all input and output wiring to the interface panel of the Microprocessor Cabinet shall be included in the bid price for each specific cable item.

ITEM 680.80324708 - MICROCOMPUTER CABINET BASE (ALUMINUM)

DESCRIPTION:

Under this item the contractor shall furnish and install a microcomputer cabinet base at locations shown on the plans or as directed by the Engineer.

MATERIALS:

The base bottom, sides, top and door shall be constructed of ¼ inch grade 5052-H32 aluminum, with full weld seams and shall conform in all respects to the attached drawing.

The bottom plate of the cabinet base shall be constructed to form a flange with the sides so that the bottom of the base is completely open. Four 1.25 inch anchor bolt holes shall be cut into the base plate.

A door shall be constructed in the front of the base by attaching a piece of ¼ inch ± aluminum inside the base to form a 1 inch lip. The door shall fit flush to the front of the base, against the lip. The door shall be secured at the top and bottom with ¼ inch Allen screws.

The top plate shall have one 8 inch hole cut into it.

A ½ inch hex nut to be used for grounding purposes shall be welded to the inside of the front of the base.

The base shall be of untreated and unpainted aluminum.

CONSTRUCTION DETAILS:

The cabinet base shall be fabricated and mounted on a concrete base in accordance with the details shown on the plans, standard sheets and as directed by the Engineer.

METHOD OF MEASUREMENT:

This work will be measured by the number of cabinet bases furnished and installed in accordance with the plans, specifications, and directions of the Engineer.

BASIS OF PAYMENT:

The unit price bid for each cabinet base shall cover the cost of fabrication, installation, all labor, material and equipment necessary to complete the work.

When the plans call for mounting the cabinet base on an existing foundation the cost of removing

ITEM 08680.803247 M - MICROCOMPUTER CABINET BASE (ALUMINUM)

the existing anchor bolts and installing new anchor bolts shall be included in the price bid for this item. When plans call for mounting the cabinet base on a new foundation, the installation of anchor bolts in the foundation shall be included in the price bid for this item. New concrete foundations will be paid for under a separate payment item.

ITEM 680.81310109 - ACCESSIBLE PEDESTRIAN SIGNAL (APS) WITH POLE

ITEM 680.81310209 - ACCESSIBLE PEDESTRIAN SIGNAL (APS) WITHOUT POLE

DESCRIPTION

The APS shall consist of a Central Control Unit (CCU) and Accessible Pedestrian Push Button Stations (PBS). This work shall consist of furnishing and installing a APS in accordance with the Contract Documents or as directed by the Engineer. The System shall meet the functionality requirements of MUTCD 2009-4E.

MATERIALS

The Accessible Pedestrian Push Button Station shall be ADA compliant. It shall contain all electronic control equipment, mounting hardware, Audible-Tactile push button and 9 inch by 15 inch informational pedestrian sign mount with bracket assembly-sign face (MUTCD # R10-3E). The Audible-Tactile push button shall be designed to provide both a button with a raised directional vibrating tactile arrow on the button and a variety of audible sounds for different pedestrian signal functions. The unit shall have a weatherproof speaker, and the appropriate informational sign for each location.

The system shall consist of a Control Unit and the Accessible Pedestrian Push Button Station with Pole Mounting Assembly.

The Systems Specifications

- Pole Unit Speaker with, microphone shall be located in the PBS, non-visible, environmentally protected housing
- Pole Unit Temperature Range: - 30°F to 165°F
- Pole Unit Push Button: ADA compliant with integrated sign bracket for the MUTCD # R10-3E sign
- Temperature and Humidity requirements- meet NEMA TS 2 Section 2.1
- Voltage Protection requirements - meet NEMA TS 2 Section 2.1
- Mechanical Shock and Vibration requirements - meet NEMA TS 2 Section 2.1
- Transient Suppression requirements – meet IEC 61000-4-4, ICC 61000-4-5
- Electronic Noise requirements – meet FCC Title 47, Part 15, Class A
- Electrical Reliability requirements- meet NEMA TS4 (Applicable Portions of Section 8)
- Enclosure requirements, (PBS) shall meet NEMA 250-Type 4X E, (CCU) shall meet NEMA 250-Type 1

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Audio and System Specifications

- Volume Control Automatic Adjustment Range: 28dB Max
- Microphone for Ambient Noise:
Approximate frequency range: 170 Hz to 2.3 kHz
- Button Tone: A brief “tick” confirms each button push
- Audible Locating Tone: 880Hz plus harmonic, 0.1 second duration, 1 second interval. Operates during pedestrian clearance and don’t walk interval.
- LED Operation: The LED lights when the button is pushed and remains lit until the next walk phase.
- LED Luminous Intensity:
Greater than 1200 mcd, sunlight visible, ultra bright red, viewing angle 160°
- System shall provide the following audible features:
 - A locating tone
 - 5 walk sound choices
 - 3 pedestrian clearance sound choices
 - Direction of travel
 - User programmable informational message
 - Audible sound must emanate from push button
- System shall provide a “Wait” message that plays once the button is activated.

CONSTRUCTION DETAILS

The Control Unit shall be mounted in the pedestrian head and powered from the pedestrian head lamp indications. The Pole Mounting Assembly shall be mounted on a pole near the start of the crosswalk. The Pedestrian push button shall be mounted between 3 ft. and 3 ft. 6 in. above an accessible surface and shall face an accessible approach (orientated parallel to the line of pedestrian travel) and within 10 in of adjacent accessible surface, as per Standard Sheets “Sidewalk Curb Ramp Details” and as per Standard Sheet “Pedestrian Signals and Flashing Beacon Installation Details”. All installations shall conform to manufacturers specifications and details required for a complete working Accessible Pedestrian Push Button. Street name shall be programmed, if there is an adjacent push button within 10 feet or as directed by the Engineer.

METHOD OF MEASUREMENT

This work will be measured by the number of stations satisfactorily furnished and installed.

BASIS OF PAYMENT

The unit price bid for each Accessible Pedestrian Push Button Station installed shall include the cost of all labor, materials, equipment, system programming and testing necessary to complete the work.

ITEM 680.81990008 - TRAFFIC SIGNAL BACK PLATES WITH YELLOW REFLECTIVE TAPE

DESCRIPTION

This work shall consist of furnishing and installing TRAFFIC SIGNAL BACKPLATES WITH YELLOW REFLECTIVE TAPE in accordance with the contract documents and as directed by the Engineer.

MATERIALS

Back plates shall be constructed of a flat sheet aluminum meeting specifications for Section 715-04, Wrought Aluminum and shall have a dull black finish that meet specifications for Section 708-07, Paint for Aluminum Surfaces. Reflective Tape shall meet the specifications for Section 730-05, Reflective Sheeting, ASTM Type I or Type III.

CONSTRUCTION DETAILS

Back plates shall be compatible with the signal heads supplied. The back plates shall have appropriate mounting brackets and when mounted shall not obstruct the signal head door openings. The yellow reflective tape shall border the back plate and have a width of 3 inches.

METHOD OF MEASUREMENT

This work will be measured as the number of TRAFFIC SIGNAL BACKPLATES WITH YELLOW REFLECTIVE TAPE satisfactorily furnished and installed.

BASIS OF PAYMENT

The unit price bid shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work.

ITEM 680.82250401 - REMOVE STEEL ANCHOR BASE TRAFFIC SIGNAL POLE

DESCRIPTION:

Under this item, the Contractor shall remove steel anchor base traffic signal poles.

MATERIALS:

Not specified.

CONSTRUCTION DETAILS:

The Contractor shall remove the steel anchor base traffic signal pole from the locations indicated in the plans, or where ordered by the Engineer and he shall deliver it to the New York State Department of Transportation Traffic Signal Maintenance Shop in Waterford, New York. The Contractor shall chip away the pole foundation to a point 18" below the finished grade and remove all protruding anchor bolts or reinforcing material. The Contractor shall backfill the excavation in accordance with section 680-3.09, Excavation and he shall restore the surface area to match the existing surrounding conditions.

METHOD OF MEASUREMENT:

This work will be measured as the number of steel anchor base traffic signal poles removed.

BASIS OF PAYMENT:

The unit price bid for each anchor base steel pole removed shall cover the cost of all labor, excavation, backfill, transportation, material, and equipment necessary including restoration.

ITEM 680.82250501 - REMOVE TRAFFIC SIGNAL SPAN WIRE ASSEMBLY WITH TRAFFIC SIGNAL HEADS AND/OR OVERHEAD LANE USE SIGNS

DESCRIPTION:

Under this item the Contractor shall remove traffic signal span wire assemblies, heads, overhead lane use signs and miscellaneous wire from traffic signal poles.

MATERIALS:

None specified.

CONSTRUCTION DETAILS:

The Contractor shall remove the traffic signal heads, the overhead lane use signs (if any), the span wire assembly, and all miscellaneous signal wire within the steel traffic signal poles from the locations indicated in the plans, or when ordered by the Engineer. Care shall be taken that the removed traffic signal heads and overhead lane use signs complete with span wire clamps, are not damaged. The signal heads and overhead lane use signs shall be delivered to the New York State Department of Transportation Traffic Signal Maintenance Shop in Waterford, New York. All other material removed shall become the property of the Contractor and shall be removed from the site.

METHOD OF MEASUREMENT:

This work will be measured as the number of span wire assemblies removed. Dual span wires shall be counted as one span wire assembly.

BASIS OF PAYMENT:

The unit price bid for each span wire assembly with traffic signal heads and/or overhead lane use signs removed shall cover the cost of all labor, material, and equipment necessary to complete the work.

ITEM 680.82250601 - REMOVE POLE MOUNTED SIGNAL CONTROL CABINET

DESCRIPTION:

Under this item, the Contractor shall remove pole mounted signal control cabinets.

MATERIALS:

Not specified.

CONSTRUCTION DETAILS:

The Contractor shall remove the pole mounted signal control cabinet from the locations indicated in the plans, or when ordered by the Engineer. If the controller is a State supplied Microcomputer (Model 170, 179 or 2070), the Contractor shall request New York State Signal Maintenance Personnel to remove the controller and associated equipment before cabinet removal. If the controller is other than a State supplied Microcomputer, the Contractor shall remove, tag, and store all signal control equipment prior to cabinet removal. The cabinet shall also be tagged, and all cabinets and equipment removed by the Contractor shall be delivered to the New York State Department of Transportation Traffic Signal Maintenance Shop in Waterford, New York.

METHOD OF MEASUREMENT:

This work will be measured as the number of pole mounted signal control cabinets removed.

BASIS OF PAYMENT:

The unit price bid for each pole mounted signal control cabinet removed shall cover the cost of all labor, transportation, material, and equipment necessary to complete the work.

ITEM 680.82250801 - REMOVE TRAFFIC SIGNAL PULLBOXES

DESCRIPTION:

Under this item, the Contractor shall remove traffic signal pullboxes.

MATERIALS:

Not specified.

CONSTRUCTION DETAILS:

Under this item, the Contractor shall remove traffic signal pullboxes from the locations indicated in the plans, or when ordered by the Engineer. The pullboxes shall become the property of the Contractor and shall be removed from the site.

The Contractor shall remove a pullbox located in the roadway area by sawcutting the pavement 2 ft. from the edge of the existing frame and then excavating around the outside of the pullbox. The existing conduit(s) shall be cut off outside of the pullbox and the entire pullbox shall be removed.

The Contractor shall remove a pullbox located in the sidewalk by sawcutting the sidewalk panel(s) in which it is located at the scorelines and removing the entire flag, then excavating around the outside of the pullbox. The existing conduit(s) shall be cut off outside of the pullbox and the entire pullbox shall be removed.

The Contractor shall backfill the excavation in accordance with section 680-3.09 to the top of the subgrade. Final restoration shall be in accordance with the plans and shall match the surrounding area.

METHOD OF MEASUREMENT:

This work will be measured as the number of pullboxes removed.

BASIS OF PAYMENT:

The unit price bid for each pullbox removed shall cover the cost of all labor, equipment, sawcutting, disposal, excavation, and backfill and surface restoration materials to complete the work.

**ITEM 680.90920008 - ELECTRIC METER SOCKET, 200 AMP, SINGLE PHASE,
240/120 VOLT W/ BYPASS SWITCH FOR SIGNAL
INSTALLATIONS**

DESCRIPTION

The Contractor shall furnish and install electric meter sockets for traffic signal installations with a lever operated bypass switch where shown on the plans or where directed by the Engineer.

MATERIALS

All materials shall be approved by the local electrical utility company.

The electric meter socket shall be a 200 ampere, 240/120 volt, 4-terminal, ringless with a lever operated bypass switch, single phase 3 wire, lay-in type with line and load connectors sized for #6 AWG wire gauge.

CONSTRUCTION DETAILS

The meter box assembly shall be installed in-line with the service entrance, positioned and mounted according to the utility specifications, and properly grounded.

All work shall be done in a manner satisfactory to the Engineer-In-Charge and the utility company.

METHOD OF MEASUREMENT

This work will be measured as the number of meter box installations made in accordance with the plans and accepted by the Engineer-In-Charge.

BASIS OF PAYMENT

The unit price bid for this item shall include the cost of furnishing all labor, material and equipment necessary to complete the work.

ITEM 680.94000015 - RAINLIGHT DISCONNECT BOX

Description. Under this item the Contractor shall furnish and install a raintight disconnect box where shown on the plans, on the standard sheets, or where directed by the Engineer.

Materials. The raintight disconnect box shall consist of a circuit breaker enclosed in a lockable raintight cabinet, both approved for use by Underwriters Laboratory. The amperage of the circuit breaker supplied in the disconnect box shall be at least 10 amperes higher than the main circuit breaker contained in the control cabinet being serviced, but shall not exceed the maximum amperage allowed for the service entrance cable used, as specified by the most current National El critical Code. The raintight cabinet supplied shall be of a construction such that it can be locked by a standard padlock.

Construction Details The disconnect box shall be installed at the location shown on the plans, on the standard sheets, or where directed by the Engineer. It shall be attached to the pole or cabinet as shown on the plans, on the standard sheets, or as directed by the Engineer.

Once installed, the contractor shall keep the disconnect box padlocked until the signal installation is accepted by NYS DOT. During this time, the EIC shall be provided with a key which will open the contractor's padlock. Once the installation is accepted, the maintaining agency will install its own padlock and the Contractor's lock and key will be returned.

Method of Measurement This item will be measured for payment as the number of raintight disconnect boxes furnished, installed, and accepted by the Engineer-in-Charge.

Basis of Payment The unit price bid shall include the cost of all labor, material, and equipment necessary to complete the work as shown on the plans, on the standard sheets, or as directed by the Engineer.

**ITEM 680.94997008 – FURNISH AND INSTALL ELECTRICAL
DISCONNECT/GENERATOR TRANSFER SWITCH**

DESCRIPTION

Under this item, the Contractor shall furnish and install a electrical disconnect/generator transfer switch as shown on the contract documents, or the standard sheets or as directed by the Engineer.

MATERIALS

The Contractor shall furnish a electrical disconnect/generator transfer switch from a manufacture listed on the current New York State Department of Transportation Traffic Signal Laboratory's Qualified Product List.

CONSTRUCTION DETAILS

The electrical disconnect/generator transfer switch shall be attached to the pole or cabinet as shown on the contract documents or the standard sheet or as directed by the Engineer.

METHOD OF MEASUREMENT

This item will be measured for payment as the number of electrical disconnects/generator transfer switches furnished installed and accepted by the Engineer-in-Charge.

BASIS OF PAYMENT

The unit price bid shall include the cost of all labor, material and equipment necessary to complete the work as shown on the contract documents, on the standard sheets, or as directed by the Engineer.

**ITEM 680.94998008 – INSTALL ELECTRICAL DISCONNECT /
GENERATOR TRANSFER SWITCH – STATE
SUPPLIED**

DESCRIPTION - Under this item, the Contractor shall install a State Supplied electrical disconnect / generator transfer switch as shown on the plans, or the standard sheets or as ordered by the Engineer.

MATERIALS - The electrical disconnect / generator transfer switch shall be State supplied.

CONSTRUCTION DETAILS - The electrical disconnect / generator transfer switch shall be attached to the pole or cabinet as shown on the plans or the standard sheet or as ordered by the Engineer, in accordance with the most current National Electrical Code.

METHOD OF MEASUREMENT - This item will be measured for payment as the number of electrical disconnect / generator transfer switch installed and accepted by the Engineer-in-Charge.

BASIS OF PAYMENT - The unit price bid shall include the cost of all labor and equipment necessary to complete the work as shown on the plans, on the standard sheets, or as ordered by the Engineer.

ITEM 680.95010415 - SERVICE CABLE 1 CONDUCTOR, NO. 04 AWG
ITEM 680.95010615 - SERVICE CABLE 1 CONDUCTOR, NO. 06 AWG
ITEM 680.95010815 - SERVICE CABLE 1 CONDUCTOR, NO. 08 AWG
ITEM 680.95011015 - SERVICE CABLE 1 CONDUCTOR, NO. 10 AWG
ITEM 680.95020415 - SERVICE CABLE 2 CONDUCTOR, NO. 04 AWG
ITEM 680.95020615 - SERVICE CABLE 2 CONDUCTOR, NO. 06 AWG
ITEM 680.95020815 - SERVICE CABLE 2 CONDUCTOR, NO. 08 AWG
ITEM 680.95021015 - SERVICE CABLE 2 CONDUCTOR, NO. 10 AWG

Description. Under this item the Contractor shall furnish and install in a raceway or conduit service entrance cable which is suitable for wet or dry locations at the location indicated on the plans and as directed by the Engineer. This cable will transmit current from the power source to the signal controller cabinet.

Material. The cable shall conform to the requirements for service entrance cable of the National Electrical Code and be Underwriters Laboratory approved. The cable shall be rated for 600 volt service and the conductors shall be stranded copper wire or as specified in the contract documents.

Construction Details. Service cable shall be installed in accordance with Details: the contract documents and as directed by the Engineer. A sufficient length of cable, not less than 24 inches, shall be left at the end of the run to allow for the tap to be made by the utility company at the power source entrance. The Contractor shall make all connections at the fused disconnect and the ground bar in the signal controller cabinet.

Method of Measurement. Service cable will be measured as the number of linear feet actually installed in accordance with the contract documents or as directed by the engineer.

Basis Of Payment. The unit price bid per linear foot shall include the cost of all materials, labor, connections, incidental fittings, equipment, tools, and all necessary tests to complete the installation.