



# Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

April 9, 2020

SUBJECT: FAI Route 190/94/290  
Project NHPP-APXQ(831)  
Section 2015-019R  
Cook County  
Contract No. 62A76  
Item No. 173, April 24, 2020 Letting  
Addendum A

## NOTICE TO PROSPECTIVE BIDDERS:

Attached is an addendum to the plans or proposal. This addendum involves revised and/or added material.

1. Revised the Schedule of Prices
2. Revised pages v-ix of the Table of Contents to the Special Provisions
3. Revised pages 2, 3, 46-48, 236-246, & 407-412 of the Special Provisions
4. Added pages 708-710 to the Special Provisions
5. Revised sheets 16, 20, 23, 25, 35, 688, 1219 & 1249 of the Plans

Prime contractors must utilize the enclosed material when preparing their bid and must include any changes to the Schedule of Prices in their bid.

Very truly yours,

A handwritten signature in black ink, appearing to read "Jack A. Elston".

Jack A. Elston, P.E.  
Bureau Chief, Design and Environment

MTS

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## SOILS INFORMATION

Soil boring logs and generalized soil profiles are shown in the Plans for SN 016-1819, SN 016-1820, SN 016-1821, SN 016-1822, and SN 016-Z051. The reports below are available for inspection at IDOT District 1, 201 W. Center Court, Schaumburg, Illinois.

Structure Geotechnical Report  
Circle Interchange Reconstruction  
Retaining Wall 30 (Proposed SN 016-1819)  
I-90/94 NB Madison Exit Ramp  
Section 2014-016R&B  
Cook County, Illinois  
Prepared by Wang Engineering, Inc.  
Original: August, 25 2016  
Revised: December 14, 2016

Structure Geotechnical Report  
Circle Interchange Reconstruction  
Retaining Wall 31 (Proposed SN 016-1820)  
F.A.I. Route 90/94 (Kennedy Expressway)  
IDOT D-91-227-13/PTB-001  
Cook County, Illinois  
Prepared by Wang Engineering, Inc.  
Original: May 10, 2019  
Revised: November 13, 2019

Structure Geotechnical Memorandum  
Jane Byrne (Circle) Interchange Reconstruction  
Retaining Wall 32 along NB Washington Exit Ramp, Proposed SN 016-1821  
F.A.I. RTE 90/94, IDOT Contract 62A76  
Section 2015-019R  
Cook County, Illinois  
Prepared by Wang Engineering, Inc.  
Original: July 11, 2019

Structure Geotechnical Report  
Circle Interchange Reconstruction  
Retaining Wall 33 (Proposed SN 016-1822)  
F.A.I. Route 90/94 (Kennedy Expressway)  
IDOT D-91-227-13/PTB-001  
Cook County, Illinois  
Prepared by Wang Engineering, Inc.  
Original: April 5, 2019  
Revised: November 19, 2019

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Structure Geotechnical Report  
Circle Interchange Reconstruction  
Retaining Wall 52 (Proposed SN 016-Z051)  
Along Randolph Exit Ramp  
FAI Route 90/94 (Kennedy Expressway)  
IDOT D-91-227-13/PTB 163-001  
Cook County, Illinois  
Prepared by Wang Engineering, Inc.  
Original: May 7, 2019  
Final: August 8, 2019

Roadway Geotechnical Report  
Jane Byrne Interchange Reconstruction  
I-90/94 and Connection Ramps  
62A76, 62A77 and 60X94  
Section 2015-020B and 2014-015R&B-R  
Cook County, Illinois  
Prepared by Wang Engineering, Inc.  
Original: October 28, 2019  
Revised: December 16, 2019  
Revised: January 28, 2020

Geotechnical Letter Report  
Overhead Sign Structures and High Mast Towers  
Jane Byrne Interchange, Contract 62A76  
Cook County, Illinois  
Prepared by Wang Engineering, Inc.  
Original: September 17, 2019

Geotechnical Letter Report  
High Mast Towers – Contract 62A76 Addendum  
Jane Byrne Interchange  
Cook County, Illinois  
Prepared by Wang Engineering  
Original: November 8, 2019

Geotechnical Memorandum  
Circle Interchange Reconstruction  
IDOT D-91-227-13/PTB 163-001  
NB-15 Micropiles  
Contract 62A76  
Prepared by Wang Engineering, Inc.  
Original: November 1, 2019

Geotechnical Letter Report  
Dynamic Message Sign  
Jane Byrne Interchange, Contract 62A76  
Cook County, Illinois  
Prepared by Wang Engineering  
Original, March 23, 2020

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**ENGINEER'S FIELD OFFICE TYPE A (SPECIAL)**

Add the following to paragraph of Article 670.01 to read:

The location of the engineer's field office shall be located at 900 South Des Plaines Street, Chicago for the exclusive use of the Engineer or Authorized Representative. It is intended that Contract 62A76 I-90/94 Northbound Roosevelt Road to Lake Street, and Contract 62A77, I-90/94 Southbound Roosevelt Road to Lake Street share the same field office. Maintenance of the field office shall be a shared responsibility by each contractor. . All furnishings shall be clearly labeled by each contractor and be returned to each contractor at the end of the project.

Revise the fifth paragraph of Article 670.02 to read:

Solid waste disposal consisting of seven waste baskets and an outside trash container of sufficient size to accommodate a weekly provided pick-up service intreated by the contractor. A weekly cleaning service for the office, including lavatory shall be provided.

Revise subparagraph (a) of Article 670.02 to read:

(a) Twenty-four desks, with minimum working surface 42 inch x 30 inch each and twelve non-folding chairs with upholstered seats and backs.

Revise subparagraph (d) of Article 670.02 to read:

(d) Eight free standing four-drawer legal size file cabinets with lock and an underwriters' laboratories insulated file device 350 degrees one hour rating.

Revise subparagraph (e) of Article 670.02 to read:

(e) Twenty folding chairs with fabric top cushions and two conference tables with minimum top size of 44 inch x 96 inch.

Revise subparagraph (h) of Article 670.02 to read:

(h) Two electric desk type tape printing calculator.

Revise subparagraph (i)(2) of Article 670.02 to read:

(i)(1) Internet connection. A high speed service connection using cable broadband, or CDMA wireless technology. Additionally, a WIFI 5 wireless network shall be provided, which will allow connection by the Engineer and up to 20 staff throughout the building. Including but not limited to all labor, material and other work by the TELCOM company necessary to install the appropriate network in and into the building. However the consultant services room must have it's own independent network from state network or connections.

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- (i)(2) Telephones lines. One telephone line including one line for the fax machine. All telephone lines shall include long distance service and all labor and materials necessary to install the phone lines at the locations directed by the Engineer. The TELCOM company shall configure ROLL/HUNT features as specified by the engineer.

Revise subparagraph (j) of Article 670.02 to read:

- (j) Two plain paper network multi-function color printer/copier/scanner machines capable of reproducing prints up to 11 inch x 17 inch within automatic feed tray capable of sorting 30 sheets of paper. Letter size and 11 inch x 17 inch paper shall be provided. The contractor shall provide the multi-function machines with IT support for setup and maintenance.

Revise subparagraph (k) of Article 670.02 to read:

- (k) One plain paper fax machine including maintenance and supplies.

Revise subparagraph (m) of Article 670.02 to read:

- (m) One electric water cooler dispenser including water service.

Add the following subparagraphs to Article 670.02:

- (s) One 4 foot x 6 foot chalkboard or dry erase board.
- (t) One 4 foot x 6 foot framed cork board.

Add the following to Article 670.07 Basis of Payment.

The building or buildings, fully equipped, will be paid for at the contract unit price per calendar month or fraction thereof for ENGINEER'S FIELD OFFICE, TYPE A (SPECIAL).

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**FRICTION AGGREGATE (D-1)**

Effective: January 1, 2011  
Revised: November 1, 2019

Revise Article 1004.03(a) of the Standard Specifications to read:

**“1004.03 Coarse Aggregate for Hot-Mix Asphalt (HMA).** The aggregate shall be according to Article 1004.01 and the following.

(a) Description. The coarse aggregate for HMA shall be according to the following table.

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- Submit at least fourteen (14) calendar days before construction begins.
- Qualification Data for the following:
  - Firm(s) installing instrumentation and collecting readings. Firms shall have experience installing and reading similar instrumentation on at least five projects over the last five years.
- Response Value Report establishing the response values for the Threshold Value and the Limiting Value for each building and structure. Submit at least fourteen (14) calendar days before construction begins.
- Action Plans describing potential changes to construction activities / means and methods within 24 hours if Response Values are reached during construction.

Additional Submittals include:

- Weekly reports of all vibration monitoring locations.

Method of Measurement. The work under this item as described herein will not be measured separately. It will be paid for as lump sum.

Basis of Payment. This work will be paid at the lump sum contract unit price for CONSTRUCTION VIBRATION MONITORING which payment shall be full compensation for all work described herein and as directed and approved by the Engineer.

## **MONITORING ADJACENT STRUCTURES**

Description. The work associated with this Special Provision requires the Contractor to monitor construction activities and monitor structures adjacent to the Project that may be susceptible to damage resulting from construction activities. "Adjacent Structures" are defined as: (1) structures adjacent to the Project that may be affected by construction of the Project including, but not limited to, structures that may be affected by vibrations, displacements, settlement, excavations, demolition, or other construction activities; (2) structures including, but not limited to, buildings, utilities, tunnels, retaining walls, bridges, and roadways; and (3) existing structures, or structures that are expected to be in place prior to completing the work on the Project.

The work associated with this Special Provision shall include, but not be limited to, the following:

- Preparation of Pre-Construction, Interim and Post-Construction Condition Survey Reports.
- Reviewing available Background Vibration Reports previously prepared by others – see CONSTRUCTION VIBRATION MONITORING special provision for list of available reports **(For informational purposes only).**
- Furnishing and installing instrumentation to monitor Adjacent Structures due to construction activities.

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Furnishing and installing instrumentation to monitor performance of temporary structures that are necessary to construct the Project.

Furnishing and installing instrumentation to monitor performance of proposed retaining wall and bridge abutment structures during construction.

Furnishing and installing instrumentation to monitor existing utilities due to construction activities and operations.

Monitoring, collecting, and reporting instrumentation data at regular intervals as described herein.

Establishing Response Values and developing Response Value Reports.

Developing and implementing action plans in response to reaching Response Values.

Providing submittals related to the work of this Special Provision.

Monitoring CTA tracks as described herein and in accordance with the requirements of the CTA FLAGGING AND COORDINATION special provision.

At a minimum, the Contractor shall perform work described herein at the following structures:

- 700 S. Des Plaines St.
- 750 S. Des Plaines St.
- 735 W. Harrison St. (Cermak Pumping Station)
- 713 W. Van Buren St. (IDOT Pump Station No. 5)
- 707 W. Harrison St. (Extra Space Storage Facility)
- 400 S. Jefferson St.
- 701 W. Jackson (Lofts)
- 333. S. Des Plaines St. (Lofts)
- 324 S. Des Plaines (Chicago Fire Department Engine 5)
- 711 W. Jackson Blvd.
- 728 W. Jackson Blvd. (Haberdasher Square Lofts)
- 210 S. Des Plaines St. (Edge Lofts & Tower)
- 700 W. Adams (Old St. Patrick's Church)
- 703 W. Monroe St. (Career Transitions Center)
- 650-660 W. Madison (ComEd SubStation)
- 659 W. Washington Blvd.
- 120 S. Des Plaines Street (The Francis Xavier Warde School)
- Existing CDWM siphon junction chambers adjacent to the north side of the existing Monroe St. bridge
- 711 W. Monroe Street (Fr. Jack Wall Mission Center)
- 718 W. Adams Street (Old St. Patrick's Church Rectory)
- 651 W. Washington Blvd.
- 645 W. Randolph St.
- Existing CTA Tunnel (Minimum of two locations)

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The Contractor shall perform additional pre-construction condition surveys at additional Adjacent Structures and utilities that the Contractor determines may be affected by the means, methods, and sequences of construction. The Contractor is solely responsible for determining the means, methods and sequences of construction, and may identify additional monitoring locations beyond those listed above. The cost for monitoring the additional locations identified by the Contractor shall be considered included in the lump sum contract unit price for MONITORING ADJACENT STRUCTURES.

Pre-Construction Condition Survey. The Contractor shall survey and provide Pre-Construction Condition Survey Reports for each of the structures listed above and at additional Adjacent Structures and utilities that the Contractor determines may be affected by the means, methods, and sequences of construction. The surveys will be used as a basis for comparison of damage that may occur after the pre-construction condition survey. The Contractor must submit the Pre-Construction Condition Survey Reports at least fourteen (14) calendar days before construction begins.

The Contractor shall request in writing, from the owner of each Adjacent Structure, permission to conduct the pre-construction condition surveys at the Adjacent Structures. The Contractor shall document if the owner of the Adjacent Structure denies access. Documentation shall include dates of requested surveys, and dates and methods of correspondence (letter, certified mail, fax, e-mail, etc.) with the property owners.

Prior to performing the pre-construction condition survey, the Contractor shall review available building information and perform independent research to determine the availability of existing documentation regarding the Adjacent Structures, including but not limited to, contacting the City's Building Department, contacting the Adjacent Structure owners, or contacting other relevant entities to obtain existing drawings, specifications, or evaluation reports. The Contractor shall document its research, including dates of requests, parties contacted, and documents available, if any.

Where access to Adjacent Structures is granted, the Contractor shall survey Adjacent Structure exteriors using telescopic aids (e.g., binoculars), high-resolution photographs, lifts or movable staging/scaffolds, remote observation equipment (e.g., drones, borescopes, or similar), or equivalent methods. Video may be used as a supplement to the survey; however, video will not be accepted by the Department as a replacement for high-resolution photography. Document defects and distress including, but not be limited to, cracks, relative displacements, discoloration, leaks, staining, ponding, or related items. Document out-of-level horizontal construction, out-of-plumb vertical construction, out-of-square or inoperable doors, windows, or other apertures, and disconnected or broken utilities. At non-building structures, survey accessible areas and similarly document defects and distress. Measure, locate, and record existing defects and distress. Where necessary, and if consent is provided from the Adjacent Structure owner, excavate test pits, perform test borings, and make exploratory openings to collect relevant information about existing conditions, including types of below-grade construction, depth of below-grade construction, and defects and distress evident in the exposed below-grade construction. The Contractor shall restore the site to its original condition.

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The intent of the surveys is to establish and document, in sufficient detail, the existing conditions for comparative references during and after construction.

Submit a draft report to the Engineer for review including, at a minimum, the following:

1. Date(s) of survey
2. Adjacent Structure or property address
3. Owner of the Adjacent Structure and/or property, including contact information and phone number
4. Adjacent Structure use, occupancy, or purpose
5. Adjacent Structure approximate age
6. Persons present during the survey
7. Existing documentation discovered through research or made available
8. Access methods and equipment used
9. High-resolution digital photographs, clearly identified in a detailed log and keyed to structure plans and/or elevations
10. Annotated sketches and/or figures
11. Record defects and distress on photographs, drawings, or similarly descriptive graphics
12. Description of structural system(s)
13. Description of exterior wall or construction materials
14. Description of interior finishes or construction materials
15. Foundation type and depth
16. Subsurface conditions
17. Obstructions limiting the survey

Respond to the Engineer's comments on the draft report and provide a final report within seven (7) calendar days for the record.

Response Values. The Contractor shall establish Response Values, including both the Threshold Value and the Limiting Value, at each location based upon the pre-construction condition surveys performed.

- **Threshold Value:** A Threshold Value is a warning value that precedes damage to Adjacent Structures. If Threshold Values are achieved, corrective actions to the design and/or construction methods shall be considered to avoid reaching Limiting Values.

**Limiting Value:** A Limiting Value is an alarm value to indicate damage to Adjacent Structures is highly probable if construction activities continue without modification. If Limiting Values are achieved, construction work shall stop immediately, the Adjacent Structures shall be surveyed for signs of additional distress from pre-construction surveys, and corrective action shall be taken to revise the construction methods to protect Adjacent Structures from damage.

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Instrumentation Installation, Monitoring, and Data Collection. Based on the pre-construction condition surveys and inspections performed, the Contractor shall determine physical monitoring locations, following the minimum number of locations below, and submit for approval at least seven (7) calendar days before construction begins. The Contractor shall install and monitor instruments identified herein, at the minimum frequencies identified in the following table. The Contractor, at its option and at no cost to the Department, may provide additional instrumentation, monitoring, and data collection based upon the Contractor's intended means and methods and findings during the pre-construction condition surveys. The Contractor shall maintain the equipment, provide calibration certificates and confirm that it is in working condition on a regular basis.

Table 1 provides the minimum requirements for monitoring Adjacent Structures including monitoring instruments, data collection accuracy and frequency and reporting frequencies. Data readings shall be taken at regular intervals in order to compare results to initial measurements and established Response Values. Submit reports at the designated frequencies. The Contractor shall provide monitoring of the Adjacent Structures based on the minimum monitoring requirements listed in Table 2. The Contractor shall review the information in Tables 1 and 2 to determine if more stringent requirements are necessary.

**Table 1: Monitoring Instruments and Data Collection/Reporting Requirements**

<b>Instrument Type</b>	<b>Data Collection Accuracy/Tolerance</b>	<b>Minimum Data Collection Frequency</b>	<b>Reporting Frequency</b>	<b>Response Values</b>
Vertical Movement Monitoring Points	One hundredth of a foot (0.01') in Chicago City Datum (CCD)	Twice Daily During Excavation and Drilling Operations, Daily At Other Times	Bi-weekly	To Be Established by Contractor
Horizontal Movement Monitoring Points	One hundredth of a foot (0.01')	Twice Daily During Excavation and Drilling Operations, Daily At Other Times	Bi-weekly	To Be Established by Contractor
Crack Gauges	1.0 mm	Weekly	Bi-weekly	To Be Established by Contractor
Seismographs	See CONSTRUCTION VIBRATION MONITORING Special Provision for requirements			
Groundwater Monitoring Wells	One tenth of a foot (0.1')	Daily	Bi-weekly	To Be Established by Contractor
Tiltmeters	Accuracy +/- 0.05 mm/m (+/- 10 arc-seconds) Resolution +/- 0.025 mm/m (+/- 5 arc-seconds)	Weekly	Bi-weekly	To Be Established by Contractor
Inclinometers	See SLOPE INCLINOMETER Special Provision for requirements			

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**Table 2: Monitoring Locations and Minimum Monitoring Requirements**

Adjacent Building	Vertical Movement Monitoring Points / Horizontal Movement Monitoring Points	Crack Gauges	Groundwater Monitoring Wells	Tiltmeters
700 S. Des Plaines St.	2 horizontal and 2 vertical locations	Determine need and number of gauges based upon pre-construction condition survey for each building. Exterior and interior cracks equal to or larger than one millimeter (1.0 mm) shall have crack gauges installed and monitored.	See Note 1	2 locations
750 S. Des Plaines St.	2 horizontal and 2 vertical locations			2 locations
735 W. Harrison St. (Cermak Pumping Station)	2 horizontal and 2 vertical locations in each tunnel			2 locations
713 W. Van Buren St. (IDOT Pump Station No. 5)	2 horizontal and 2 vertical locations			2 locations
707 W. Harrison St. (Extra Space Storage Facility)	2 horizontal and 2 vertical locations			2 locations
400 S. Jefferson St.	2 horizontal and 2 vertical locations			2 locations
701 W. Jackson (Lofts)	2 horizontal and 2 vertical locations –			2 locations
333. S. Des Plaines St. (Lofts)	2 horizontal and 2 vertical locations–			2 locations
324 S. Des Plaines (Chicago Fire Department Engine 5)	2 horizontal and 2 vertical locations			2 locations
711 W. Jackson Blvd.	2 horizontal and 2 vertical locations			2 locations
728 W. Jackson Blvd. (Haberdasher Square Lofts)	2 horizontal and 2 vertical locations			2 locations
210 S. Des Plaines St. (Edge Lofts & Tower)	2 horizontal and 2 vertical locations			2 locations
700 W. Adams (Old St. Patrick's Church)	4 horizontal and 4 vertical locations			4 locations
703 W. Monroe St. (Career Transitions Center)	2 horizontal and 2 vertical locations			2 locations
650-660 W. Madison (ComEd SubStation)	2 horizontal and 2 vertical locations			2 locations
659 W. Washington Blvd	2 horizontal and 2 vertical locations	2 locations		

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120 S. Des Plaines Street (The Francis Xavier Warde School)	4 horizontal and 4 vertical locations			4 locations
Existing CDWM siphon junction chambers adjacent to the north side of the existing Monroe St. bridge.	2 horizontal and 2 vertical locations			2 locations
711 W. Monroe Street (Fr. Jack Wall Mission Center)	4 horizontal and 4 vertical locations			4 locations
718 W. Adams Street (Old St. Patrick's Church Rectory)	4 horizontal and 4 vertical locations			4 locations
651 W. Washington Blvd.	2 horizontal and 2 vertical locations			2 locations
645 W. Randolph St.	2 horizontal and 2 vertical locations			2 locations
Existing CTA Tunnel (Minimum of two locations)	2 horizontal and 2 vertical locations			2 locations

Note 1: Groundwater monitoring wells as located in the structural plans or as directed by the Engineer

Establish benchmarks prior to construction activities to be used for movement monitoring. Benchmarks shall be located in areas that will not be influenced by construction activities.

Maintain an accurate log of instrumentation data for comparison with baseline data. Notify the Engineer of any changes from the last report within 24hrs. Promptly notify the Engineer when Response Values are reached in order to review and enact action plan(s).

Action Plans. Upon reaching or exceeding Response Values, the Contractor shall immediately notify the Engineer and perform the following:

Threshold Values: Evaluate means, methods, and sequences of construction, and data collection/reporting frequency upon reaching Threshold Values. The Contractor shall provide a submittal within 24 hours of the Threshold Values being reached that summarizes the means, methods and sequences of construction to be used to preclude reaching Limiting Values, and that identifies modifications to data collection and data reporting frequencies. Provide a summary report to the Engineer for review and approval.

Revised 4/9/2020

- **Limiting Values:** Immediately stop construction work in the zone of influence of the instrument, and coordinate a meeting with the Engineer to evaluate distress, discuss corrective actions, develop alternate means, methods, and sequences of construction, and identify modifications to data collection and reporting frequencies. The Contractor shall provide an action plan submittal within 24 hours of the Limiting Values being reached providing a summary report to the Engineer for review and approval. No additional compensation will be due the Contractor for changes to means, methods, and sequences of construction. The Contractor will not be entitled to any claim of delay for stopping of working due to the reaching of Limiting Values.

#### Ground Monitoring Wells

Groundwater monitoring well shall be minimum 2-inch diameter and shall extend to ten feet below the lowest pile tip elevation. The bottom portion of the well up to five feet below the top of pile elevation shall be perforated with sand packs and sealed above this level. Groundwater shall either be monitored manually using an electronic water level meter with a sound and gauge readout or transducers linked to a data logger.

Perform Interim Construction Surveys. The Contractor shall establish construction milestones for performing interim condition surveys of Adjacent Structures to corroborate the survey data required of the Project and submit to the Engineer for review and approval. The Contractor is also required to perform condition surveys within 24 hours if Response Values are reached during construction. At a minimum, demolition, completed excavations utilizing temporary structures and the completion of foundation elements, retaining walls and the vertical faces of abutments shall be considered construction milestones. With the Engineer's approval, the Contractor shall establish the particular structures receiving interim condition surveys based upon the various construction milestones.

Perform interim condition surveys at Adjacent Structures at construction milestones established by the Project. Conduct interim survey(s) in a manner that duplicates the pre-construction condition survey to evaluate whether additional distress from pre-construction surveys has occurred. The pre-construction and interim surveys will be used to evaluate if the Project construction activities are causing damage to Adjacent Structures, and whether alternate construction means, methods, and sequences are necessary to protect the Adjacent Structures from damage. No additional compensation will be due the Contractor for changes to means, methods, and sequences of construction.

Prepare and submit an Interim Condition Survey Report identifying changes to the information identified in the Pre-Construction Survey Report. Interim Condition Survey Reports shall be submitted within seven (7) calendar days of an established construction milestone and within three (3) calendar days after a response value is reached.

Perform Post-Construction Condition Survey. The Contractor shall perform a final condition survey to establish any variations in the Adjacent Structures from the pre-construction and interim condition surveys.

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Within ten (10) calendar days after Substantial Completion of the Project, as confirmed by the Engineer, conduct a post-construction survey of structures in a manner that duplicates the pre-construction and interim condition surveys to evaluate whether additional distress from pre-construction and interim condition surveys has occurred. The pre-construction, interim, and post-construction surveys will be used to evaluate if the Project construction activities caused damages to the Adjacent Structures.

Prepare and submit a Post-Construction Survey Report identifying changes to the information identified in the Pre-Construction or Interim Condition Survey Reports.

Restoration. At the completion of construction and after the submittal and approval of the post-construction condition survey report, all temporary elements utilized for the monitoring of adjacent structures as described herein shall be removed. Groundwater monitoring wells shall be grouted to final ground surface with caps and sleeves removed. Crack gauges, monitoring points and tiltmeters utilized on exterior or interior walls shall be removed with all anchorages removed, and walls and monitoring locations restored to pre-construction condition.

Chicago Transit Authority (CTA) Track Monitoring. The Contractor will include monitoring of the eastbound and westbound CTA tracks below and adjacent to a portion of the construction in the contract. The Contractor will monitor CTA tracks for vertical and horizontal movements. At a minimum, monitor daily during all Work within or below I-290, then weekly for eight (8) weeks after the completion of all proposed improvements. . Submit copies of reports to CTA for review and provide copies to the Engineer for their records. The reports shall identify monitoring instrumentation utilized, measurement data, stop work periods, corrective measures and other associated information. Maximum allowable horizontal and vertical movements are ¼ inch. If movements in excess of ¼ inch are detected, the Contractor will discontinue construction operations immediately and notify the CTA. CTA will evaluate the track condition and determine what restorative work is required. The Contractor will perform this restorative work at the Contractor's expense prior to continuing remaining contract work. If track repairs are required, the Contractor shall hire a Contractor experienced in CTA track work and approved by the CTA to perform the corrective repairs to the satisfaction of the CTA at no additional cost to the project.

Submittals. Submit the following items in a timely manner to allow for review and approval by the Engineer without delaying the work. Do not order materials or start work before receiving written approval from the Engineer.

Revised 4/9/2020

Submit the following for review and approval by the Engineer:

Pre-Construction Condition Survey Report: Submit at least fourteen (14) calendar days before construction begins.

Interim Construction Condition Survey Reports: Submit within seven (7) calendar days after the interim construction survey at an established construction milestone.

Interim Construction Condition Survey Reports: Submit within three (3) calendar days after the interim construction survey when a response value is reached.

Post-Construction Condition Survey Report: Submit within ten (10) calendar days after Substantial Completion of the Project.

Qualification Data for the following:

- Firm(s) installing instrumentation and collecting readings. Firms shall have experience installing and reading similar instrumentation on at least five projects over the last five years.

Product Data: For each type of product. Include construction details, material descriptions, performance properties, dimensions of individual components and profiles.

Instrumentation plans, schedules, and details, including:

- An instrumentation plan showing the type, location, and installation details of instruments to be installed.
- Monitoring and reporting frequency.
- Reports of all monitoring (at the required frequencies listed above) including a description of the associated construction activity. The reports shall include a tabular and graphical summary of all readings to date.

Response Value Report establishing the response values for the Threshold Value and the Limiting Value for each building and structure. Submit at least fourteen (14) calendar days before construction begins.

Action Plans describing potential changes to construction means and methods within 24 hours if Response Values are reached during construction.

Corrective Measures. Damage to Adjacent Structures as a result of construction activity shall be corrected by the Contractor. No additional compensation shall be due the Contractor for repairing Adjacent Structures. The Contractor shall not be entitled to any claim of damages or delay for stopping to make corrective measures.

Method of Measurement. The work under this item as described herein will not be measured separately but will be paid for as lump sum.

Revised 4/9/2020

Basis of Payment. This work will be paid at the lump sum contract unit price for MONITORING ADJACENT STRUCTURES, which payment shall be full compensation for all work described herein, and as directed and approved by the Engineer.

Progress payments shall be made as follows: 30% of the lump sum bid price at completion of the Pre-Construction Condition Survey and the initial installation of monitoring equipment; 50% of the lump sum bid price shall be prorated throughout the monitoring and data collection duration and upon completion of the Interim Construction Condition Surveys at the established construction milestones; and 20% of the lump sum bid price upon removal of the monitoring equipment, restoration of the existing monitoring sites and completion of the Post-Construction Condition Survey.

Vibration monitoring and the installation and monitoring of slope inclinometers is not included in MONITORING ADJACENT STRUCTURES, but shall be paid at the lump sum contract unit price for CONSTRUCTION VIBRATION MONITORING and at the contract unit price per each for SLOPE INCLINOMETER.

#### **MONITORING ADJACENT STRUCTURES OWNER INFORMATION**

The contractor shall contact and invite the Haberdasher building condominium association representatives prior to the pre-construction and post-construction building inspections.

Roger Ady  
728 W. Jackson Blvd, Chicago IL, 60661  
847-414-8238

This work shall not be paid for separately but shall be included in the cost of MONITORING ADJACENT STRUCTURES.

#### **CLEANING EXISTING MANHOLE OR HANDHOLE**

Description. This item consists of cleaning an existing handhole or manhole for the installation of new conduit(s) and cable(s).

General Requirements. General requirements must be in accordance with Section 801 of the Standard Specifications, except as herein modified.

Installation. Existing cable hooks must be relocated and existing cables must be retrained as required prior to drilling the existing manhole or handhole. Existing and new debris must be removed and disposed of off-site by the Contractor. Existing and new gas and water must be pumped out as directed by IDOT. Debris removal, de-gassing and water pumping must be included in this item; separate payment will not be made.

Revised 4/9/2020

Method of Measurement. The contractor shall demonstrate to the satisfaction of the Engineer that the ITS components, devices and infrastructure have been properly installed, protected and maintained and that the appropriate data is being transmitted to the Traffic Management Center prior to submitting a pay request. In order for final payment to be released the contractor must demonstrate that the equipment is working as intended following inspection by the Engineer. Failure to do so will be grounds for denying the pay request.

Basis of Payment. Maintaining ITS During Construction and Rerouting ITS Communication shall be paid for at the contract unit price per calendar month (Cal Mo) for MAINTAINING ITS DURING CONSTRUCTION, which shall include all work as described herein.

## **CCTV CAMERA STRUCTURE**

Description. This work shall consist of furnishing and installing a 100' steel CCTV camera structure complete with foundation and camera lowering device. The structure must be a galvanized steel structure with a concrete foundation. Specifications for the structure are detailed in the section herein.

Materials. Materials shall be as specified herein.

### **Camera Lowering System**

The camera lowering system shall be designed to support and lower an Ethernet/IP closed circuit television camera, lens, housing, PTZ mechanism, cabling, connectors and other supporting field components without damage or causing degradation of camera operations.

The camera lowering system device and the pole are interdependent; and thus, must be considered a single unit or system. The lowering system shall consist of a pole and lowering device system with the mounting slot and bolt hole mirrored on 180 degrees of the pole top tenon. The system shall include the suspension contact unit, divided support arm, and a pole adapter for attachment to a pole top tenon, pole top junction box, conduit mount adapter and camera connection box. The divided support arm and receiver brackets shall be designed to self-align the contact unit with the pole center line during installation and ensure the contact unit cannot twist under high wind conditions. For maximum arm strength, round support arms are not acceptable.

The camera-lowering device shall withstand wind forces of 100 mph with a 30 percent gust factor using a 1.65 safety factor. The lowering device manufacturer, upon request, shall furnish independent laboratory testing documents certifying adherence to the stated wind force criteria utilizing, as a minimum effective projected area, the actual EPA or an EPA greater than that of the camera system to be attached.

The camera-lowering device to be furnished shall be the product of manufacturers with a minimum of 5 years of experience in the successful manufacturing of camera lowering systems. The lowering device provider shall be able to identify a minimum of 3 previous projects where the purposed system has been installed successfully for over a one-year period of time each.

Revised 4/9/2020

The lowering device manufacturer shall furnish an authorized factory representative to oversee the installation contractor's assembly and testing of the first lowering system onto the pole assembly. The manufacturer shall furnish the applicable DOT engineer documentation certifying that the installation contractor has been instructed on the installation, operation and safety features of the lowering device for the particular project. The contractor shall be responsible for providing applicable maintenance personnel "on site" operational instructions.

a) Suspension Contact Unit & Contact Block

The suspension contact unit shall have a load capacity 600 lbs. with a 4 to 1 safety factor. There shall be a locking mechanism between the fixed and moveable components of the lowering device. The movable assembly shall have a minimum of 2 latches. This latching mechanism shall securely hold the device and its mounted equipment. The latching mechanism shall operate by alternately raising and lowering the assembly using the winch and lowering cable. When latched, all weight shall be removed from the lowering cable. The fixed unit shall have a heavy duty cast tracking guide and means to allow latching in the same position each time. The contact unit housing shall be weatherproof with a gasket provided to seal the interior from dust and moisture. The entire unit shall have a minimum temperature rating of -40 degrees F to +190 degrees F (-40C to 90C).

The prefabricated components of the lift unit support system shall be designed to preclude the lifting cable from contacting the power or video cabling. The lowering device manufacturer shall provide conduit mount adapters for housing the lowering cable. These adapters shall have an interface to allow the connection of a contractor provided 1.25 inch PVC conduit and be located just below the cable stop block at the back of the lowering device. The Contractor shall supply internal conduits in the pole as directed by the Lowering Device provider. The only cable permitted to move within the pole or lowering device during lowering or raising shall be the stainless steel lowering cable. All other cables must remain stable and secure during lowering and raising operations.

The Lowering Device must be specifically equipped with electrical contacts connectors designed for an Ethernet (IP-CAT5e) video transmission along with PTZ control. The Contact Connectors shall be designed for extreme environmental outdoor use.

The female and male socket contact halves of the connector block shall be made of a UL94, V-0 rated thermosetting synthetic rubber. The female barrel contacts and the male pin contacts shall be permanently and integrally encased in this rubber material to ensure optimum protection from moisture and the environment.

All current carrying male pin and female socket/barrel contacts shall be Gold-plated per ASTM B-488 over Nickel plated CA 360 per QQ-N-290m.

The Ethernet configuration contact connector shall include:

Each IP/Ethernet Male-Female connector shall include a total of (13) Specifically designed Male contacts sized a minimum of 0.09 inches while the female contacts shall be at least 0.09 inches I.D. at the contact area. Eight of the thirteen contacts shall be soldered to CAT5e Wire end terminated with an RJ45-Male connector. Five of the thirteen contacts shall be soldered to #18/1 UL lead wire and affixed with numbered tags, which may be used for additional camera requirements including but not limited to power, control, alarms or grounds.

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All current carrying male pin and female socket/barrel contacts shall be Gold-plated per ASTM B-488 over Nickel plated CA 360 per QQ-N-290m. Each individual female barrel contact shall have a Nickel plated CA 360 sleeve which prevents foreign matter from entering the contact area as well as preclude the possibility of the leaves of the female contact from opening beyond allowable limits and ensure a snug fit around the respective male pins. There shall be at least one contact that is positioned in a manner which will allow it to make first and break last providing optimum grounding performance.

All soldering shall be per IPC J STD-001E. Each individual contact shall be rated for up to 600v and 7A but de-rated according to the wire used in the application. For optimum weatherproofing, each male shall be self-wiping with a shoulder at the base of each male contact so that it will recess into the female block, thereby giving a rain-tight seal to each individual contact when mated. Further, the wire leads from both the male and female rubber contact blocks shall be permanently and integrally molded in the synthetic rubber body. The facility manufacturing the electrical contact connector must comply with Mil Spec Q-9858 and Mil Spec I-45208.

b) Lowering Tool

The camera-lowering device shall be operated by use of a portable lowering tool. The tool shall consist of a lightweight metal frame and winch assembly with factory spooled stainless steel aircraft cable, a quick release cable connector, an adjustable safety clutch and a variable speed industrial duty electric drill motor. This tool shall be compatible with accessing the support cable through the hand hole of the pole. The lowering tool shall attach/secure to the pole with one single bolt. The tool will support itself and the load during lowering/raising operations. The winch assembly shall include an automatic breaking system that provides a means to prevent freewheeling when loaded. The lowering tool shall be delivered to the applicable DOT engineer upon project completion. The lowering tool shall have a reduction gear to reduce the manual effort required to operate the lifting handle to raise and lower a capacity load. The lowering tool shall be provided with an adapter for operating the lowering device by a portable drill using a clutch mechanism. The lowering tool shall be equipped with a positive breaking mechanism to secure the cable reel during raising and lowering operations and prevent freewheeling. The manufacturer shall provide a variable speed, heavy-duty reversible drill motor, clutch and one lowering tool for every ten camera lowering device poles. The lowering tool shall be made of durable and corrosion resistant materials, powder coated steel, galvanized steel, heavy duty aluminum or otherwise protected from the environment by industry-accepted coatings to withstand exposure to a corrosive environment.

c) Camera Junction Box

The camera junction box is essential for providing both a mounting location for the CCTV as well as an interface compartment for wire leads from the lowering device to the CCTV or applicable surge suppression module. The camera junction box shall be of two piece clamshell design with one removable hinge side and one latch side with single toggle bolt to facilitate easy access. The general shape of the box shall be cylindrical to minimize the effective projected area. The Camera Junction Box shall be cast aluminum with stabilizing weights on the outside of the box to increase room on the interior. The box shall be capable of having up to 40 pounds of stabilizing weights. The bottom of the Camera Junction Box shall be drilled and tapped with a 1-1/2" NPT/Female thread to accept industry standard dome housings and be able to be modified to accept a wide variety of other camera mountings. The junction box shall be gasketed to prevent water intrusion. The bottom of the box shall incorporate a screened and vented hole to allow airflow and reduce internal condensation.

Revised 4/9/2020

d) Materials

All pulleys for the camera lowering device and portable lowering tool shall have sealed, self lubricated bearings, oil tight bronze bearings, or sintered- oil impregnated, bronze bushings. The lowering cable shall be a minimum 1/8-inch diameter stainless steel aircraft cable with a minimum breaking strength of 1740 pounds with (7) strands of 19 wire each.

All electrical and video Coaxial connections between the fixed and lowerable portion of the contact block shall be protected from exposure to the weather by both a gasket on the bottom side of the bell housing enclosure as well as the "O" ring shoulders at the base of each male contact pin to prevent degradation of the power/signal contacts.

The interface and locking components shall be made of stainless steel and/or aluminum. All external components of the lowering device shall be made of corrosion resistant materials, powder coated, galvanized, or otherwise protected from the environment by industry-accepted coatings to withstand exposure to a corrosive environment.

In the event the CCTV is a non-dome or otherwise not properly weight balanced and plumb, the Camera Manufacturer shall provide weights and /or counterweights as necessary to assure that the alignment of pins and connectors are proper for the camera support to be raised into position without binding.

The Contractor shall provide any applicable power/signal connectors and weatherproof interface couplers for attachment to the bare leads and RJ-45 Male in the pole top and/or camera junction boxes in a manner acceptable to the project engineer.

The Contractor shall provide appropriate length of applicable power/signal cable in one continuous run from the respective equipment cabinet to the pole top junction box of each lowering device pole. The Contractor is also responsible for providing a CAT5e cable from the CCTV unit to the CCTV cabinet for future use.

e) Camera Pole

Design shall be in accordance with the 2009 edition of AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals including all addendums. Minimum Loading requirements shall be based on an isotach wind velocity for the area of installation according to the current AASHTO isotach wind chart. Calculations and detailed drawings shall be submitted demonstrating compliance with the AASHTO specification.

The Fabricator shall be certified under Category I, "Conventional Steel Structures" as set forth by the American Institute of Steel Construction Quality Certification Program. Proof of this certification will be required prior to bid opening to ensure that the fabricator has the personnel, organization, experience, procedures, knowledge, equipment, capability and commitment to fabricate quality pole structures.

Revised 4/9/2020

All welding shall be in accordance with Sections 1 through 8 of the American Welding Society (AWS) D1.1 Structural Welding Code. Tackers and welders shall be qualified in accordance with the code. Tube longitudinal seam welds shall be free of cracks and excessive undercut, performed with automatic processes, and be visually inspected. Longitudinal welds suspected to contain defects shall be magnetic particle inspected. All circumferential butt-welded pole and arm splices shall be ultrasonically or radiographically inspected.

All materials and products shall be manufactured in the United States of America and comply with ASTM or AASHTO specifications. Mill certifications shall be supplied as proof of compliance with the specifications.

The pole shall be designed to support the specified camera and accessories. Close consideration must be given to the effective projected area of the complete lowering system and camera equipment to be mounted on the pole along with the weight when designing the pole to meet the specified deflection performance criteria. The pole top deflection shall not exceed one inch in a 30-mph (non-gust) wind. The calculations shall include a pole, base plate, and anchor bolt analysis. The pole calculations shall be analyzed at the pole base, at 5-ft. pole intervals/segments and at any other critical pole section. At each of these locations, the following information shall be given:

- The pole's diameter, thickness, section modulus, moment of inertia, and cross-sectional area.
- The centroid, weight, projected area, drag coefficient, velocity pressure, and wind force of each pole segment.
- The axial force, shear force, primary moment, total moment, axial stress, bending stress, allowable axial stress, allowable bending stress, and combined stress ratio (CSR).
- The pole's angular and linear deflection.

The pole shall be of multi-piece construction. All structures with pole shaft diameters of 26 inches or less shall be round; pole shaft diameters greater than 26 " may be round or multi-sided. The shaft shall have a constant linear taper of 0.14 in/ft, and contain only one longitudinal seam weld. Circumferential welded tube butt splices and laminated tubes are not permitted. Longitudinal seam welds within 6 inches of complete penetration pole to base plate welds shall be complete penetration welds. The shaft shall be hot dip galvanized per the requirements of the contract documents. The interior diameter of the shaft regardless of pole height shall be at least 5 inches to accommodate lowering device requirements.

The hand hole opening for winch operation shall be reinforced with a minimum 2-inch wide hot rolled steel rim. The nominal outside dimension is 6 inches x 27 inches. The handhole shall have a tapped hole for mounting the portable winch thereto as shown on the drawings and include a cover. Unless otherwise noted on the plans, the bottom lip of the handhole shall be located on the shaft between 30"-33" from the baseplate.

Revised 4/9/2020

The pole shall have a custom plate mounted tenon that allows the field modification of the arm/camera orientation up to 360 degrees. With this design the IDOT engineer can make slight orientation modifications to the camera mount to allow optimum viewing in case of future road development, change in terrain or a change in the viewing needs priority. The tenon shall have mounting holes and slot as required for the mounting of the camera-lowering system. The tenon shall be of dimensions necessary to facilitate camera lowering device component installation. Each lowering device slot shall be parallel to the pole centerline for mounting the lowering device. There shall be a mounting slot for each required camera lowering device. Unless otherwise noted, with a lowering device, the mounting slots shall be 180 degrees apart.

Top and bottom electrical cable guides shall be located within the pole aligned with each other. One cable guide-strain relief ring shall be positioned 2 inches below the winch operation handhole and the other shall be positioned 1 inch directly below the top of tenon. A parking stand ring shall be positioned no more than 2 inches below the top of the handhole on the inner portion of the handhole frame and located at 90, 180 and 270 degrees. Note Drawings for details.

Base plates shall conform to ASTM A36 or A572 Grade 50. Plates shall be integrally welded to the tubes with a telescopic welded joint or a full penetration butt weld with backup bar. Plates shall be hot dip galvanized per the requirements of the contract documents.

Anchor bolts shall conform to the requirements of ASTM F1554 Grade 55. The upper 12 inches of the bolts shall be hot dip galvanized per ASTM A153. Each anchor bolt shall be supplied with two hex nuts and two flat washers. The strength of the nuts shall equal or exceed the proof load of the bolts.

Method Of Measurement. CCTV camera structures shall be counted, each with foundation, lowering device and all appurtenances installed.

Basis of Payment. This item shall be paid at the contract unit each for CLOSED CIRCUIT TELEVISION CAMERA STRUCTURE, GALVANIZED STEEL, of the mounting height specified.

## **FIBER OPTIC PATCH PANEL, 96F**

Description. This item shall consist of furnishing and installing a fiber optic patch panel for a 96 fiber optic cable, as specified in the plans and described herein.

Materials. The Fiber Optic Patch Panel rack- or wall-mount shall be equal to Corning FDC-CMH-096 meeting the following requirements:

- The fiber patch panel shall terminate pigtail fibers as called out on the Plans.
- The fiber optic termination panel shall allow termination of a fiber patch cord to interconnect outside plant fibers to fiber optic communication equipment.
- The approved type optical connectors on the end of each pigtail shall connect to a coupler securely mounted to a patch panel within the controller cabinet. The maximum optical loss across the connection shall not exceed 0.25 dB.
- The fibers with the optical connectors on the pigtail cable shall be routed through and secured in the fiber optic termination panel as directed by and to the satisfaction of the Engineer.
- The bulkheads or single mode adapter types shall be single mode ST compatible, ceramic. The Contractor shall supply enough splice trays to accommodate 96 single mode splices. The splice trays shall accommodate 12 fusion splices and be equal to Corning M67-041-C. Splice trays shall mount in the 19" rack and be housed in their own housing separate from the bulk heads.

Revised 4/9/2020

## **FIRE HYDRANTS TO BE REMOVED**

Description. An existing CDWM water main fire hydrant is located immediately south of the Washington Boulevard bridge pier between NB I-90/94 and the Randolph St. exit ramp. This work shall consist of procuring the materials required for the removal of the existing fire hydrant.

Excavation, curb removal, pavement removal, excavation support, backfilling excavated material, curb installation, placing topsoil, seeding, and other required efforts will be paid for separately as designated in the plans or directed by the Engineer.

Materials. The contractor shall provide the following materials to CDWM for removal of the fire hydrant and repair of the 12" water main at this location. All materials shall meet current (at the time of submittal) Chicago Department of Water Management (CDWM) Technical Specifications for Water Main Construction.

<i>Materials</i>	<i>Quantity</i>	<i>Units</i>
Pipe DI MJ – 12" Class 56	5	LF
Polywrap – 12"	5	LF
Sleeve Transition – 12"	2	EA
Gasket MJ LT – 12"	2	EA
Megalug MJ – 12"	2	EA

Prior to procurement of the water main repair materials, the contractor shall make submittals of manufacturer's cut-sheets, drawings, certifications, etc. for the materials to be provided to CDWM for review and approval. The material shall be delivered to the job site.

Method of Measurement. Fire hydrants to be removed will be measured for payment for each location required by CDWM.

Basis of Payment. This work will be paid for at the contract unit price per EACH for FIRE HYDRANTS TO BE REMOVED. The unit price shall include all of the materials required by CDWM for removal of the fire hydrant and repair of the 12" water main at this location and includes the proper disposal of any pipe and fittings left at the site from the CDWM hydrant removal work.

Added 4/9/2020

## PAVEMENT MARKING BLACKOUT TAPE (BDE)

Effective: November 1, 2014

Revised: April 1, 2016

Revise the fourth paragraph of Article 701.04 of the Standard Specifications to read:

“The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions shall be removed, covered, or turned from the view of motorists. All existing pavement markings which conflict with the revised traffic pattern shall be removed according to Section 783 or when specified, temporarily covered with pavement marking blackout tape. The width of blackout tape shall be at least 1 in. (25 mm) wider than the width of the pavement marking being covered. The removing or covering of existing markings shall be scheduled immediately to facilitate the revised traffic pattern. If darkness or inclement weather prohibits the removal or covering operations, such operations shall be resumed the next morning or when weather permits.”

Revise Article 701.19(f) of the Standard Specifications to read:

“(f) Removal of existing pavement markings and raised reflective pavement markers will be measured for payment according to Article 783.05. Temporary covering of existing pavement markings with blackout tape will be measured for payment in feet (meters) in place. Removal of blackout tape will be measured for payment in square feet (square meters).”

Revise Article 701.20(j) of the Standard Specifications to read:

“(j) Removal of existing pavement markings and raised reflective pavement markers will be paid for according to Article 783.06. Temporary covering of existing pavement markings with blackout tape will be paid for at the contract unit price per foot for PAVEMENT MARKING BLACKOUT TAPE, of the line width specified.” Removal of blackout tape will be paid for as short term pavement marking removal according to Article 703.07.”

Revise the first two paragraphs of Article 1095.06 of the Standard Specifications to read:

“**1095.06 Pavement Marking Tape.** White or yellow marking tape shall consist of glass spheres of high optical quality embedded into a binder on a suitable backing that is precoated with a pressure sensitive adhesive. The spheres shall be of uniform gradation and distributed evenly over the surface of the tape. Blackout marking tape shall be a Type III tape consisting of a matte black, non-reflective, patterned surface that is precoated with a pressure sensitive adhesive. The surface of the blackout pavement marking tape shall provide a minimum skid resistance value of 45 BPN when tested according to ASTM E 303-74.

The material shall be white, yellow, or matte black as specified. White and yellow colors shall conform closely to Federal color tolerances for pavement marking paint.”

Added 4/9/2020

Revise the second table of Article 1095.06 to read:

Test	Type I		Type III		
	White	Yellow	White	Yellow	Blackout
Initial Thickness, mils (mm)	20 (0.51)	20 (0.51)	20 (0.51)	20 (0.51)	65 (1.65) <sup>1/</sup> 10 (0.25) <sup>2/</sup>
Durability (cycles)	5,000	5,000	1,500	1,500	1,500

Notes:

- 1/ Measured at the thickest point of the patterned surface.
- 2/ Measured at the thinnest point of the patterned surface.”

Added 4/9/2020