



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

November 8, 2017

SUBJECT: FAI Route 90/94 (I-90/94)
Project NHPP-000V(124)
Section 2014-016R&B
Cook County
Contract No. 60X95
Item No. 75, November 17, 2017 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 iii & vi of the Table of Contents to the Special Provisions
3. Revised pages 114-118 and 184-188 of the Special Provisions
4. Added pages 389-398 to the Special Provisions
5. Revised sheets 15 and 17B 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,

Maureen M. Addis, P.E.
Engineer of Design and Environment

A handwritten signature in black ink, appearing to read "Ted B. Walschleger" with a small "P.E." to the right.

By: Ted B. Walschleger, P. E.
Engineer of Project Management

cc: John Fortmann, Region 1, District 1; Tim Kell; D. Carl Puzey; Estimates

MS/ck

REMOVE AND REPLACE BLIND FLANGE	135
TEMPORARY PUMPING SYSTEM.....	136
CONCRETE BARRIER TRANSITION (SPECIAL).....	137
TEMPORARY EPOXY PAVEMENT MARKING	138
RAISED REFLECTIVE PAVEMENT MARKER, REFLECTOR REMOVAL	138
STABILIZED CONSTRUCTION ENTRANCE.....	139
AIR QUALITY COMPLIANCE	139
CONSTRUCTION AIR QUALITY – DUST CONTROL	141
REMOVE IMPACT ATTENUATOR	144
REMOVE, STORE AND RE-ERECT SIGN PANEL (SPECIAL).....	144
REMOVE, STORE AND RE-ERECT SIGN PANEL ASSEMBLY (SPECIAL).....	145
TEMPORARY CHAIN LINK FENCE.....	145
FENCE REMOVAL AND RE-ERECTION.....	146
FENCE (SPECIAL).....	147
TREE GRATES.....	147
REQUIRED INSPECTION OF WOODY PLANT MATERIAL.....	148
MUSHROOM COMPOST FURNISH AND PLACE.....	148
PLANTING SOIL MIX FURNISH AND PLACE	149
PLANTING WOODY PLANTS	153
FAILURE TO COMPLETE PLANT CARE AND ESTABLISHMENT WORK ON TIME.....	157
WEED CONTROL, PRE-EMERGENT GRANULAR HERBICIDE	158
GENERAL REQUIREMENTS FOR WEED CONTROL SPRAYING	159
REPAIR IRRIGATION SYSTEM.....	161
PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH, SPECIAL.....	162
DETECTABLE WARNINGS (SPECIAL)	163
TEMPORARY PAVEMENT	164
LOCAL STREET IMPACTS.....	165
REMOVAL OF ASBESTOS CEMENT CONDUIT.....	165
REMOVAL OF EXISTING STRUCTURES NO. 1.....	171
TEMPORARY SOIL RETENTION SYSTEM	172
DECORATIVE RAILING (PARAPET MOUNTED).....	174
LIGHTWEIGHT CELLULAR CONCRETE FILL (D-1).....	176
FORM LINER TEXTURED SURFACE	182
REMOVAL OF EXISTING STRUCTURE NO. 2	184

PORTABLE CHANGEABLE MESSAGE SIGNS (BDE)	357
PORTLAND CEMENT CONCRETE (BDE)	358
PORTLAND CEMENT CONCRETE BRIDGE DECK CURING (BDE)	359
PORTLAND CEMENT CONCRETE SIDEWALK (BDE).....	360
PROGRESS PAYMENTS (BDE)	361
SUBCONTRACTOR MOBILIZATION PAYMENTS (BDE)	362
TEMPORARY PAVEMENT MARKING (BDE).....	362
TRAINING SPECIAL PROVISIONS (BDE)	365
IDOT TRAINING PROGRAM GRADUATE ON-THE-JOB TRAINING SPECIAL PROVISION	367
WARM MIX ASPHALT (BDE).....	370
WEEKLY DBE TRUCKING REPORTS (BDE).....	372
STEEL COST ADJUSTMENT (BDE).....	372
STORM WATER POLLUTION PREVENTION PLAN	376
MONITORING ADJACENT STRUCTURES	389

CONCRETE BARRIER WALL (SPECIAL)

Description. This work shall consist of constructing a concrete barrier wall with reinforcement bars on a concrete barrier base as detailed in the plans.

Construction Requirements. This work shall be done in accordance with the applicable portions of Section 637 of the Standard Specifications. The concrete barrier wall shall be constructed on a concrete barrier base as detailed in the plans. The concrete barrier wall shall be constructed separately and not poured monolithically with the concrete barrier base.

Method of Measurement. CONCRETE BARRIER WALL (SPECIAL) shall be measured for payment in feet along the centerline of the barrier. The concrete barrier base will be paid for separately according to CONCRETE BARRIER BASE (SPECIAL).

Basis of Payment. This work will be paid for at the contract unit price per foot for CONCRETE BARRIER WALL (SPECIAL), which price shall include all equipment, labor, and materials necessary to construct the concrete barrier wall including all reinforcement bars in the concrete barrier wall.

CONSTRUCTION VIBRATION MONITORING

Description. This work consists of monitoring buildings, structures, tunnels and other locations susceptible to vibration from construction activities.

The Contractor shall furnish monitoring equipment and all equipment and labor necessary to install and monitor adjacent buildings and structures for vibration. The Contractor shall designate a minimum of two monitoring point locations for each of the structures located at the following addresses, at a minimum:

- 120 S. Des Plaines Street (The Francis Xavier Warde School) (a)
- 733 W. Madison Street (Crowne Plaza Hotel) – four locations on building adjacent to Monroe Street and Monroe SB exit ramp (a)
- Existing Monroe Street Chicago Department of Water Management (CDWM) siphon junction chambers adjacent to the north side of the existing Monroe Street Bridge
- 703 W. Monroe Street (Horizons for Youth)
- 711 W. Monroe Street (Fr. Jack Wall Mission Center also referred to as the Archdiocese Archives and Records Center and the Career Transition Center) – four locations minimum (a)
- 700 W. Adams Street (Old St. Patrick’s Church) – four locations minimum (a)
- 718 W. Adams Street (St. Patrick’s Church Rectory) – four locations minimum (a)
- 111 S. Halsted Street (Walgreens) (a)
- 412 S. Peoria Street (UIC-CUPPA Hall) (a)
- 400 S. Green Street (Green Street Lofts) (a)

Revised 11/8/17

- (a) Background Vibrations Reports were previously developed for the buildings noted above during the Project planning phase, and are available for review, for informational purposes only, at the District One offices. These reports provide information regarding the vibration levels caused by ambient vibrations due to normal traffic, building mechanical equipment and any unrelated construction activities being performed nearby at the time of the monitoring and report development.

The Contractor is solely responsible for determining the means, methods and sequences of construction, and may identify additional locations beyond those listed above for monitoring vibration. The cost for monitoring the additional locations identified by the Contractor is included in the lump sum contract unit price for CONSTRUCTION VIBRATION MONITORING.

The Contractor shall coordinate with the Engineer and building/structure owners to ensure the proposed monitoring locations are acceptable to the building owners and accessible to both the Contractor and the Engineer at all times. The proposed locations of building vibration points are to be submitted to the Engineer for approval prior to the start of construction. Selection of the building vibration monitoring points shall be coordinated during the pre-construction condition surveys included within the MONITORING ADJACENT STRUCTURES special provision.

Vibration Monitoring: The Contractor shall employ the services of a qualified vibration monitoring consultant. Monitoring point locations and frequency of data collection shall be as determined by the Contractor's Consultant and are subject to the approval of the Engineer. All vibration monitors shall be attached to the floor of the buildings or structures being monitored. Vibration monitoring shall be a continuous and uninterrupted process and must be in place prior to the start of any construction activity. All vibration monitors for the project shall be programmed to actuate an alarm when the Threshold Value or Limiting Value is reached. The alarm notification protocol shall consist of the immediate dialing of mobile telephone numbers of the Engineer (or his/her authorized representative) and the Prime Contractor.

Response Values: The Contractor shall establish the response values, including both the Threshold Value and the Limiting Value, for each building and structure.

- **Threshold Value:** A Threshold Value is a warning value. If Threshold Values are achieved, the Contractor must stop the work, determine the best course of action to reduce the vibrations and implement corrective actions to the design and/or construction methods to avoid reaching Limiting Values.

Limiting Value: A Limiting Value is an alarm value. 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 design and/or construction methods to protect the adjacent structures from damage.

Revised 11/8/17

If the Threshold Value or Limiting Value is reached, all vibration inducing work shall be stopped. The Contractor shall establish the horizontal/vertical distance limit requirements between the vibration monitoring point location and the source of the vibration-inducing work to determine which construction operations must be stopped. Work may resume upon implementation of the action plan and with the approval of the Engineer.

If the work is stopped because the Threshold Value or Limiting Value is reached there will be no additional compensation nor any additional time extensions granted. Any change in construction methods to avoid reaching the Limiting Value will not be grounds for additional compensation.

The Contractor must devise means and methods of construction that will not reach the established vibration response values. The Contractor is advised that particularly careful demolition/construction requirements may be required at locations where the property line is immediately adjacent to the area of construction.

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

- **Threshold Values:** If Threshold Values are achieved, the Contractor must stop the work and evaluate the means, methods, and sequences of construction and data collection/reporting frequency. 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 the data collection and data reporting frequencies. Provide a summary report to the Engineer for review and approval.
- **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.

Corrective Measures. If, at any time, resulting vibrations meet or exceed the established response values, the Contractor shall stop work immediately and initiate the necessary corrective measures as approved by the Engineer. Damage to the Adjacent Structures as a result of construction activity shall be corrected by the Contractor. No additional compensation shall be due to the Contractor for repairing Adjacent Structures. The Contractor shall not be entitled to any claim of damages or delay for stopping the project construction activities to make corrective measures.

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.

- Vibration Control Plan shall include:
 - Locations of all vibration monitoring points, including property address and property contact information.
 - Procedure and outline for how the data will be provided to the Engineer.
 - Product Data: Type of vibration monitor to be used. Include construction details, material descriptions, performance properties, dimensions of individual components and profiles.
 - List of the Contractor's equipment to be used during demolition and construction operations.
 - Contact information for the Vibration Monitoring consultant and their staff.
 - Instrumentation plans, schedules, and details, including:
 - An instrumentation plan showing the type, location, and installation details of all instruments to be installed.
 - Monitoring and reporting frequency.
 - Timetable that outlines the duration that each monitoring point will be maintained and checked.
 - 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.
 - 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.

Revised 11/8/17

COMBINATION CURB AND GUTTER TYPE B V.12 (CDOT)

Description: Work under this item shall be performed according to Section 606 of the IDOT Standard Specifications for Road and Bridge Construction, and to the City of Chicago Department of Transportation Regulations for Openings, Construction and Repair in the Public Way. The work consists of constructing variable height Portland Cement Concrete (PCC) combination curb and gutter greater than 3" in height and less than 9" in height.

Materials: Materials shall meet the applicable requirements of Division 1000 of the Standard Specifications.

Construction Requirements: Meet applicable requirements of Section 606 of the Standard Specifications. Construct combination concrete curb and gutter type B V.12 (CDOT) at the locations, widths and thickness shown on the Plans.

Method of Measurement: COMBINATION CURB AND GUTTER TYPE B V.12 (CDOT) will be measured for payment in feet along the flow line of the gutter and along the face of the concrete curb, which measurement will include drainage castings incorporated in various curbs and gutters.

Basis of Payment: This work will be paid for at the contract unit price per foot for COMBINATION CURB AND GUTTER TYPE B V.12 (CDOT).

REMOVAL OF EXISTING STRUCTURE NO. 2

Description. This item shall consist of furnishing all labor, equipment and materials necessary for the complete removal and disposal of the retaining wall along Madison Street Exit Ramp at South side of Monroe Street Bridge. The work shall be done in accordance with the applicable portions of Section 501 of the Standard Specifications, as described herein, as detailed in the plans and as directed by the Engineer.

The scope of this item shall include, but not limited to, removal and disposal of retaining wall stem, foundation, piles and steel sheet piling. This work shall include removal and disposal of existing abandoned 12" diameter water main. This work shall also include removal and disposal of miscellaneous items appurtenant to the structures, including but not limited to fence, existing conduits, conduit supports, electrical wires, junction boxes, light pole, traffic signal etc. The Contractor must submit a detailed procedure for removing the existing structures, to the Engineer for approval, prior to starting this Work.

The Contractor shall remove the existing foundation and piles to a minimum depth of 1 foot below the bottom of fascia panel elevation of the proposed retaining wall.

The Contractor shall exercise extreme caution not to damage existing structures that will remain in service and adjacent properties during construction. Any damage to existing structures and/or adjacent properties is the responsibility of the Contractor and the Contractor shall repair any such damage to the satisfaction of the Engineer.

Contractor shall coordinate with existing utilities owners and the City of Chicago to remove and/or relocate existing utilities within the work zone prior to structure removal activities. Where utilities were identified during design they are shown on the drawings. The final location of utilities is the responsibility of the Contractor and is included in Removal of Existing Structure No. 2.

The work shall conform in every respect to all environmental, state and local regulations regarding construction requirements, the protection of adjacent properties, as well as dust and noise control.

Equipment to perform removal work shall be appropriate for the location immediately adjacent to the Archdiocese of Chicago. The approval of the equipment and procedure by the Engineer does not guarantee the performance in the field of the equipment will be acceptable. If, in the judgment of the Engineer, the noise and/or vibration effects exceed those required by the local residents, then the Contractor must halt production and find a remedy acceptable to the Engineer. Threshold values for vibration monitoring are included in the special provision "CONSTRUCTION VIBRATION MONITORING." The costs incurred finding suitable equipment and procedures shall be included in the cost of this item. No additional costs shall be paid for this effort.

Revised 11/8/17

Prior to commencing work under this Item, the Contractor shall verify the location of all existing utilities in the area. The Contractor shall submit drawings and written documentation to the Engineer of such verification. All work under this Item shall be executed in such a manner so as not to disturb or damage the existing utilities.

All materials removed under this Item shall become the property of the Contractor and shall be disposed of by the Contractor off the site and in a lawful manner meeting all IDOT Policies and Procedures.

Traffic Operations. The traffic using Interstate I-90/94 must remain open to all lanes of traffic during demolition activities unless the Contractor has secured the necessary permits from the Illinois Department of Transportation to allow for temporary closure of lanes.

Existing Plans. See contract drawings for original plans for the existing structures involved in this work. The original plans, however, may not show all modifications that have been made to the structures over the years. The completeness of these plans is not guaranteed and no responsibility is assumed by IDOT for their accuracy. Information is furnished for the Contractor's convenience and is to be used solely at the Contractor's risk.

Method of Measurement. No separate measurement will be made for removal of existing structures.

Excavation of earth necessary to perform the removal of existing structure will not be measured for payment.

Basis of Payment. The work under this Item will be paid for at the Contract unit price each for REMOVAL OF EXISTING STRUCTURES, NO. 2, as indicated on the Plans and as specified herein.

SLOPE INCLINOMETER

Description. This work shall consist of installing and maintaining slope inclinometer casings to obtain measurements of lateral movements of foundation and retained soils during the construction. Slope inclinometer casing locations, elevations, and periods of monitoring for each device will be determined by the Engineer. The slope inclinometers are intended to be installed between proposed Retaining Wall No. 29 (SN 016-Z017) & adjacent buildings and behind the Monroe Street bridge (SN 016-1700) abutments.

This work shall also include monitoring movement of the proposed Retaining Wall No. 29 (SN 016-Z017) soldier piles and Monroe St bridge (SN 016-1700) abutment drilled shafts.

Equipment. The slope inclinometer casing is comprised of nominal 2.75-inch diameter PVC casing with a coupling system that produces strong, flush joints that won't pull apart, twist out of alignment, or break if subjected to bending. The casing joints shall be equipped with o-ring seals and shall not leak or break under the pressure of grout. The casing joints shall be able to withstand 1,200 pounds of tension, 20-foot-pounds of torque, and a bending moment of 120 foot-pounds, and a pressure of 160 pounds per square inch (psi).

Revised 11/8/17

The inside of the casing shall have spiral-free, machine broached grooves spaced at 90 degrees that are continuously aligned along the full length of the casing. The grooves shall be of sufficient depth, width, and consistency to provide repeatable positioning of the inclinometer probe used to measure lateral movement of the casing at various depths.

The casing shall be capped top and bottom. A lockable, protective cover shall be installed at the ground surface to protect the inclinometer casing. Locations with construction traffic shall be protected by at least three (3) bumper posts.

Construction Requirements. The inclinometer borehole shall be drilled from the top of existing grade elevation to a minimum of 5 feet into the bedrock with a minimum nominal inside diameter of 4.0 inches. The inclinometer casing shall be installed in the borehole with the guide grooves aligned parallel and perpendicular to the retaining wall or abutment face. The casing sections shall be assembled at the borehole. Use pipe clamps to hold the casing at the borehole collar while adding the next section of casing. Do not pre-connect the entire length of casing and drop into the hole, as this can result in damage to the casing.

Casing will float in a water-filled borehole, so the casing shall be filled with water to install it down hole. When grout is pumped into the hole, however, the casing will again begin to float. Hold the casing in place by using a casing anchor or lowering a steel pipe to the bottom of the casing. Do not force or hold the casing collar down using the drill rig or other top-down method, or the casing is likely to be compressed and lose its straightness.

Grouting shall be performed using a mixer, grout pump, and a pipe or hose for delivering the grout. Grout shall not be mixed by hand, and the water pump on the drill rig shall not be used to deliver the grout. A properly mixed grout shall be free of lumps and thin enough to pump but thick enough to set in a reasonable length of time. If the grout is too watery, it will shrink excessively, leaving the upper portion of the borehole un-grouted.

Grout mixes are provided in the following tables for hard to medium stiff soils and for soft soils. Mix the cement with water first. Then mix in the bentonite. Adjust the amount of bentonite to produce a grout with the consistency of heavy cream. The mix for hard to medium stiff soils has a 28-day compressive strength of about 100 psi, similar to hard clay. The mix for soft soils has a 28-day compressive strength of about 4 psi, similar to very soft clay.

Bentonite-Cement Grout for Hard to Medium Stiff Soils		
Materials	Weight	Ratio by Weight
Portland Cement	94 lb (1 bag)	1
Bentonite	25 lb (as required)	0.3
Water	30 gallons	2.5

Bentonite-Cement Grout for Soft Soils		
Materials	Weight	Ratio by Weight
Portland Cement	94 lb (1 bag)	1
Bentonite	39 lb (as required)	0.4
Water	75 gallons	6.6

Revised 11/8/17

The grout can be installed by either pre-grouting the hole or using an external grout pipe. In pre-grouting, the grout is pumped into the hole first, the grout pipe retrieved, and then the inclinometer casing lowered into the hole. Keep the casing filled with water to counteract buoyancy and grout pressure. Lower a steel pipe to the bottom of the casing to counteract buoyancy, allow the grout to set, top off the borehole with grout, and install the protective cover. When using an external grout pipe, first lower the inclinometer casing to the specified depth, then lower the grout pipe to the bottom of the hole and pump in grout. Add water into the casing to match the grout level. Take measures to counteract buoyancy but do not force the inclinometer casing down from the top, let the grout set with inclinometer casing anchored from the bottom, and install the protective cover.

The protective cover shall have an approximate 2.5-foot stickup beyond the highest ground level during construction and be lockable. The top of the inclinometer casing must extend 1 to 2 inches above the protective cover when the cover is opened, so that a pulley system can be installed on the casing when taking measurements with the inclinometer probe.

Inclinometer measurements and records: The contractor will make and record all observations and measurements required to determine ground movements during wall and abutment construction. Inclinometer probe measurements are made by lowering the inclinometer probe to the bottom of the casing and then slowly raising the probe by recording measurements every two feet up the casing.

A baseline set of readings will be taken no less than one week before the beginning of wall and abutment construction, to be used as a reference to determine ground movements. The baseline set will consist of the average of three sets of readings. Each set of readings will consist of inclinometer probe measurements made in the primary direction of anticipated ground movement and measurements made in the secondary or perpendicular direction.

During the installation of drilled shafts and soldier piles, the Contractor will take a minimum of one inclinometer reading per week. After the completion of drilled shaft and soldier pile installation and the start of excavation in front of the wall or abutment, the Contractor will take a minimum of two inclinometer readings each day (preferable one in the morning and one at the end of working day) until the wall/abutment completion. During the excavation in front of the wall or abutment, the horizontal movement (perpendicular to the retaining wall/abutment) of every single retaining wall pile and abutment drilled shaft shall be monitored using survey techniques (accuracy of 0.01') on a daily basis. The Contractor will make all records of slope inclinometer and retaining wall/abutment measurements readily available to the Engineer in tabular and graphical formats. Additionally, adjacent structures will be monitored as required under MONITORING ADJACENT STRUCTURES.

The Contractor shall control the work in such a manner that cumulative movements do not exceed the design maximum outward soldier pile wall or abutment deflection of 1 inch and 0.25 inch outward or downward ground movement at the existing adjacent buildings. If measured ground movements in slope inclinometers begin to accelerate between readings, work shall be immediately suspended and the Engineer must be informed immediately.

Revised 11/8/17

After the completion of the wall or abutment construction, the monitoring shall continue weekly for at least 3 months. After all monitoring has been completed, and at the direction of the Engineer, the cap shall be removed and the casing shall be grouted to final ground surface prior to restoration.

Basis of Payment: This work will be paid for at the contract unit price per each for SLOPE INCLINOMETER which payment shall be full compensation for the work described herein and directed by the Engineer and include, at a minimum, all required materials, installation, monitoring, grouting, sealing and required restoration.

DRILLED SHAFTS

Effective: October 5, 2015

Revised: October 4, 2016

Revise Section 516 of the Standard Specifications to read:

“SECTION 516. DRILLED SHAFTS

516.01 Description. This work shall consist of constructing drilled shaft foundations.

516.02 Materials. Materials shall be according to the following.

Item	Article/Section
(a) Portland Cement Concrete (Note 1).....	1020
(b) Reinforcement Bars	1006.10
(c) Grout (Note 2)	1024.01
(d) Permanent Steel Casing	1006.05(d)
(e) Slurry (Note 3)	

Note 1. When the soil contains sulfate contaminates, ASTM C 1580 testing will be performed to assess the severity of sulfate exposure to the concrete. If the sulfate contaminate is >0.10 to < 0.20 percent by mass, a Type II (MH) cement shall be used. If the sulfate contaminate is >0.20 to < 2.0 percent by mass, a Type V cement shall be used. If the sulfate contaminate is \geq 2.0 percent by mass, refer to ACI 201.2R for guidance.

Note 2. The sand-cement grout mix shall be according to Section 1020 and shall be two to five parts sand and one part Type I or II cement. The maximum water cement ratio shall be sufficient to provide a flowable mixture with a typical slump of 10 in. (250 mm).

Note 3. Slurry shall be bentonite, emulsified polymer, or dry polymer, and shall be approved by the Engineer.

Revised 11/8/17

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.
- 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.

Added 11/8/17

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

- 120 S. Des Plaines Street (The Francis Xavier Warde School)
- 733 W. Madison Street (Crowne Plaza Hotel)
- Existing Chicago Department of Water Management (CDWM) siphon junction chambers adjacent to the north side of the existing Monroe Street bridge
- 703 W. Monroe Street (Horizons for Youth)
- 711 W. Monroe Street (Fr. Jack Wall Mission Center also referred to as the Archdiocese Archives and Records Center and the Career Transition Center)
- 700 W. Adams Street (Old St. Patrick's Church)
- 718 W. Adams Street (St. Patrick's Church Rectory)
- 111 S. Halsted Street (Walgreens)
- 412 S. Peoria St. (UIC-CUPPA Hall)
- 400 S. Green St. (Green St. Lofts)

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.

Added 11/8/17

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.

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.

Added 11/8/17

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.

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.

Added 11/8/17

Table 1: Monitoring Instruments and Data Collection/Reporting Requirements

Instrument Type	Data Collection Accuracy/Tolerance	Minimum Data Collection Frequency	Reporting Frequency	Response Values
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			

In addition, monitoring movement for proposed Retaining Wall No. 29 and the Monroe Street bridge abutments is included in the pay item for SLOPE INCLINOMETER, and monitoring of vibration is included in the pay item CONSTRUCTION VIBRATION MONITORING. The monitoring and data collection/reporting requirements for these items are included in the respective special provisions.

Added 11/8/17

Table 2: Monitoring Locations and Minimum Monitoring Requirements

Adjacent Building	Vertical Movement Monitoring Points / Horizontal Movement Monitoring Points	Crack Gauges	Groundwater Monitoring Wells	Tiltmeters
120 S. Des Plaines Street (The Francis Xavier Warde School)	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.	N/A	2 locations
733 W. Madison Street (Crowne Plaza Hotel)	2 horizontal and 2 vertical locations		N/A	2 locations
Existing CDWM siphon junction chambers	2 horizontal and 2 vertical locations at each chamber		N/A	2 locations
703 W. Monroe Street (Horizons for Youth)	2 horizontal and 2 vertical locations		N/A	2 locations
711 W. Monroe Street (Fr. Jack Wall Mission Center)	4 horizontal and 4 vertical locations		2 locations	2 locations
700 W. Adams Street (Old St. Patrick's Church)	2 horizontal and 2 vertical locations		N/A	2 locations
718 W. Adams Street (St. Patrick's Church Rectory)	2 horizontal and 2 vertical locations		N/A	2 locations
111 S. Halsted Street (Walgreens)	2 horizontal and 2 vertical locations		N/A	2 locations
412 S. Peoria St. (UIC-CUPPA Hall)	2 horizontal and 2 vertical locations – Utilized during Peoria Street Siphon Lining		N/A	2 locations
400 S. Green St. (Green St. Lofts)	2 horizontal and 2 vertical locations– Utilized during Peoria Street Siphon Lining		N/A	2 locations

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. Promptly notify the Engineer when Response Values are reached in order to review and enact action plan(s).

Added 11/8/17

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.
- **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.

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.

Added 11/8/17

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.

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 for the Peoria Street siphon lining. 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.

Added 11/8/17

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.

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.

Added 11/8/17

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.

Added 11/8/17