



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

February 21, 2025

SUBJECT: FAP Route 342 (IL 53)
Project NHPP-HSIP-Z450(650)
Section 2018-100-BR
Cook County
Contract No. 62N91
Item No. 17, March 7, 2025 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 Schedule of Prices.
2. Revised the Table of Contents to the Special Provisions.
3. Revised pages 2-5, 248-250, 255, 272-273, 275, & 314 of the Special Provisions.
4. Added pages 495-506 to the Special Provisions.
5. Revised Sheets 11, 12, 14-16, 19, 25, 34, 37, 38, 125, 166, 175, 389, 391, 394A, 657-659, 661, 666, 668-671, 701, 748, 749, 781-783, 808-811, 814-819, 824, 838, 854, 937, 938, 967, 969, 979, 981, 990A and 992 of the Plans.
6. Added sheets 206A, 207A, 346A, and 348A to 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

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MAINTENANCE OF ROADWAYS (D1)

Effective: September 30, 1985

Revised: November 1, 1996

Beginning on the date that work begins on this project, the Contractor shall assume responsibility for normal maintenance of all existing roadways within the limits of the improvement. This normal maintenance shall include all repair work deemed necessary by the Engineer, but shall not include snow removal operations. Traffic control and protection for maintenance of roadways will be provided by the Contractor as required by the Engineer.

If items of work have not been provided in the contract, or otherwise specified for payment, such items, including the accompanying traffic control and protection required by the Engineer, will be paid for in accordance with Article 109.04 of the Standard Specifications.

STATUS OF UTILITIES (D1)

Effective: June 1, 2016

Revised: January 1, 2020

Utility companies and/or municipal owners located within the construction limits of this project have provided the following information regarding their facilities and the proposed improvements. The tables below contain a description of specific conflicts to be resolved and/or facilities which will require some action on the part of the Department's contractor to proceed with work. Each table entry includes an identification of the action necessary and, if applicable, the estimated duration required for the resolution.

UTILITIES TO BE ADJUSTED

Conflicts noted below have been identified by following the suggested staging plan included in the contract. The company has been notified of all conflicts and will be required to obtain the necessary permits to complete their work; in some instances, resolution will be a function of the construction staging. The responsible agency must relocate, or complete new installations as noted below; this work has been deemed necessary to be complete for the Department's contractor to then work in the stage under which the item has been listed.

STAGE / LOCATION	TYPE	DESCRIPTION	RESPONSIBLE AGENCY	DURATION OF TIME
Rand Road 1015+21, 42' LT	Fiber Optic	Existing fiber optic in conflict with proposed traffic signal post foundation	AT&T Local	TBD
IL 53 1132+24, 133' RT to 1132+88, 141' LT	Underground Cable	Existing underground cable in conflict with proposed retaining wall substructure	Comcast	TBD
IL 53 1132+24, 133' RT to 1132+88, 141' LT	Underground Electric	Existing underground electric in conflict with proposed retaining wall substructure	ComEd	40 Days

STAGE / LOCATION	TYPE	DESCRIPTION	RESPONSIBLE AGENCY	DURATION OF TIME
Rand Road 1005+65, 44' LT	Underground Electric	Existing underground electric in conflict with proposed traffic signal post foundation	ComEd	
Rand Road 1008+36, 49' LT	Underground Electric	Existing underground electric in conflict with proposed storm sewer and manhole	ComEd	
Rand Road 1014+28, 52' RT	Underground Electric	Existing underground electric in conflict with proposed traffic signal post foundation	ComEd	
Rand Road 1014+39, 51' RT	Underground Electric	Existing underground electric in conflict with proposed traffic signal post foundation	ComEd	
Rand Road 1015+14, 51' RT	Underground Electric	Existing underground electric in conflict with proposed traffic signal post foundation	ComEd	
IL 53 1132+32, 134' RT to 1132+95, 141' LT	Fiber Optic	Existing fiber optic in conflict with proposed retaining wall substructure	ComEd Fiber	
IL 53 1132+32, 134' RT to 1132+95, 141' LT	Underground Cable	Existing underground cable in conflict with proposed retaining wall substructure	MCI/Verizon	TBD
IL 53 1415+57, 79' LT	Fiber Optic	Existing fiber optic in conflict with proposed storm sewer and manhole	MCI/Verizon	TBD
Rand Road 1008+67, 54' RT	Gas Line	Existing gas line in conflict with proposed storm sewer and junction chamber	Nicor	60 Days
Rand Road 1009+63, 53' RT to 1011+49, 55' RT	Gas Line	Existing gas line in conflict with proposed retaining wall substructure	Nicor	
Rand Road 1013+00, 41' RT	Gas Line	Existing gas line in conflict with proposed grade cut for multi-use path	Nicor	
IL 53 1422+38, 78' LT	Gas Line	Existing gas line in conflict with proposed storm sewer	Nicor	
IL 53 1432+20, 183' RT	Gas Line	Existing gas line in conflict with proposed storm sewer and manhole	Nicor	
IL 53 1132+32, 133' RT to 1132+95, 140' LT	Fiber Optic	Existing fiber optic in conflict with proposed retaining wall substructure	Windstream	TBD
IL 53 1432+20, 122' RT	Fiber Optic	Existing fiber optic in conflict with proposed storm sewer	Windstream	TBD

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The following contact information is what was used during the preparation of the plans as provided by the Agency/Company responsible for resolution of the conflict.

Agency/Company Responsible to Resolve Conflict	Name of contact	Phone	E-mail address
AT&T Distribution	Alexander Bryant Jennifer Wilson	630-272-9010	Ab8652@att.com Jw304b@att.com
AT&T Local	Bruce Robbins	630-573-6471	Br1831@att.com
AT&T Transmission	Bobby Ahkter	630-390-0089	Ba3817@att.com
City of Rolling Meadows	Aaron Grosskopf Public Works Director	847-963-0500	PW@cityrm.org
Comcast	Robert Stoll	224-229-5849	Robert_Stoll2@comcast.com
ComEd	Brenda Brock Vincent Mazzaferro	815-641-9608	Brenda.Brock@exeloncorp.com Vincent.MazzaferroPE@comed.com
ComEd Fiber	Ben Koehler (Adesta)	331-264-7450	Ben.koehler@aus.com
MCI/Verizon	Joe Chaney		Joe.Chaney@verizon.com
Nicor	Charles Parrott Michael Ann Beyke	847-807-9736 630-388-2761	cparrot@southernco.com mbeyke@southernco.com
Windstream	Damage Prevention Group	800-289-1901	windstreamprs@korweb.com
Village of Arlington Heights	Chris Papierniak, Director of Public Works	847-368-5800	publicworks@vah.com

UTILITIES TO BE WATCHED AND PROTECTED

The areas of concern noted below have been identified by following the suggested staging plan included for the contract. The information provided is not a comprehensive list of all remaining utilities, but those which during coordination were identified as ones which might require the Department's contractor to take into consideration when making the determination of the means and methods that would be required to construct the proposed improvement. In some instances, the contractor will be responsible to notify the owner in advance of the work to take place so necessary staffing on the owner's part can be secured.

STAGE / LOCATION	TYPE	DESCRIPTION	OWNER
Algonquin Road 111+89, 69' RT	Underground Electric	Existing aerial pole near proposed IDOT electric and fiber optic lines	ComEd
Algonquin Road 111+92, 45' LT	Underground Electric	Existing aerial pole near proposed IDOT fiber optic line	ComEd
Rand Road 1005+59, 52' RT	Underground Electric	Existing underground electric line near proposed traffic signal pole foundation	ComEd
IL 53 1433+19, 189' RT	Gas Line	Existing gas line near proposed storm sewer manhole	Nicor
Rand Road 1015+28, 45' RT	Gas Line	Existing gas line near proposed sidewalk grading and traffic signal equipment	Nicor
IL 53 1132+50, 133' RT to 1133+08, 141' LT	Water Main	Existing water main near the proposed retaining wall substructure	City of Rolling Meadows
IL 53 1433+19, 115' RT	Water Main	Existing water main near proposed overhead sign structure foundation	Village of Arlington Heights

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The following contact information is what was used during the preparation of the plans as provided by the owner of the facility.

Agency/Company Responsible to Resolve Conflict	Name of contact	Phone	E-mail address
ComEd	Brenda Brock Vincent Mazzaferro	815-641-9608	Brenda.Brock@exeloncorp.com Vincent.MazzaferroPE@comed.com
Nicor	Charles Parrott Michael Ann Beyke	847-807-9736 630-388-2761	cparrot@southernco.com mbeyke@southernco.com
Village of Arlington Heights	Chris Papierniak, Director of Public Works	847-368-5800	publicworks@vah.com

The above represents the best information available to the Department and is included for the convenience of the bidder. The days required for conflict resolution should be considered in the bid as this information has also been factored into the timeline identified for the project when setting the completion date. The applicable portions of the Standard Specifications for Road and Bridge Construction shall apply.

Estimated duration of time provided above for the first conflicts identified will begin on the date of the executed contract regardless of the status of the utility relocations. The responsible agencies will be working toward resolving subsequent conflicts in conjunction with contractor activities in the number of days noted.

The estimated relocation duration must be part of the progress schedule submitted by the contractor. A utility kickoff meeting will be scheduled between the Department, the Department's contractor, and the utility companies when necessary.

The Department's contractor is responsible for contacting JULIE or DIGGER within city of Chicago prior to all excavation work. State Electrical Contractor shall be notified 72 hours in advance of construction to locate IDOT underground electrical facilities at 773-287-7600 or dispatch@meade100.com.

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DRAINAGE STRUCTURE TO BE REMOVED

Description. This Work shall consist of removing existing Type 4 or Type 5 drainage structures.

General. The existing drainage structure and all appurtenances shall be removed and disposed of in accordance with the applicable portions of Section 605 of the Standard Specifications. Removal limits shall be verified by the Engineer before removal. The hole formed by the removal of the structure shall be backfilled in accordance with Section 605 of the Standard Specifications.

Method of Measurement. The proposed work shall be measured for payment per each drainage structure removed.

Basis of Payment. The proposed work shall be paid for at the Contract unit price per each for DRAINAGE STRUCTURE TO BE REMOVED, which shall include all labor and equipment necessary to remove the drainage structures and backfill the remaining hole as described in this Special Provision at locations shown on the drawings. Removal of pipes connected to drainage structures shall be paid for separately.

DRILL AND GROUT BARS

Description. This work shall consist of the procurement, drilling and adhesive grouting of reinforcement bars, either coated or uncoated, into existing hardened concrete structures at the locations shown in the plans or as directed by the Engineer in holes of described depth and diameter as detailed in the plans or Standard Specifications.

Adhesive materials shall be according to Article 584.02 of the Standard Specifications. Drilling and grouting of reinforcement bars, either coated or uncoated, shall be performed according to Article 584.03 of the Standard Specifications. Steel reinforcement bars, either coated or uncoated, shall be according to Section 508, except as modified in this Special Provision.

Method of Measurement. All bars indicated as DRILL AND GROUT BARS will be measured for payment in place as a quantity of each. Poundage for detailed steel reinforcement bars, either coated or uncoated, indicated in the plans to be drilled and grouted under this pay item will not be measured individually for payment but shall be considered as included in the unit price bid for DRILL AND GROUT BARS.

Basis of Payment. This work will be paid for at the contract unit price per each for DRILL AND GROUT BARS.

DUCTILE IRON WATER MAIN

Add the following to Article 561.01 Description. This work shall be in accordance with Sections 20, 40, 41, and standard drawings of the SSWSC, and 561 of the Standard Specifications, the details in the drawings, and the following special provision.

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562.02 Materials. Materials shall meet the specifications of Section 40 of the SSWSC and the following;

40-2.01 PIPE MATERIALS

Add the following paragraph to this section:

All pipe and materials used in performance of the work shall be clearly marked as to strength, class, or grade. Pipe and materials not so marked shall be subject to rejection.

40-2.01B DUCTILE IRON PIPE

Replace this section with the following:

Unless otherwise noted in the project documents, all water main pipe shall be ductile iron, minimum thickness Class 52, with mechanically restrained joints, designed in accordance with ANSI/AWWA C151/A21.51, except gaskets shall be neoprene or other synthetic rubber. All joints for ductile iron water main shall be gasketed mechanical joints in accordance with ANSI/AWWA C111/A21.11. All fittings shall be mechanically restrained joint fittings and the restraining components shall be ductile iron in accordance with applicable requirements of ANSI/AWWA C110/A21.10 and/or C153/A21.53. Interior of pipe shall have a bituminous coating, as specified in AWWA C151. Exterior of pipe shall be coated with a layer of arc-sprayed zinc in accordance with ISO 8179. The mass of the zinc applied shall be 200 grams per square meter of pipe surface area. A finishing layer of bituminous coating shall be applied over the zinc coating as specified in AWWA C151. Inner surfaces of all ductile iron water piping shall have a cement mortar lining in accordance with the requirements of AWWA C104. Type of pipe shall be clearly marked on pipe by manufacturer.

All ductile iron piping and fittings shall be polyethylene-encased in accordance with AWWA C105. Polyethylene encasement shall be comprised of three layers of co-extruded linear low-density polyethylene film fused into one. Any rips or punctures shall be repaired prior to backfilling pipe. Polyethylene encasement shall be taped to provide a snug fit along the pipe.

In cases where corporation stops are to be tapped into mains, pipe wall thickness shall be furnished as specified in AWWA C151 to provide engagement of four threads, or pipe saddles shall be furnished as approved by the manufacturer.

40-2.05A CAST IRON OR DUCTILE IRON PIPE FITTINGS

Replace this section with the following:

All standard water main pipe fittings sizes 3 inches through 24 inches shall be ductile iron Class 350 conforming to requirements of ANSI/AWWA C153/A21.53 and ANSI/AWWA C111/21.11. All water main fittings shall have a cement mortar lining in accordance with the requirement of ANSI/AWWA C104/A21.4. Fittings shall be furnished with a rated working pressure of 150 psi. All fitting joints shall be mechanical joint.

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"MEG-A-LUG" or approved equal mechanical joint restraints shall be used at all connections of water mains to bends, tees, crosses, reducers, and other fittings. All mechanical joints shall have a minimum of six (6) sacrificial zinc anode caps.

Special fittings shall be furnished and installed as specified. Contractor shall be responsible for furnishing and installing all fittings necessary to construct the water main and appurtenances in the locations shown in the plans at the specified depth of bury and for making all necessary connections to existing mains.

No additional payment will be allowed for water main fittings. The cost of all water main fittings shall be considered incidental to the cost of the water main piping.

41-2.02 EXCAVATION, BACKFILL, AND CLEAN UP DEPTH OF PIPE COVER

Replace the second paragraph with the following:

The minimum depth of cover for water main and water service lines shall be 5.5 feet below existing ground or the proposed grade to the crown of the pipe. The depth shall be increased as shown on the plan and profile sheets or as necessary to avoid conflict with other utilities at no change in bid price. Special care shall be taken with regard to grade in the vicinity of existing and planned utility crossings.

The proposed water main shall be protected with a minimum temporary ground cover of at least 3.0 feet during construction activities between April 1 and November 1 of the same calendar year. In the case that water main construction is not completed and the final proposed grade above the water main is not placed between these dates, a minimum temporary ground cover of at least 5.5 feet must be maintained above the water main between November 1 and April 1 of the following year.

41-2.04 LAYING OF PIPE ON CURVES

Add the following paragraph to this section:

No additional payment will be allowed for water main fittings. The cost of all water main fittings shall be considered incidental to the cost of the water main piping.

41-2.10 THRUST BLOCKING

Replace the first, second, and sixth paragraphs in this section with the following:

Water main shall be installed in accordance with AWWA C600 for iron pipe. All plugs, caps, tees, hydrants, bends, and other fittings for water mains shall be provided with restrained joints.

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Heights Water Distribution Unit or designated representative during construction. A sampling tap will be required to test the source. Sampling from fire hydrants shall not be allowed.

561.05 Basis of Payment. Delete the first paragraph add the following;

This work will be measured and paid for at the contract unit price per foot of DUCTILE IRON WATER MAIN of the diameter specified. This price shall include all bends, tees, crosses, reducers, plugs, fittings, thrust blocks, retainer glands, encasement, chlorination, pressure and leakage testing, bedding material, haunching material, polyethylene encasement, labor and equipment necessary to construct the water main as specified herein.

ETHERNET SWITCH

Description. This Work shall consist of furnishing, installing, integrating, and testing an environmentally hardened Layer III Ethernet switch. Switch shall be a Cisco IE 3400-8TS2 (with IE 3300-8S expansion module) or approved equivalent. Contractor shall provide Ethernet switches with all necessary hardware and software to make the switches operational and be compatible with IDOT's existing network. Contractor shall be responsible for programming and integrating all new switches in coordination with the Department to have the new switches integrated into the existing network.

Materials. Layer III (Network) Switch

(A) Management Capabilities

- (1) Switches shall support full-duplex Ethernet
- (2) Switches shall be capable of Layer 2 LAN Base services
- (3) Switches shall have American Standard Code for Information Interchange (ASCII) based configuration files for offline editing and bulk configuration
- (4) Switches shall be managed using Simple Network Management Protocol (SNMP) Version 3.
- (5) Switches must be able to use Secure File Transfer Protocol (SFTP) to transfer configuration file to and from a central server.
- (6) Switches shall be compliant with IEEE 802.1 and 802.3. Specifically, the switch must comply with the following IEEE 802.1 standards:
 - (a) IEEE 802.1D—Media Access Control (MAC) Bridges, including Rapid Spanning Tree Protocol (RSTP).
 - (b) IEEE 802.1Q—Virtual Local Area Network (VLAN) tagging and Multiple Spanning Tree Protocol (MSTP).
 - (c) IEEE 802.1X (Port Based Network Access Protocol).
- (7) Switches shall perform multicast filtering using Internet Group Management Protocol (IGMP) snooping.
- (8) Switches shall support Address Resolution Protocol (ARP)
- (9) Switches shall support the following Layer 3 capabilities:

Internet Protocol Version 4 (IPv4);

- (a) Internet Protocol Version 6 (IPv6);

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Removal of the existing continuously reinforced pavement immediately above the existing lug system is not included in the unit cost of this item, but shall be paid for separately as PAVEMENT REMOVAL.

Method of Measurement. LUG SYSTEM REMOVAL will be measured in per each lug system location as identified in the plans. One lug system location consists of a series of individual lugs as shown on the plans.

Basis of Payment. This work shall be paid for at the contract unit price per each, for LUG SYSTEM REMOVAL, which price is payment in full for all labor, tools, equipment, and materials necessary to remove and dispose of the lug system.

MAINTAINING ITS DURING CONSTRUCTION

Description. Intelligent Transportation Systems (ITS) references IDOT traffic surveillance infrastructure. These elements include, but are not limited to, the following: induction loops, ramp meters, closed circuit television cameras, dynamic message signs, highway advisory radios, Radar Vehicle Sensing Devices (RVSDs), wireless vehicle detection devices, copper and fiber optic communication cables, power cables, cabinets, and communication equipment.

General Requirements. Effective the date the Contractor's activities (ITS or otherwise) begin at the job site, the Contractor shall be responsible for the proper operation and maintenance of ITS elements that are part of, or that may be affected by, the work until final acceptance by the Engineer or as otherwise determined by the Engineer.

Before performing any excavation, removal, or installation work (ITS or otherwise) at the site, the Contractor shall initiate a request for a maintenance transfer and preconstruction inspection to be held in the presence of the Engineer and a representative of the party or parties responsible for maintenance of any ITS systems that may be affected by the work. This includes co-ordination with adjacent projects that may have an effect on the ITS infrastructure. The request for the maintenance preconstruction inspection shall be made no less than seven (7) calendar days prior to the desired inspection date.

Existing ITS elements, when depicted on the plans, are intended only to indicate the general equipment installation of the systems involved and shall not be construed as an exact representation of the field conditions. It remains the Contractor's responsibility to visit the site to confirm and ascertain the exact condition and location of the ITS components and systems to be maintained and installed.

Existing ITS components shall be defined as any ITS component or device in service at the time of the commencement of construction activities. The contract drawings indicate the general extent of any existing ITS elements, but whether indicated or not, it remains the Contractor's responsibility to ascertain the extent of effort required for compliance with these specifications, and failure to do so will not be justification for extra payment or reduced responsibilities.

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Maintaining ITS During Construction - It is the Contractor's responsibility to maintain vehicle detection, which includes speed and volume data, in all lanes within the construction limits for this project, on all roadway segments and ramps that will be open to traffic. Where the existing detection cannot be maintained, the Contractor shall provide a temporary detection system, approved by IDOT, at no additional cost to the contract. The Contractor's responsibility shall include protection or removal and storage of any ITS/Communication cabinets and protecting in place any cables, conduits and ITS devices in or adjacent to the work zone. This work may also include the abandonment of the existing device and communication pathway and the installation of a temporary device such as a RVSD with a wireless communication. This work shall also include the relocation and adjustment of RVSD and wireless detection devices as necessary in coordination with construction staging. It is the Contractor's responsibility to maintain closed circuit television cameras including associated fiber optic communications and power.

Contractor is responsible for the disconnection, rerouting, and reconnection of all fiber and copper communication cables currently located in existing conduits as indicated in the plans.

The disconnection and reconnection must be made at an existing splice point or communication cabinet where a connection is made, or as otherwise indicated in the plans. The existing communication and infrastructure must be properly maintained for the duration of construction activities and the Contractor must coordinate the disconnection and reconnection activities with the Engineer.

All work required to maintain, relocate or provide a fully operational and integrated temporary ITS infrastructure system as depicted in the plans or otherwise necessary and as provided for in this special provision shall be paid for under the Maintaining ITS During Construction pay item. No component items germane to this work shall be paid for separately.

Once construction activities are complete, all temporary equipment installed will become the property of the Contractor and shall be disposed of at the Contractor's expense.

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.

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Basis of Payment. This work will be paid for at the contract unit price per acre for MOWING. Any additional mowing or trimming required to obtain the height specified or to disperse mowed material will be considered as included in the cost of the initial mowing. Payment for mowing and trimming shall include the cost of all material, equipment, labor, removal, disposal, and incidentals required to complete the work as specified herein and to the satisfaction of the Engineer.

NON-PRESSURE CONNECTION TO EXISTING WATER MAIN

Description. This work shall consist of connecting the new water main with the existing water main at locations shown on the plans. This work shall be in accordance with Sections 20, 40, 41, and the standard drawings of the SSWSC, the special provision for DUCTILE IRON WATER MAIN and the following special provision.

41-2.11 CONNECTION TO EXISTING MAINS

Add the following to this section:

Where shown on the plans, CONTRACTOR shall make connections to existing mains. Connections shall be performed to minimize time that the distribution system is out of service, but in no case shall service be interrupted without prior 48 hours' notice to the Engineer.

Where proposed pipe and fittings connect to existing pipe, existing pipe joints within the restrained pipe lengths shall be mechanically restrained as specified in the NON-PRESSURE CONNECTION TO EXISTING WATER MAIN. This work will not be paid for separately, but will be included in the cost of the connection.

Method of Measurement and Basis of Payment. Connection to existing water main shall be measured and paid for at the contract unit price per each for NON-PRESSURE CONNECTION TO EXISTING WATER MAIN, regardless of the diameter of the pipe. The unit price bid shall include all labor, equipment, excavation, bedding, haunching, initial backfill, removal of existing water main, fittings, reducers, couplings, thrust blocks, retainer glands, and tapping saddle necessary to perform the connection as specified.

ORNAMENTAL FENCE

Description. This work shall consist of furnishing and installing a steel fence, gates and accessories as shown on the plans.

Materials.

- A. The steel material for the fence framework (i.e., tubular pickets, rails and posts) shall meet the following:
 - I. Galvanized after forming:
 - a. Conform to the requirements of ASTM A1011/1011M
 - b. Minimum yield strength of 50,000 psi.
 - c. The exterior shall be hot-dip galvanized with a 0.45 oz/ft² minimum zinc weight.

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job site or installed as part of the job. This does not relieve the Contractor from replacement/repairs of equipment found to be damaged or in non-compliance of these provisions.

Certain items such as conduit, wire, duct, anchor bolts, and junction boxes will be inspected and may be tested by the Department's Bureau of Materials and these items shall not be delivered to the job site without inspection approval. Items such as cabinets shall be inspected by the Engineer at the Contractor's or manufacturer's shop and these items shall not be delivered to the job site without Bureau of Traffic Operations Electrical Engineer inspection approval. It shall be the Contractor's responsibility to arrange inspection activities with the Engineer thirty (30) days prior to installation. 30 days prior to installation of the tone equipment being supplied and, prior to request for a turn-on, the Bureau of Traffic Operations Electrical Engineer will be contacted for the correct frequencies, controller addresses and "DB" setting for each location to be installed. When the work is complete, all equipment fully operational, the Contractor shall schedule a turn-on inspection with the Engineer. Acceptance will be made as a total system, not as parts. The Contractor shall request the inspection no less than seven (7) working days prior to the desired inspection date.

No inspection shall be made until the delivery of acceptable "as built" drawings, specified certifications, and the required guarantees.

It will be the responsibility of the installing Contractor to provide a qualified technician representing the tone equipment supplier to be at the turn-on inspection of each location to provide the technical expertise to bring each location on line.

The Contractor shall furnish the necessary manpower and equipment to make the Inspection. The Engineer may designate the type of equipment required for the inspection tests.

A written record of the loop analyzer readings shall be submitted to the Bureau of Traffic Operations Electrical Engineer prior to the final inspection.

Any part or parts of the installation that are missing, broken, defective, or not functioning properly during the inspection shall be noted and shall be adjusted, repaired, or replaced as directed by the Engineer and another inspection shall be made at another date. Only upon satisfaction of all points shall the installation be acceptable.

After the subject inspections are completed the Bureau of Traffic Operations Electrical Engineer will provide the Contractor with a complete punch list of items necessary to be completed prior to final inspection and acceptance for maintenance.

The Contractor shall furnish a written guarantee for all materials, equipment and work performed under the contract for a period of not less than two (2) years from the date of final acceptance.

WATER MAIN LINE STOP

Description. This work shall consist of installing and removing a temporary line stop on the existing water main at locations shown on the contract drawings.

General. Line stops shall be placed to isolate a section of the existing water main as needed for the proposed water main removal and replacement. Line stop locations shown in the drawings are approximate and based off the minimum restrained pipe lengths shown in the DUCTILE IRON WATER MAIN special provision. Where possible, existing valves shall be utilized instead of proposed line stops.

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REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES (PROJECT SPECIFIC)

Description. This work shall consist of the removal and disposal of regulated substances according to Section 669 of the Standard Specifications as revised below.

Contract Specific Sites. The excavated soil and groundwater within the areas listed below shall be managed as either “uncontaminated soil”, hazardous waste, special waste or non-special waste. For stationing, the lateral distance is measured from centerline and the farthest distance is the offset distance or construction limit, whichever is less.

Soil Disposal Analysis. When the waste material requires sampling for landfill disposal acceptance, the Contractor shall secure a written list of the specific analytical parameters and analytical methods required by the landfill. The Contractor shall collect and analyze the required number of samples for the parameters required by the landfill using the appropriate analytical procedures. A copy of the required parameters and analytical methods (from landfill email or on landfill letterhead) shall be provided as Attachment 4A of the BDE 2733 (Regulated Substances Final Construction Report). The price shall include all sampling materials and effort necessary for collection and management of the samples, including transportation of samples from the job site to the laboratory. The Contractor shall be responsible for determining the specific disposal facilities to be utilized; and collect and analyze any samples required for disposal facility acceptance using a NELAP certified analytical laboratory registered with the State of Illinois.

Site 3752B-2 ROW (3752B-1, 3752B-8, 3752B-133, 3752B-172, and 3752C-2), IL 53 from Lake Cook Road to Algonquin Road, Long Grove, Palatine, Arlington Heights, Rolling Meadows, Schaumburg, Cook County.

- Station 1116+50 to Station 1124+15 (CL IL 53), 0 to 125 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1127+00 to Station 1130+25 (CL IL 53), 0 to 240 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1130+25 to Station 1136+00 (CL IL 53), 0 to 230 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Lead and Manganese.
- Station 1136+00 to Station 1139+15 (CL IL 53), 0 to 130 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameters: Lead and Manganese.
- Station 139+15 to Station 1142+10 (CL IL 53), 0 to 130 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminant of concern sampling parameter: Benzo(a)pyrene.
- Station 1142+10 to Station 1144+80 (CL IL 53), 0 to 125 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameters: Lead and Manganese.
- Station 1144+80 to Station 1147+55 (CL IL 53), 0 to 160 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameter: Manganese.

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- Station 1147+55 to Station 1153+45 (CL IL 53), 0 to 160 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameters: Arsenic and Manganese.
- Station 1153+45 to Station 1156+50 (CL IL 53), 0 to 135 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Benzo(a)pyrene, Arsenic, Manganese, Thallium.
- Station 1156+50 to Station 1159+50 (CL IL 53), 0 to 135 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1159+50 to Station 1162+50 (CL IL 53), 0 to 140 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminant of concern sampling parameters: Lead, Manganese, and Thallium.
- Station 1162+50 to Station 1165+50 (CL IL 53), 0 to 150 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron, Lead, and Manganese.
- Station 1165+50 to Station 1168+50 (CL IL 53), 0 to 160 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminant of concern sampling parameters: Arsenic, Lead, and Manganese.
- Station 1168+50 to Station 1171+80 (CL IL 53), 0 to 160 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameter: Manganese.
- Station 1171+80 to Station 1185+00 (CL IL 53), 0 to 160 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameters: Lead and Manganese.
- Station 1385+50 to Station 1410+40 (CL IL 53), 0 to 280 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameters: Arsenic, Lead, and Manganese.
- Station 1410+40 to Station 1412+50 (CL IL 53), 0 to 315 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminant of concern sampling parameters: Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Iron, Lead, and Manganese.
- Station 1412+50 to Station 1414+70 (CL IL 53), 0 to 200 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron, Lead, and Manganese.
- Station 1414+70 to Station 1416+15 (CL IL 53), 0 to 140 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron, Lead, Manganese, and Nickel.
- Station 1416+15 to Station 1419+30 (CL IL 53), 0 to 180 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Manganese and Thallium.

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- Station 1419+30 to Station 1421+60 (CL IL 53), 0 to 170 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminant of concern sampling parameters: Arsenic and Manganese.
- Station 1421+60 to Station 1426+30 (CL IL 53), 0 to 180 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameters: Lead and Manganese.
- Station 1426+30 to Station 1428+70 (CL IL 53), 0 to 180 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminant of concern sampling parameters: Benzo(a)pyrene and Manganese.
- Station 1428+70 to Station 1431+10 (CL IL 53), 0 to 190 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1431+10 to Station 1433+60 (CL IL 53), 0 to 200 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminant of concern sampling parameter: Naphthalene.

At the ROW property, Naphthalene were detected at concentrations exceeding the TACO Tier 1 soil remediation objectives for the Construction Worker exposure route in soil boring ROW-69, from the sample interval 0 to 6 feet deep, as noted in the Final Preliminary Site Investigation Report for this project, submitted February 14, 2025 by Weston Solutions, Inc. Procedures shall be implemented to protect site workers and observers from hazards encountered during construction activities in locations containing contaminated materials, pursuant to Article 669 of the Standard Specifications for Road and Bridge Construction manual.

- Station 1433+60 to Station 1441+70 (CL IL 53), 0 to 200 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameters: Arsenic, Lead, and Manganese.
- Station 1441+70 to Station 1444+50 (CL IL 53), 0 to 85 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Arsenic, Manganese, and Thallium.
- Station 1444+50 to Station 1447+50 (CL IL 53), 0 to 85 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminant of concern sampling parameters: Manganese, and Thallium.
- Station 1447+50 to Station 1450+50 (CL IL 53), 0 to 85 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1450+50 to Station 1453+40 (CL IL 53), 0 to 85 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron and Manganese.
- Station 1453+40 to Station 1457+50 (CL IL 53), 0 to 85 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.

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- Station 1457+50 to Station 1517+00 (CL IL 53), 0 to 125 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminant of concern sampling parameters: VOCs, SVOCs, and Metals.
- Station 1116+50 to Station 1119+35 (CL IL 53), 0 to 130 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Benzo(a)pyrene, Iron, and Manganese.
- Station 1119+35 to Station 1121+85 (CL IL 53), 0 to 130 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminant of concern sampling parameters: Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, and Lead.
- Station 1121+85 to Station 1124+55 (CL IL 53), 0 to 130 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1124+55 to Station 1130+25 (CL IL 53), 0 to 250 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron, Lead, and Manganese.
- Station 1130+25 to Station 1136+00 (CL IL 53), 0 to 240 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameters: Arsenic, Lead, and Manganese.
- Station 1136+00 to Station 1139+15 (CL IL 53), 0 to 130 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron and Manganese.
- Station 1139+15 to Station 1142+00 (CL IL 53), 0 to 125 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1142+00 to Station 1147+55 (CL IL 53), 0 to 130 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron, Lead, Manganese, Thallium.
- Station 1147+55 to Station 1150+55 (CL IL 53), 0 to 160 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminant of concern sampling parameters: Arsenic and Manganese.
- Station 1150+55 to Station 1153+60 (CL IL 53), 0 to 150 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron, Lead, and Manganese.
- Station 1153+60 to Station 1159+50 (CL IL 53), 0 to 145 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameters: Arsenic and Manganese.

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- Station 1159+50 to Station 1162+50 (CL IL 53), 0 to 135 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Manganese.
- Station 1162+50 to Station 1165+50 (CL IL 53), 0 to 130 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1165+50 to Station 1185+00 (CL IL 53), 0 to 120 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Arsenic, Manganese, Thallium.
- Station 1382+00 to Station 1385+55 (CL IL 53), 0 to 95 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminant of concern sampling parameters: Arsenic and Manganese.
- Station 1385+55 to Station 1388+50 (CL IL 53), 0 to 95 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameters: Lead and Manganese.
- Station 1388+50 to Station 1391+50 (CL IL 53), 0 to 95 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameter: Manganese.
- Station 1391+50 to Station 1397+45 (CL IL 53), 0 to 90 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1397+45 to Station 1400+50 (CL IL 53), 0 to 100 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameter: Manganese.
- Station 1400+50 to Station 1409+00 (CL IL 53), 0 to 300 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1409+00 to Station 1410+85 (CL IL 53), 0 to 110 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1410+85 to Station 1412+80 (CL IL 53), 0 to 110 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron, Lead, and Manganese.
- Station 1412+80 to Station 1413+40 (CL IL 53), 0 to 130 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron, Lead, and Manganese.
- Station 1413+40 to Station 1418+50 (CL IL 53), 0 to 130 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1418+50 to Station 1424+50 (CL IL 53), 0 to 140 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Lead, Manganese, and Thallium.

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- Station 1424+50 to Station 1427+50 (CL IL 53), 0 to 150 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminant of concern sampling parameters: Benzo(a)pyrene and Manganese.
- Station 1427+50 to Station 1436+60 (CL IL 53), 0 to 200 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameters: Lead and Manganese.
- Station 1436+60 to Station 1439+30 (CL IL 53), 0 to 90 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminant of concern sampling parameters: Arsenic, Lead, Manganese, and Thallium.
- Station 1439+30 to Station 1444+50 (CL IL 53), 0 to 90 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameters: Arsenic and Manganese.
- Station 1444+50 to Station 1447+60 (CL IL 53), 0 to 85 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameter: Manganese.
- Station 1447+60 to Station 1450+50 (CL IL 53), 0 to 85 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminant of concern sampling parameters: Benzo(a)pyrene and Manganese.
- Station 1450+50 to Station 1453+55 (CL IL 53), 0 to 85 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1453+55 to Station 1457+50 (CL IL 53), 0 to 85 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminant of concern sampling parameters: Manganese and Thallium.
- Station 1457+50 to Station 1517+00 (CL IL 53), 0 to 125 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminant of concern sampling parameters: VOCs, SVOCs, and Metals.
- Station 1000+50 to Station 1004+80 (CL IL 12), 0 to 100 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron, Lead, and Manganese.
- Station 1004+80 to Station 1008+10 (CL IL 12), 0 to 100 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1007+50 to Station 1008+10 (CL IL 12), 0 to 60 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron, Lead, Manganese, and Nickel.
- Station 1008+10 to Station 1009+50 (CL IL 12), 0 to 100 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron, Lead, and Manganese.

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- Station 1009+50 to Station 1011+65 (CL IL 12), 0 to 100 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron, Lead, and Manganese.
- Station 1011+65 to Station 1012+95 (CL IL 12), 0 to 150 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminant of concern sampling parameters: Iron, Lead, and Manganese.
- Station 1012+95 to Station 1015+65 (CL IL 12), 0 to 150 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(3). Contaminant of concern sampling parameters: Benzo(a)pyrene and Manganese.
- Station 1012+95 to Station 1015+65 (CL IL 12), 140 to 285 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(2). Contaminant of concern sampling parameter: Manganese.
- Station 1+00 to Station 10+00 (CL Ramp B), 0 to 40 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminant of concern sampling parameters: VOCs, SVOCs, and Metals.

Engineered Barrier. An engineered barrier shall be installed in storm sewer, trenches to limit the exposure and control the migration of contamination from the contaminated soil that remains within the trench excavation. It shall be placed beneath the trench backfill material at the following location:

- Station 1432+20 (CL IL 53), 0 to 200 feet LT – non-special waste. Contaminants of concern sampling parameter: Naphthalene.

The engineered barrier shall consist of a geosynthetic clay liner system, geomembrane liner, or equivalent material as approved by the Engineer. A geosynthetic clay liner shall be composed of a bentonite clay liner approximately 0.25 inches thick. The engineered barrier shall have a permeability of less than 10^{-7} cm/sec. Installation of the geosynthetic clay liner system shall be in accordance with the manufacturer's recommendations except that all laps shall face down-slope.

The geomembrane liner shall have a minimum thickness of 30 mils. The geomembrane liner shall line the entire trench and installed in accordance with the manufacturer's recommendations.

No equipment will be allowed on the engineered barrier until it is covered by a minimum of 1 foot of backfill. Any damage to the engineered barrier caused by the Contractor shall be repaired at no additional expense to the Department in accordance with the manufacturer's recommendations and as directed by the Engineer.

Method of Measurement: The engineered barrier will be measured for payment in place and the area computed in square yards.

Basis of Payment: The engineered barrier will be paid for at the contract unit price per square yard for ENGINEERED BARRIER.

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Work Zones

Three distinct OSHA HAZWOPER work zones (exclusion, decontamination, and support) shall apply to projects adjacent to or within sites with documented leaking underground storage tank (LUST) incidents, or sites under management in accordance with the requirements of the Site Remediation Program (SRP), Resource Conservation and Recovery Act (RCRA), or Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), or as deemed necessary. For this project, the work zones apply for the following ISGS PESA Sites:
None

ILLINOIS DEPARTMENT OF TRANSPORTATION COMMUNICATIONS NODE

Description

This work shall consist of furnishing, installing, and testing a Communications Node site per the Plans. The Communications Node site shall consist of a concrete foundation and two Model 334 cabinets. One cabinet shall house only fiber optic termination equipment (Fiber Cabinet) and one cabinet shall house communications equipment, an environmentally hardened Ethernet switch, power supplies, and a UPS with batteries (Network Cabinet).

Materials

Concrete Foundation

The concrete foundation for the Communications Node shall be per the materials requirements section of "*Concrete Foundation, Surveillance Cabinet Model 334*" Specification.

Model 334 Cabinets

The Model 334 cabinets shall be constructed per the materials requirements section of "*Cabinet, Model 334*" specification.

The two Model 334 cabinets shall be installed on a cabinet riser, as shown in the Plans and shall be made of the same materials as the cabinet.

UPS

The UPS shall be internal to the Model 334 cabinet and shall be specified herein. UPS shall have the capacity to operate the Ethernet switches for 8 hours. The UPS shall have a network interface module for communicating UPS status to the Ethernet switch described below. The UPS shall meet the following minimum specifications:

1. Safety Compliance: UL listed to UL1778
2. Efficiency: >95% on line
3. Voltage Nominal: 120 VAC
4. Voltage Range: 100-142 VAC
5. Typical Run Time (minutes): Full load: 8 hours
6. Transfer Time: 4 ms, typical
7. Battery: Sealed, maintenance-free, valve-regulated.
8. Battery Recharge Time (to 95% of capacity): 8 hours with output fully loaded
9. Over-Current Protection (Online): circuit breaker

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10. Operating Temperature Range: -10°F to +140°F

11. Humidity: 5% to 95% RH (non-condensing) The UPS and its batteries shall be rack-mountable..

The Contractor shall submit calculation sheets, accompanied by manufacturer's data sheet listing the power requirements of critical components, as support materials for justifying the UPS sizing choices. The Contractor shall use worst-case power-load data for the calculation.

Layer III (Node) Switch

The Contractor shall provide two (2) Layer III Ethernet switches with all necessary hardware and software to make the switch operational and be compatible with IDOT's existing network. The switch shall be a Cisco IE5000 or approved equivalent. The switches shall be joined via a stacking cable so as operate as a single unit. The Contractor shall be responsible for programming and integrating the new switch into the existing network.

(A) Management Capabilities

- (1) Switches shall support full-duplex Ethernet
- (2) Switches shall be capable Layer 2 LAN Base services
- (3) Switches shall have American Standard Code for Information Interchange (ASCII) based configuration files for offline editing and bulk configuration
- (4) Switches shall be managed using Simple Network Management Protocol (SNMP) Version 3.
- (5) Switches must be able to use Secure File Transfer Protocol (SFTP) to transfer configuration file to and from a central server.
- (6) Switches shall be compliant with IEEE 802.1 and 802.3. Specifically, the switch must comply with the following IEEE 802.1 standards:
 - (a) IEEE 802.1D - Media Access Control (MAC) Bridges, including Rapid Spanning Tree Protocol (RSTP).
 - (b) IEEE 802.1Q - Virtual Local Area Network (VLAN) tagging and Multiple Spanning Tree Protocol (MSTP).
 - (c) IEEE 802.1X (Port Based Network Access Protocol).
- (7) Switches shall perform multicast filtering using Internet Group Management Protocol (IGMP) snooping.
- (8) Switches shall support Address Resolution Protocol (ARP)
- (9) Switches shall support the following Layer 3 capabilities:
 - (a) Internet Protocol Version 4 (IPv4);
 - (b) Internet Protocol Version 6 (IPv6);
 - (c) Open Shortest Path First (OSPF);

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- (d) Generic Routing Encapsulation (GRE);
- (e) Inter-VLAN Internet Protocol (IP) routing for full Layer 3 routing between two or more VLANs;
- (f) Virtual Router Redundancy Protocol (VRRP);
- (g) IP multicast routing utilizing Protocol Independent Multicast (PIM) and Internet Group Management Protocol, Version 2 (IGMPv2). Support for PIM sparse mode (PIM-SM) and PIM dense mode (PIM-DM);
 - (h) Quality of Service (QoS);
 - (i) Security utilizing Access Control Lists (ACLs).
- (B) Power Requirements
 - (1) Input Voltage to Power Supply Modules: 100 to 240 VAC
 - (2) Redundant Power Supplies
- (C) Environmental Requirements
 - (1) Operating Temperature: -40°to +75°C
 - (2) Humidity: 0 to 95% (non-condensing)
 - (3) Resistant to electromagnetic interference (EMI)
- (D) Network Port Requirements
 - (1) Switches shall have the following minimum port configurations:
 - (a) (12) 10/100/1000 Mbps copper Ethernet ports, RJ-45 connector
 - (b) (12) FE/GE SFP ports
 - (c) (4) 10G SFP ports with SM transceivers, LC connector
 - (2) Contractor shall ensure the launch power of the optical ports is great enough such that when coupled with the receiver sensitivity of the connecting device, the optical budget of the link is not exceeded. The Contractor shall furnish GE transceivers and 10G transceivers to accommodate the number of links shown in the Plans. At a minimum, the Contractor shall provide the following transceivers or approved equivalent.
 - (a) (12) GLC-LX-SM-RGD [1 Gbps single mode duplex transceivers]
 - (b) (2) SFP-10G-BX40U-I [10 Gbps single mode simplex transceivers]
 - (3) All ports shall have Diagnostic light-emitting diodes (LED). These indicators shall include link, activity, and power LEDs.

Fiber Optic Splice Enclosure

The Contractor shall provide four (4) rack mountable fiber optic splice enclosures capable of terminating a 144 strand fiber optic cable. The fiber optic splice enclosure shall:

- (a) Have the capacity to accommodate all fibers from the entering fiber optic cables.
- (b) be capable of being installed in TIA standard 19" racks.
- (c) be aluminum material per ATSM B209, powder coated, and modular design.

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- (d) be supplied with optical splice trays and organizer holders. Trays shall be aluminum with clear plastic covers, designed for outdoor use, and accommodate 24 fusion splices. The trays shall have perforations for cable ties and buffer tube strain relief features. Individual trays shall be removable from the enclosure without disturbing the other trays or removing the enclosure itself from the cabinet.
 - (e) have the tray capacity to accommodate immediate fusion splices and future splices of the entering fiber optic cables.
 - (f) have provisions for cable strain-relief
 - (g) have pull out labels for administrative documentation

Construction Requirements

Concrete Foundation

The concrete foundation for the Communications Node shall be built per the construction requirements section of the “*Concrete Foundation, Surveillance Cabinet Model 334*” specification. The dimensions of the foundation shall be per the node cabinet details shown in the Plans.

Model 334 Cabinets

The Model 334 cabinets shall be built per the construction requirements section of the “*Cabinet, Model 334*” specification. The cabinets shall be installed on a cabinet riser as shown in the Plans. The two cabinets shall be connected by two (2) 4-inch galvanized steel conduits that will allow fiber jumpers to pass between cabinet. The conduit entries shall be sealed against water and animal entry. The Contractor shall submit shop drawings of the proposed cabinet, cabinet riser, and foundation attachment details to the Engineer for approval prior to installation.

Layer III (Node) Switch

Installation. The Contractor shall install the Ethernet switches and power supplies in the Network Cabinet as shown in the Plans or as approved by the Engineer. The Contractor shall create a backplane connection using a manufactured recommend stacking cable to ensure the switches operate as a single unit.

The Contractor shall install all necessary patch cords, optical transceivers, connectors, power supplies, communication transformers, or auxiliary equipment necessary to complete the communication circuits. The Contractor shall connect the switch to the field devices as indicated in the Plans.

Configuration. When requested by the Contractor, the Engineer will provide the necessary IP address assignments and port assignments, including the necessary port provisioning. The Contractor shall be responsible for all network programming of the switches and communicating elements within the building or cabinet.

The Contractor shall configure gateway IP addresses for all subnets that connect to the switch. OSPF routing shall be configured and the routes to those subnets being advertised to adjacent switches confirmed. The Contractor shall configure ACLs and work with the Department to determine IP Ranges, ports, and other settings to be used in configuring the ACLs.

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The Department may elect to have its Network Administrator configure the node switches. In the event that the Department makes this election, the Contractor shall deliver all switches to the Department for configuration prior to installation. The Contractor shall request a meeting with the Departments Network Administrator within 2 weeks from Notice to Proceed to determine the Department's preferred approach to switch configuration.

UPS

The Contractor shall install the UPS module as shown in the Plans or as approved by the Engineer. UPS shall be connected inline between the Ethernet switch and cabinet power supply in order to provide clean power that is backed up by a battery system.

Fiber Optic Splice Enclosure

The Contractor shall install the rack mountable fiber optic splice enclosures in the Fiber Cabinet per the Plans or as directed by the Engineer. All fiber optic cable strands entering the cabinet shall be terminated on patch panels per the construction section of the "*Fiber Optic Cable, Single Mode*" specification. Strands shown to be connected to the Ethernet switch per the Plans shall be joined using factory pre-terminated jumpers that pass through the conduit connections between cabinets.

Basis of Payment

This work will be paid for at the contract lump sum price for ILLINOIS DEPARTMENT OF TRANSPORTATION COMMUNICATIONS NODE.

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