



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

June 2, 2026

SUBJECT FAI Route 290A (I-290)
Project NHPP-DCHU(802)
Section FAI 290 22 Structure 1
Cook County
Contract No. 62R61
Item No. 3, June 12, 2026, Letting
Addendum B

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 the Table of Contents to the Special Provisions
3. Revise pages 2, 77, 200, 201, 232, 233, 239-241, 258-260, 264, & 267-276 of the Special Provisions
4. Added pages 723-763 to the Special Provisions
5. Revised sheets 1, 2, 5-8, 10-15, 17, 19-21, 23-25, 29, 31, 35, 36, 55, 58-62, 64, 65, 90-95, 98, 102, 103A, 106-108, 114-116, 118-120, 148, 150, 299, 306, 307, 310-316, & 323-325 of the Plans
6. Added sheets 97A, 97B, 299A, & 306A

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

Very truly yours,

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

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

MTS

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COMPLETION DATE PLUS WORKING DAYS (D1)

Effective: September 30, 1985

Revised: January 1, 2007

Revise Article 108.05 (b) of the Standard Specifications as follows:

"When a completion date plus working days is specified, the Contractor shall complete all contract items and safely open all roadways to traffic by 11:59 PM on **October 31, 2028** except as specified herein.

The Contractor will be allowed to complete all clean-up work and punch list items within **10** working days after the completion date for opening the roadway to traffic. Under extenuating circumstances the Engineer may direct that certain items of work, not affecting the safe opening of the roadway to traffic, may be completed within the working days allowed for clean up work and punch list items. Temporary lane closures for this work may be allowed at the discretion of the Engineer.

Article 108.09 or the Special Provision for "Failure to Complete the Work on Time", if included in this contract, shall apply to both the completion date and the number of working days.

CTA STATUS OF UTILITIES

Effective: June 1, 2016

The table below contains a description of specific conflicts to be resolved and/or facilities which will require some action on the part of the Department's contractor in cooperation with the CTA to proceed with work.

UTILITIES TO BE ADJUSTED

Conflicts noted below have been identified. The CTA has been notified of all conflicts and will be required to perform actions noted below.

Revised 6/2/2026

The Contractor shall complete a post-construction track survey and inspection after completion of the operation. The post-construction track survey shall consist of the Contractor surveying the same points taken during the pre-construction track survey, according to Section 10 of the CTA Adjacent Construction Manual based off the operation that is completed last and with the furthest construction limit.

All pre-construction and post-construction track survey work shall be incidental and included in the cost of the daily track monitoring.

Forms shall be per Appendix E of the CTA Adjacent Construction Manual or as directed by the Engineer.

Basis of Payment. This work will be paid for at the contract unit price per LUMP SUM for TRACK MONITORING.

VALVE VAULTS (BASIN) TO BE ABANDONED

Description. This work shall consist of removing the frame and lid, removing the valve, plugging or capping the watermain and filling existing valve basins at the locations indicated in the plans or as directed by the Engineer. In addition to this special provision, this work shall be completed in accordance with applicable portions of Sections 593 and 605 of the Standard Specifications and Section 33 12 20 (3.5) Dept. of Water Management Special Provisions for Water and Sewer Main Construction.

The material used to fill the valve basins shall be aggregate or Controlled Low Strength Material (CLSM) meeting the requirements of Section 1019 of the Standard Specifications and Section 33 12 20 (3.5) Dept. of Water Management Special Provisions for Water and Sewer Main Construction.

Revised 6-2-2026

All excavation and restoration of parkway shall be considered as part of this item. If the foundation is in sidewalk, an expansion joint shall be required between the sidewalk and the foundation.

Basis of Payment. This work will be paid for at the contract unit price per each for CONCRETE FOUNDATION FOR TYPE SUPER "P" BASEMOUNTED TRAFFIC SIGNAL CONTROLLER CABINET.

HANDHOLE, ELECTRIC, WITH FRAME AND COVER (CDOT)
HANDHOLE, ELECTRIC, WITH FRAME AND COVER (CDOT)
Effective: March 16, 2024
Revised: June 1, 2026 (Basis of Payment)
CDOT SP 814-1

Description. The following CDOT Division of Electrical Operations (DEO) material specifications and standard drawings are applicable to this work.

Material Specifications: 1458, 1528
Standard Drawings: 866, 867, 871, 872, 874, 10927

This item shall consist of furnishing and installing or constructing an electrical handhole with frame and cover in pavement, parkway, driveway, or sidewalk.

Materials. Frames and covers shall meet the requirements of Material Specification 1458. Handholes shall meet the requirements of Material Specification 1528. 24" frames and covers shall meet the requirements of Standard Drawing 872. 30" frames and covers shall meet the requirements of Standard Drawing 874 and 10927. Bricks shall meet the requirements of Section 1041 of the IDOT Standard Specifications for Road and Bridge Construction (SSRBC). All other materials used shall meet the appropriate material requirements of the Standard Specifications.

General Requirements. The handhole shall be a precast concrete structure, or, if conditions merit, a cast in place concrete structure, complete with cast iron frame and cover, and conforming in detail with Standard Drawing 867 for 30" handholes, Standard Drawings 866 or 871 for heavy-duty handholes, except that the number of conduit openings shall be as shown on the construction plans.

Each handhole shall be installed at the location specified on the plans or at the location identified by the Resident Engineer.

Revised 6/2/2026

Construction Requirements. The area where the handhole is to be placed shall be properly excavated. All disposable material shall be properly disposed of per Article 202.03 of the SSRBC. Each handhole shall be set or constructed on a foundation of loose stone not less than eight inches (8") deep. The 36" handhole for pavement installation shall have a floor as shown in Drawing Number 871. The frame casting shall be accurately set on a full bed of mortar to the finished elevation so that no subsequent adjustment shall be necessary. It is desirable not to use a neck for the frame. However, if approved by the Resident Engineer, mortar and brick, or mortar and concrete rings, may be used to adjust to the proper grade. Adjustment rings, bricks, and frames shall be set in a full mortar bed. Use of partial bricks will not be allowed. Bricks shall be laid in full header courses only. Mortar shall be mixed in a proportion of one (1) part of cement to three (3) parts sand by volume of dry materials. After entering ducts have been installed in place in the handhole, the openings in the wall shall be plugged in an approved manner flush with the inner surface. If backfill is required, screenings shall be used and properly compacted. Parkway shall be restored to the proper grade. Pavement shall be properly restored to finished grade. Patching of the pavement shall be done with high early strength concrete meeting the requirements of Articles 1001 and 1020 of the Standard Specifications. Sidewalks shall be restored to the proper grade using a 5-inch thickness of concrete. The inside of the handhole shall be clean of all debris.

Basis of Payment. This work will be paid for at the contract unit price per EACH for HANDHOLE (SPECIAL) or HEAVY DUTY HANDHOLE (SPECIAL).

HYDRANT INSTALLATION (CDOT)

Effective: January 1, 2023

Revised: October 31, 2026 (Basis of Payment)

SP 564-1

Description. Work under this item shall be performed according to the City of Chicago Department of Water Management (DWM) Standard Specifications and include, but is not limited to, all labor, equipment, and material required to complete excavation, bedding, backfilling, removal of spoil, sheeting and bracing, and removal of ground water in the prices bid for this Item providing and installing fire hydrants, as detailed in the plans, standard drawings, work order and/or as directed by the Commissioner.

Revised 6/2/2026

REPLACE FRAME, LID AND MANHOLE ROOF WITH 30" FRAME, LID AND MANHOLE ROOF (CDOT)

Effective: January 1, 2023
Revised: June 1, 2026 (Basis of Payment)
CDOT SP 604-7

Description. Work under this item shall consist of replacing an existing manhole/ handhole frame, lid and manhole roof with new 30-inch frame, lid, and manhole roof as detailed in the plans, standard drawings, work order and/or as directed by the Commissioner. The existing manhole/handhole may be located in the street, in the sidewalk, or in the parkway.

Materials. The 30-inch frame and lid shall be as shown in Standard Drawings 874 and 10927. The new manhole frame shall be as shown on Standard Drawing 729. All frames and lids shall conform to Material Specification 1458. Bricks shall meet the requirements of Section 1041 of the IDOT Standard Specifications for Road and Bridge Construction (SSRBC). Concrete must meet the requirements for Portland cement concrete, SI Class, in Section 1020 of the SSRBC. Dowel rods must meet the requirements of Article 1006.11 of the SSRBC. Reinforcement bars must meet the requirements of Article 1006.10 of the SSRBC.

MATERIAL SPECIFICATIONS	STANDARD DRAWING
1458	729, 872, 874, 10927

Construction Requirements. Pavement, sidewalk, and dirt shall be removed to the extent necessary to remove the frame/lid and manhole roof. Existing manhole roof shall be broken down and removed. All removed material shall be disposed of according to the requirements of Article 202.03 of the SSRBC. The existing manhole walls shall be keyed to provide a bond with the new concrete roof. Reinforcement bars of sufficient size shall be doweled into the existing manhole walls. Holes drilled for dowel bars shall have the area around reinforcement bars filled with grout. Wooden forms shall be used to form the new concrete roof. The new roof shall be poured in place and shall be reinforced in accordance with Standard Drawing 729. The roof for parkway or sidewalk areas must accommodate a 24" frame and lid. The roof for a roadway must accommodate a 30" frame and lid.

Mortar and brick, or mortar and concrete rings, shall be used to adjust to the frame and lid to the proper grade. With the approval of the Resident Engineer, the Contractor may use precast adjusting rings. Adjustment rings, bricks, and frames shall be set in a full mortar bed. Mortar shall be mixed in a proportion of one (1) part cement to three (3) parts sand by volume of dry mix. The interior of the adjustment shall be smooth. Use of partial bricks shall not be allowed. Bricks shall be laid in full -header courses only. In no instance shall the neck of the manhole or handhole exceed two (2) feet in depth.

Revised 6/2/2026

The pavement, sidewalk, or parkway shall be restored to the proper grade after adjustment. Patching of pavement around a structure shall be with high early strength concrete meeting the requirements of Sections 1001 and 1020 of the SSRBC. The bituminous concrete layer shall be properly restored. Sidewalk shall be replaced to the nearest full slab, or expansion joint, and shall be a minimum of 5 inches in thickness. Parkways shall be properly backfilled and topped with appropriate soil material.

Method of Measurement. This work will be measured for payment per each unit replaced.

Basis of Payment. This work will be paid for at the contract unit price per EACH for MANHOLES TO BE ADJUSTED WITH NEW FRAME, CLOSED LID, BOLTED. All excavation and restoration, as well as bricks, concrete, mortar, backfill, soil, disposal of surplus excavated material, reinforcement bars, frames and lids, etcetera will be included in the unit price.

ROD AND CLEAN EXISTING CONDUIT (CDOT)

Effective: April 9, 2025

CDOT SP 895-17

Description. The following CDOT Division of Electrical Operations (DEO) material specifications and standard drawings are applicable to this work.

Material Specifications: None Applicable

Standard Drawings: None Applicable

This work shall consist of inserting a duct rod or electrical fish rod or tape of sufficient length and rigidity into an electrical conduit opening in one electrical manhole or handhole and pushing the said rod through the conduit to emerge at the next or subsequent manhole in the conduit system at the location shown on the plans. The duct rod may be inserted and removed by any standard construction method which causes no damage to the conduit system. The size of the conduit may vary, but there shall be no differentiation in cost for the size of the conduit.

The conduit system which is to be rodded and cleaned may exist with various amounts of standing water in the manholes or handholes. The contractor shall pump the water or sufficient water from the manholes or handholes to drain the conduit and to afford compatible working conditions for the installation of the duct rods and/or cables. The pumping of the manholes and handholes shall be included in the cost of rodding and cleaning of the conduit.

Any manhole or handhole which, in the opinion of the Resident Engineer contains excessive debris, dirt or other materials to the extent that conduit rodding and cleaning is not feasible, shall be cleaned at the Commissioner's direction and payment approved as a separate pay item, and not a part of this specification.

Revised 6/2/2026

STEEL CASING PIPE AUGERED AND JACKED

Description. This work shall consist of furnishing and installing steel casing pipe, of the required inside diameter, at locations shown on the plans. This work shall consist of furnishing all labor, tools, equipment, and material necessary for the installation of the casing pipe complete in place by auger and jacking method, including jacking and receiving pit sizes, and temporary soil retention and support system, thrust walls, access plan; removal and disposal of excavated materials; protection, repair or replacement of utilities; dewatering, erosion and siltation control methods and devices to provide protection; supporting and installing carrier pipe within casing; filling of annular space between casing and carrier pipes; end seals; testing; and backfilling to the lines and grades as detailed in the plans. The work shall be performed according to Section 552 of the Standard Specifications, CTA Adjacent Construction Manual 2017, the City of Chicago Department of Water Management Standard Specifications included in Appendix C, as modified herein, and as shown on the plans.

Materials. Steel casing pipe shall conform to ASTM A139 Grade A with continuous field-welded butt joints in accordance with AWWA C206, and a minimum yield strength of 35,000 psi. Casings shall be capable of withstanding the railroad loadings and other loads superimposed upon them. The minimum wall thickness for steel casing pipe per CTA guidelines in Appendix D of the adjacent Construction Manual shall be 0.813 inches. All metallic casing pipes shall be designed for corrosion control and shall have an effective corrosion service life of 100-year period. Steel casing pipe and joints shall be made of metal and of leakproof construction.

<u>Nominal Diameter</u>	<u>Minimum Wall Thickness - Inches</u>
<u>Pipe Size As specified</u>	<u>Per ASTM</u>

Comply with the requirements specified below for the carrier pipe.

Casing Spacers:

1. Bands: Molded high density polyethylene, 304 stainless steel, or 14 gauge
2. (minimum) hot rolled and pickled steel.
3. Steel band coating: Minimum 10 mil of fusion bonded PVC coating.
4. Steel band liner: Minimum 0.090-inch PVC.
5. Bolts, washers, and nuts: 304 stainless steel.
6. Runners: Glass reinforced or glass filled high density reinforced plastic.
7. Casing spacer configuration: Restrained, in all directions.
8. Spacing: One spacer on each side of and a maximum of 12 inches from each joint, and a minimum of one between the joints, with additional spacers and as recommended by casing spacer manufacturer.

Casing end seals:

1. Use rubber end seals made specifically for this purpose.

Revised 6/2/2026

Casing void pressure grout:

1. Grout: Use clean dry concrete mix, composed of one part Portland cement and 10 parts of sand and gravel by volume, or other mix approved by the Engineer.
2. Low density cellular concrete grout:
 - a. Minimum net density: 45 pcf.
 - b. Minimum compressive strength at 28 days: 160 psi. Casing corrosion

protection systems:

1. Anodes: 17-pound magnesium type.
2. Anode connections: Welded.
3. Provide copper connector cable from anode bags to casing.
4. Weld connector cable to steel casing.

Submittals. The contractor shall submit to the Engineer for approval, procedures for installation of the pipe casing and watermain, including: jacking pit size, receiving pit size, access plan, dewatering and erosion control plans, equipment and method of installation, temporary soil retention plans, temporary embankment support, methods of verifying accuracy of placement, and method of securing and welding steel pipe casing joints. No work will be allowed on this item until procedures have been approved by the Engineer. In addition, the Contractor shall provide watermain installation procedures, pipe spacer locations, and material to fill annular space

This work shall include the installation of a bracing system and/or temporary embankment support, excavation, and backfilling to the elevation of the proposed grade according to Section 502 and the following. The bracing system shall be designed and installed to prevent the movement of soil, structures, pavements and/or utilities adjacent to the excavated area. The Contractor shall submit design calculations and shop drawings prepared and sealed by an Illinois Licensed Structural Engineer for the bracing system or temporary embankment support. Shop drawings shall show all necessary details for the construction of the bracing system and temporary embankment support. The design calculations and shop drawings shall be submitted to the Engineer for review and acceptance.

Construction Requirements.

This work shall not proceed without authorization of the Engineer. However, the Contractor shall be fully responsible for the safety, stability and adequacy of the bracing system or temporary embankment support and shall be solely responsible and liable for all damages resulting from his construction operations or from failure or inadequacy of the bracing system or temporary embankment support. In the event the bracing system or temporary embankment support protecting the existing embankment fails or is otherwise inadequate, in the judgment of the Engineer, the Contractor shall, at his own expense, take all necessary steps to restore the embankments to a safe operating condition to the satisfaction of the Engineer.

Revised 6/2/2026

The jacking and receiving pit shall be sized and remain in place for the watermain thrust block and riser shaft box structure installation. The pits shall be completely removed after the excavation is backfilled and as directed by the Engineer. When work has been completed the bracing system and temporary embankment support system shall be removed and disposed of according to Section 501 of the Standard Specifications or as directed by the Engineer.

Erosion Control measures shall be in place prior to commencing storm sewer jacking operations.

The Contractor shall monitor the top of rail elevation and develop a plan per the Special Provision TRACK MONITORING, including the number and location of top of rail points that shall be surveyed. One point shall be taken directly along the centerline of the casing pipe. The readings shall be recorded and provided to the Engineer upon request. Top of rail shall be marked so the same points are surveyed. The rail should be monitored during jacking operations a minimum of 4-hour intervals or according to CTA requirements. Movements of over one quarter (1/4) inch vertically shall be immediately reported to the Engineer. The Contractor may be required to stop operations, and CTA forces may have to be called to surface the track. In addition, if visual sign of track settlement is apparent, additional readings will be required immediately, jacking operations shall be stopped, and the Engineer shall be notified. The rail shall also be monitored after jacking operations are complete.

Any excess embankment excavation removed from the jacking and receiving pits, and the pipe tunneling operations shall be disposed of according to Section 669.

The use of water under pressure jetting or puddling will not be permitted. Some boring may require water to lubricate cutter and pipe, and under such conditions, is considered dry boring.

In the event the jacking is abandoned, all voids or abandoned holes caused by boring or jacking are to be filled by pressure grouting. The grout material should be sand cement slurry with a minimum of two (2) sacks of cement per cubic yard and a minimum of water to assure satisfactory placement.

QC/QA Requirements. The contractor shall provide a manufacturer's written certification that the materials used comply with the specifications including the most recent version of DWM Standard Specifications.

Method of Measurement. This work will be measured for payment in place in feet. Non-Special Waste disposal will be measured for payment according to Article 669.15.

Basis of Payment. This work will be paid for at the contract unit price per foot for CASING PIPE, BORED AND JACKED, 54", including but not limited to the steel casing, jacking and receiving pits, bracing, excavation, grout, pipe spacers, geotechnical analysis and sampling, engineering design work, and all material, equipment, and labor to complete the work.

Rail monitoring will be paid for according to the Special Provision TRACK MONITORING.

Non-Special Waste disposal and soil testing will be paid for according to Article 669.16.

Revised 6/2/2026

ethod of Measurement. Trees, Shrubs, Grasses, Perennials, Vines, Groundcovers, Bulbs, and Annuals will be measured per each of the type and size specified. Only acceptable plants will be measured for payment.

All materials and maintenance activities required to provide and establish healthy, thriving plant material shall be considered incidental to this item.

Basis of Payment. This work will be paid for at the contract price per each for TREE PLANTING IN TREEPITS, SHRUB, GRASS, PERENNIAL, VINE, GROUNDCOVER, BULB, and ANNUAL of the type and size specified, or as shown on the plans. Payment shall include furnishing and installing the plant material of the type and size specified, and all materials, equipment, and labor necessary to complete the work.

Revised 6/2/2026

TRENCH AND BACKFILL WITH SCREENINGS (CDOT)

Effective: March 9, 2024

CDOT SP 810-3

Description. The following CDOT Division of Electrical Operations (DEO) material specifications and standard drawings are applicable to this work.

Material Specifications: Not Applicable

Standard Drawings: 579, 813

This work shall consist of excavating a trench for the installation of conduit and backfilling with limestone screenings as a portion of the total backfill of the trench, all as shown in Division of Electrical Operations Standard Drawings No. 579 and No. 813. This work shall meet all applicable requirements of Article 810.04(a) of the Standard Specifications.

Revised 6/2/2026

VALVE INSTALLATION (CDOT)

Effective: January 1, 2023

Revised: January 1, 2026 (Basis of Payment)

SP 561-10

Description. Work under this shall be performed in accordance with the Chicago Department of Water Management (DWM) Standard Specifications.

General Requirements. This work includes all labor, materials, and equipment necessary to install Chicago Standard Butterfly Valve of the specified diameter; basins, frames, lids, and all materials, supports and labor required to support any valves located in vaults as detailed in the plans, standard drawings, work order and/or as directed by the Commissioner, and includes the following:

Installation of valve basins shall meet existing elevations with adjustment allowance for adjustment or reconstruction to meet proposed elevations at the time of pavement construction by others.

The work performed on joining all pipe and fittings must be performed by a plumber, licensed in the City of Chicago. This work shall include but not be limited to the installation of the gasket, continuity wedges, and the tightening of all gland nuts and bolts.

QC/QA Requirements. The contractor shall provide a manufacturer's written certification that the materials used comply with all applicable provisions specified in the most recent version of DWM Standard Specifications.

Method of Measurement. Work under this item will be measured for payment per each Valve Basin With Butterfly Valve, of the size specified or Valve Basin with Butterfly Valve (Special), of the size specified.

Basis of Payment. This work will be paid for at the contract unit price per each for VALVE BASIN WITH BUTTERFLY VALVE, of the size specified and VALVE BASIN WITH BUTTERFLY VALVE (SPECIAL) of the size specified, and shall include all labor, equipment, and material necessary to perform the work specified above.

WATER MAIN INSTALLED IN OPEN CUT (CDOT)

Effective: January 1, 2023

Revised: January 8, 2026 (Basis of Measurement and Payment)

SP 561-2

Description. Work under this item shall be performed according to Section 561 of the IDOT Standard Specifications for Road and Bridge Construction and Chicago Department of Water Management (DWM) Standard Specifications, except as herein modified.

Revised 6/2/2026

WATER MAIN TRANSITION SLEEVE (CDOT)

Effective: January 1, 2023

Revised: January 1, 2026 (Basis of Payment)

SP 561-6

Description. Work under this item shall be performed according to Section 561 of the IDOT Standard Specifications for Road and Bridge Construction and Chicago Department of Water Management (DWM) Standard Specifications, and include, but not be limited to, furnishing all labor, tools, equipment, and material necessary for the installation of the transition sleeve and all accessories for the purpose of joining 2 pieces of pipe with similar nominal size as detailed in the plans, standard drawings, work order and/or as directed by the Commissioner.

QC/QA Requirements. The contractor shall provide a manufacturer's written certification that the materials used comply with the specifications including the most recent version of DWM Standard Specifications.

Method of Measurement. This work will not be measured separately for payment.

Basis of Payment. This work will not be measured separately for payment but shall be INCLUDED in the cost of the watermain pipe. The work shall include the sleeve of the size specified, all labor, material, and equipment required to complete the work.

WATER VALVES (CDOT)

Effective: January 1, 2023

Revised: January 1, 2026 (Basis of Payment)

SP 561-8

Description. Work under this item shall be performed in accordance with the requirements of Section 307 of the Chicago Department of Water Management Standard Specifications. This work consists of, but is not limited to, all labor, material, and equipment necessary to install City of Chicago Gate Valves as detailed in the plans, standard drawings, work order and/or as directed by the Commissioner.

General Requirements. For resilient wedge gate valves the Contractor will install two (2) 1-inch test taps as indicated on the standard details contained in the plans. The work of joining all pipe and fittings must be performed by a plumber licensed in the State of Illinois or City of Chicago. This work will include but not be limited to the installation of the gasket, continuity wedges, and the tightening of all gland nuts and bolts.

QC/QA Requirements. The Contractor must provide a manufacturer's written certification that the materials comply with these specifications.

Revised 6/2/2026

Method of Measurement. This work will be measured in place per each gate valve installed, as determined by the Commissioner. The installation of test taps in the same basin will not be measured for payment and will be included in the cost of this work. The installation of the basin, test taps, and other work required will not be measured for payment and included in the cost of this work.

Basis of Payment. This work will be paid at the contract unit price per each for VALVE BASIN WITH GATE VALVE of the size and type specified or VALVE BASIN (SPECIAL) WITH GATE VALVE of the size specified. The contract unit price will include test taps for valves, basin with frame and lid, fittings, gaskets, continuity wedges, and the provision and proper installation of all gland nuts and bolts and all other work required to complete the valve installation. Test taps for valves and valve basins with frame and lids will not be paid for separately and shall be included in the cost of this item.

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WORK RESTRICTIONS

Trees three inches or greater in diameter at breast height shall not be cleared from April 1st through September 30th of any given year.

The Contractor shall not implement the full closure of Laramie Avenue (including implementing the detour route) prior to completion of water main work sequence (i) as shown on Drawing 90, which includes the relocation of the 36" diameter water main crossing I-290 and associated work.

Operational restrictions shall be observed during the construction sequencing of the proposed 36-inch feeder main (water mains 16-inches and larger) replacement and abandonment work. These restrictions are required to maintain system reliability and adequate water supply to the surrounding service area throughout the duration of construction and are as follows:

1. The proposed 36-inch feeder main replacement in S Laramie Avenue may be constructed prior to the start of bridge work and prior to the completion of the 36-inch feeder main abandonment, provided all other operational restrictions outlined below are satisfied.
2. The existing 36-inch feeder main in S Cicero Avenue at I-290 and the existing 36-inch feeder main in S Central Avenue at I-290 shall not be taken out of service simultaneously with the proposed 36-inch feeder main replacement in S Laramie Avenue. At no time during construction shall more than one of these three feeder mains be out of service concurrently.
3. The proposed 36-inch feeder main replacement in S Laramie Avenue shall not be under construction simultaneously with the proposed feeder main replacements in W Lexington Street and W Flourney Street. Construction of either the S Laramie Avenue feeder main replacement or the W Lexington Street and W Flourney Street feeder main replacements may proceed, but not both concurrently. The construction sequencing plan shall clearly delineate these phases to ensure compliance with this restriction.
4. The proposed feeder main replacements in W Lexington Street and W Flourney Street shall not be taken out of service during the peak demand season, defined as May 15 through September 15. All construction activities requiring the feeder mains in W Lexington Street and W Flourney Street to be out of service shall be scheduled outside of this period.

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).

SHREDDED HARDWOOD BARK MULCH

Effective: June 1, 2012
Revised: March 21, 2022
CDOT SP 251-1

Description. The work under this item shall consist of furnishing, transporting, and placing shredded hardwood mulch into planting beds or around trees as described herein.

Materials. Hardwood bark mulch shall be clean, finely shredded mixed hardwood bark, not to exceed two (2) inches in its largest dimension, free of foreign matter, sticks, stones, and clods. All hardwood bark mulch shall be processed through a hammermill.

General Requirements. The Contractor shall supply and install shredded hardwood bark mulch to mulch around trees, shrubs and herbaceous plants in landscaped planting beds. Existing trees require a four (4) foot minimum diameter ring around the base of the tree. Annual areas shall be mulched with pine bark fines.

The Contractor shall remove all litter and plant debris, repair grade by raking and adding planter soil mix or pulverized topsoil as needed prior to mulching. Care shall be taken not to bury leaves, stems, or vines under mulch material.

All finished mulch areas shall be left smooth and level to maintain a uniform surface and appearance. All work areas shall be clean of debris and mulch prior to leaving the site.

Added 6/2/2026

Submittals. A sample shall be provided prior to performing the work.

Construction Requirements. Place mulch manually around plants as follows:

Annuals: Spread one (1) inch of mulch lightly through annual plantings.

Perennials, bulbs, groundcovers, vines, grasses: Spread two (2) inches of mulch around plants. Ensure mulch is away from crowns of plants.

Shrubs, including roses: Spread three (3) inches of mulch around shrub. Ensure mulch is away from stems and crown of shrub.

Trees, shade and ornamental: Spread three (3) inches of mulch around trees. Do not pile mulch around trunk; ensure root flare is visible.

Mechanical or power mulch systems are not acceptable methods of placing shredded hardwood mulch.

Method of Measurement. SHREDDED HARDWOOD BARK MULCH will be measured for payment in place and the area computed in square yards.

Basis of Payment. This work will be paid for at the contract unit price per square yard for SHREDDED HARDWOOD BARK MULCH, which price shall be payment for completing the work as specified.

WATER MAIN TEST TAP

Effective: January 1, 2023

Revised: June 1, 2026

CDOT SP 561-5

Description. Work under this item shall be performed in accordance with Section 561 of the IDOT Standard Specifications for Road and Bridge Construction, and Chicago Department of Water Management (DWM) Standard Specifications, and include, but not be limited to, precast basin, frame and grate, bedding aggregate material, and furnishing all labor, tools, equipment, and material necessary for the installation of the test tap and all accessories for monitoring pressure as detailed in the plans, standard drawings, work order and/or as directed by the Commissioner.

QC/QA Requirements. The contractor shall provide a manufacturer's written certification that the materials used comply with the specifications including the most recent version of DWM Standard Specifications.

Method of Measurement. This work will be measured for payment per each installed.

Basis of Payment. This work will be paid for at the contract unit price per each for WATER MAIN TEST TAP, of the size specified, which price shall include all labor, material, and equipment required to complete the work as specified.

WATER SERVICE CONNECTION

MODIFIED (CDOT SP 561-9, 565-7 AND 562-1)

Description. Work under this item shall consist of paying for and obtaining a water main tap permit from the Chicago Department of Water Management (DWM), scheduling date and time for the DWM to perform the tap, excavation to the water main, exposing the water main, cleaning the exterior of the water main, installing copper piping from the water tap to the water valve assembly (curb stop and buffalo box), and placing and compacting trench backfill for each of the water service connections as detailed in the plans, standard drawings, work order and/or as directed by the Commissioner.

The Contractor shall coordinate with DWM a minimum of 90 days prior to starting the work. The Contractor shall notify the property owners a minimum of 45 days' notice prior to water shut off. The DWM will complete the service outside the public Right of Way (within private property).

Materials. Water valves, 2 inch, shall be curb stops fabricated of brass and provided with outlets suitable for copper connections. Curb stops shall be of the round-way type conforming to AWWA Standard C800-89 Underground Service Line Valves and Fittings.

Curb Stops shall be housed in curb boxes. Curb boxes shall be screw type, with the base threaded to attach to the curb stop or shall be Buffalo or "arch" type, and of such construction that it shall be capable of extension to finished grade. Base sections and lids shall be cast of heavy, high grade iron. "Water" shall be marked on lid. Curb stop and box shall be equipped with a shut-off rod, typically 2 inches shorter than the curb box at its maximum extension

Construction Requirements. This work shall be performed by a City of Chicago Licensed Plumbing Contractor. All work performed shall be in accordance with the latest editions of the following:

- a. DWM Standard Specifications.
- b. City of Chicago Plumbing Code.
- c. IDOT Standard Specifications for Road and Bridge Construction (SSRBC).
- d. AWWAC800 Underground Service Line Valves and Fittings. The Contractor shall obtain a Water Tap Permit from the DWM at 121 N. LaSalle Street (City Hall), Room 1111.

The Contractor shall obtain a Water Tap Permit from the DWM at 121 N. LaSalle Street (City Hall), Room 1111. The contractor shall supply approved shop drawings which indicate maximum flow rates, length of taps from property lines, and any other information required by DWM.

When required per the Commissioner the contractor shall supply a Public Way Opening Permit from CDOT's Public Right of Way Permit Office. The Contractor shall schedule the date and time to perform the tap with DWM. The tap date is approximately two (2) weeks following permit issuance. The tap date shall be coordinated with the Construction Phasing and the Maintenance of Traffic Plans, to minimize traffic conflicts.

The Contractor shall not remove pavement or excavate trench to the water main more than one (1) working day prior to the scheduled tap, unless otherwise approved by the Commissioner. The placement and anchoring of steel plates and all additional traffic control required shall be considered incidental to this item.

Excavation (including disposal of any excavated material) shall be in accordance with applicable portions of Section 202 of SSRBC. Excavation shall be the minimum area required to facilitate the water tap. All shoring required shall be considered incidental to this item. This item shall also include excavation required to install pipe from the Water Tap to the Water Valve Assembly.

The excavation for water taps to be installed under pavement shall be from the sub-grade elevation to the depth required to perform the water tap. The excavation for water taps under non-paved areas shall be from the existing surface elevation to the depth required to perform the tap. Excavation shall not be paid for separately but shall be considered incidental to this item. Pavement removal and replacement shall be paid for using applicable line items. Restoration of non-paved areas shall be paid using applicable line items.

The Contractor shall clean the exterior of the water main to facilitate placement of the “saddle” by DWM to perform the water tap. The Contractor shall use equipment which will not damage the water main. If the water main is not prepared to the satisfaction of the DWM the tap will not be performed and shall be rescheduled.

The Contractor shall install Type K Copper Pipe, 2 inch diameter from the water tap to the Water Valve Assembly. This work shall be considered incidental to this item.

Trench Backfill shall be placed and compacted in accordance with Section 208 of the SSRBC and shall be included in the cost of this item. Trench backfill shall be in accordance with DWM Standard Specifications.

Any water service shut-off box, which is damaged by the Contractor, must be repaired, or replaced with a plastic shut-off box at his/her own expense. The Contractor will not be permitted to operate service control valves or any line valves of the water distribution system. If any damage is caused to the water service or water shut-off valve, the Department of Water Management personnel will repair or replace them and charge the cost to the Contractor. Payments to the Contractor, in the amount of damages, will be withheld until they are resolved with the Department of Water Management.

QC/QA Requirements. The contractor shall provide a manufacturer’s written certification that the materials used comply with the specifications.

Method of Measurement. This work will be measured for payment per each installed.

Basis of Payment. This work will be paid for at the contract unit price per each for WATER SERVICE CONNECTION, of the size specified, which price shall include all labor, material, and equipment required to complete the work as specified.

WATER SERVICE REMOVAL

Description. Work shall be performed according to Section 562 of the standard specifications and work under this item consists of excavating and removing existing water service lines from existing water main tap location to water valve assembly (curb stop/buffalo box) which is currently servicing private property owners, and placing and compacting trench backfill for each of the water service connections as detailed in the plans, standard drawings, work order and/or as directed by the Commissioner.

Construction Requirements. The existing service line contains LEAD. The Contractor shall take all precautions necessary to properly handle and dispose of the material in accordance with these specifications and Illinois IEPA requirements. This work shall be completed by a City of Chicago Licensed Plumbing Contractor with lead abatement training and adhere to OSHA, EPA, state plumbing code requirements and with the Lead Service Line Replacement and Notification Act.

The Contractor shall schedule the date and time to perform this work in conjunction with the new Water Service Connection, and this work shall be completed after the new service is installed and operational, or as directed by the DWM or Engineer. The removal shall be coordinated with the Construction Phasing and the Maintenance of Traffic Plans, to minimize traffic conflicts. The placement and anchoring of steel plates and all additional traffic control required shall be considered incidental to this item.

Excavation (including disposal of any excavated material) shall be in accordance with applicable portions of Section 202 of SSRBC. Excavation shall be the minimum area required to facilitate the water line removal and the removal of the valve (curb stop/buffalo box). All shoring required shall be considered incidental to this item.

Excavation shall not be paid for separately but shall be considered incidental to this item. Pavement removal and replacement shall be paid for using applicable line items. Restoration of non-paved areas shall be paid using applicable line items.

Trench Backfill shall be placed and compacted in accordance with Section 208 of the SSRBC and shall be included in the cost of this item. Trench backfill shall be in accordance with DWM Standard Specifications.

Method of Measurement. This work will be measured for payment per each.

Basis of Payment. This work will be paid for at the contract unit price per each for WATER SERVICE REMOVAL, which price shall include all labor, material, and equipment required to complete the work as specified.

BLOW OFF ASSEMBLY

Modified CDOT SP 561-1 (June 1, 2026)

Description. Work under this item shall be performed according to Section 561 of the IDOT Standard Specifications for Road and Bridge Construction and Chicago Department of Water Management (DWM) Standard Specifications, except as herein modified.

Construction Requirements. The blow off assembly shall be according to DWM standard detail FM-19, except that an separate precast concrete basin is not required as the watermain items will be housed in the precast riser shaft. This work shall include, but not be limited to, furnishing all labor, tools, equipment, and material necessary for the installation of the blow off assembly and all accessories as detailed in the plans, standard drawings, work order and/or as directed by the Commissioner, for watermain components including, 36"X8" 3BMJ Tee connection to proposed watermain, 8"x1/8 1BMJ Bend, 8" D.I. Pipe, 8" MJ Valve, 8"x8" 3BMJ Tee, 8" MJ plug and cap, supports, and all other work required to complete the blow off assembly. Provisions shall be made in the top slab of the precast riser shaft to provide an opening to assist with drainage equipment as directed by CDWM.

QC/QA Requirements. The contractor shall provide a manufacturer's written certification that the materials used comply with the specifications including the most recent version of the DWM Standard Specifications.

Method of Measurement. This work will be measured for payment per each.

Basis of Payment. This work will be paid for at the contract unit price per each for BLOW OFF ASSEMBLY, which price shall include all labor, material, and equipment required to complete the work as specified.

WATER SERVICES 2-INCHES & SMALLER

SECTION 33 12 13

WATER SERVICES 2-INCHES & SMALLER

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. This section includes the requirements for the installation of water services 2-inch and smaller in diameter as shown on the Drawings and specified here.

1.2 REFERENCES

- A. City of Chicago Plumbing Code.
- B. ASTM B62 - Composition of Bronze or Ounce Metal Castings.
- C. ASTM B63 - Resistivity of Metallically Conducting Resistance and Contact Materials.
- D. ASTM B88 - Seamless Copper Water Tube.
- E. AWWA C800 - Underground Service Line Valves and Fittings.
- F. Follow the latest edition of the above references.

1.4 SUBMITTALS

- A. Refer to Book I for submittal requirements and procedures for Shop Drawings, Product Data, Records and Samples.
- B. The Contractor must provide the Commissioner, prior to the use of any materials in this section, certified test and inspection reports from an approved testing laboratory, or at the point of manufacture, that all materials and/or equipment to be utilized in this work are in accordance with the Contract Documents.
- C. All tests as specified are to be performed at the point of manufacture. The cost of testing is considered incidental to the construction and no additional payment will be allowed.
- D. Each individual unit must be pressure tested and guaranteed for service at pressures minimally equal to pressure ratings specified for design purposes in AWWA C800. The Contractor must provide an affidavit that materials furnished comply with this standard.

1.5 QUALITY ASSURANCE

- A. **The Work necessary for the installation of new, or modification to existing services, must be performed by a plumber licensed in the State of Illinois or the City. This Work will include, but not be limited to, tapping**

the main; installing corporation cocks; cutting and flaring the ends of copper tubing; installing copper tubing, fittings, and roundway (curb stop) valves; and connecting new service tubing to existing services, as specified herein.

PART 2 - PRODUCTS

2.1 COPPER TUBING

- A. Type "K" (soft) copper tubing, seamless annealed conforming to ASTM B88.

2.2 ROUNDWAY (CURB STOP)

- A. All roundways must be ball valve type with copper flare connections on both ends and Minneapolis type curb box threads. The roundway must conform to requirements of AWWA C800. Minneapolis thread size for 1-inch roundway will be 1 ½-inches; 1 ½-inch and 2-inch roundways will be 2-inches.
- B. Roundways must be composed of bronze or ounce metal alloy conforming to the chemical and physical requirements of ASTM B62 and AWWA C800. Castings must be high grade, smooth, and free from sand, blowholes, shrinkage, or other foundry defects. No roundway can be plugged or filled in any manner. All threads must be cut full and without defects.
- C. Acceptable manufactures and products for roundway valves are A.Y. McDonald, model # 6104, Ford Meter Box, model # B22-M, or Mueller, model # B-25154.

2.3 SHUT-OFF BOX

- A. Shut-off boxes must conform to details for the "Plastic Shut-off Box - Type B" shown in the Drawings, as manufactured by C.P. Test Services-Valvco, Inc.
- B. The shut-off box is to be manufactured from ABS plastic, and be of a two (2) piece tubular design, employing sliding friction between the upper and lower tube sections to maintain length adjustments. A threaded bushing is to be bonded to the plastic of the bottom end section to enable attachment to a roundway (curb stop) shut-off valve. A cast iron lid and rim is to be bonded to the plastic of the top section of the unit. The lid is to have a removable pentagon head bolt for locking the lid into the rim. The letters "WATER" must be cast on the top of the lid. The total length of the plastic shut-off box must be a minimum of 72-inch when fully extended.

2.4 BRASS CORPORATION COCKS

- A. Corporation cocks for water service connections must be of a plug type design conforming to ASTM B62 and AWWA C800. Corporation cocks, when ordered complete, must be furnished with a 1/8-bend tailpiece coupling, inlet end swivel nut with female flare copper thread and gasket, and outlet end copper flare connection, as manufactured by A.Y. McDonald, model # 4701L, with model # 4750S couplings.
- B. 1-inch corporation cocks used for test taps must be ordered without gasket, coupling nut and tailpiece, and be of type manufactured by A. Y. McDonald, model # 3120C.

2-inch corporation cocks used for test taps must be ordered without gasket, coupling nut, and tailpiece, and be of type manufactured by A.Y. McDonald, model # 3131.
- C. Corporation cocks must be manufactured from composition bronze or ounce metal alloy conforming to ASTM B62 and AWWA C800. The valve castings must be high grade, smooth, and free from sand, blowholes, shrinkage, or other foundry defects. Castings must not be plugged or filled in any manner. All threads must be cut full and without defects. All gaskets, screws, or other parts necessary for proper installation and operation of the corporation stop must be supplied.

2.5 COMPRESSION COUPLINGS

- A. Provide compression couplings to join lead or iron water services to brass fittings and copper water services. Couplings must be manufactured from composition bronze or ounce metal alloy conforming to ASTM B62 and AWWA C800. Castings must be high grade, smooth, and free from sand, blowholes, shrinkage, or other foundry defects. No coupling may be plugged or filled in any manner. All threads must be cut full and without defects.
- B. Couplings must be equipped with clamps or setscrews to engage the pipe and act as locking devices. Screws must be manufactured from silicone bronze or stainless steel.
- C. Furnish the appropriate type and number of compression couplings listed below for connecting existing water services to the brass fittings or copper water services:
 - 1. 1-inch strong lead to 1-inch copper flare.
 - 2. 1 1/2-inch extra strong lead to 1 1/2-inch copper pack fitting.
 - 3. 2-inch extra strong lead to 2-inch copper pack fitting.
 - 4. 1-inch strong lead to 1-inch MIP thread.
 - 5. 1 1/2-inch extra strong lead to 1 1/2-inch MIP thread.
 - 6. 2-inch extra strong lead to 2-inch MIP thread.

7. 1-inch strong lead to 1-inch strong lead.
8. 1-inch extra strong lead to 1-inch copper flare.
9. 1-inch extra strong lead to 1-inch MIP thread.
10. 3/4-inch strong lead to 3/4-inch FIP thread.
11. 3/4-inch strong lead to 3/4-inch strong lead.
12. 3/4-inch iron pipe to 3/4-inch FIP thread.
13. 5/8-inch strong lead to 3/4-inch FIP thread.
14. 1/2-inch strong lead to 3/4-inch MIP thread.

- D. Acceptable manufactures for compression coupling kits are Ford Meter Box, "Lead-Pak" and "Pack Joint" kits; A.Y. McDonald, "Mac-Pak" or "Compression Coupling" kits; or Mueller "Pack Joint" kit.

2.6 BRASS AND COPPER PIPE FITTINGS AND COUPLINGS

- A. Fittings and couplings must be manufactured from composition bronze or ounce metal alloy conforming ASTM B62 and AWWA C800. Castings must be high grade, smooth, and free from sand, blowholes, shrinkage, or other foundry defects. No coupling or fitting may be plugged or filled in any manner. All threads must be cut full and without defects.
- B. Furnish the appropriate number of brass and copper fittings and couplings listed below needed to connect the existing water services to the new main.
1. 3/4-inch FIP X 1-inch flare.
 2. 1-inch FIP X 1-inch flare.
 3. 1 1/2-inch FIP X 1 1/2-inch flare.
 4. 2-inch FIP X 2-inch flare.
 5. 3/4-inch MIP X 1-inch flare.
 6. 1-inch MIP X 1-inch flare.
 7. 1 1/2-inch MIP X 1 1/2-inch flare.
 8. 2-inch MIP X 2-inch flare.
 9. 3/4-inch FIP X 1-inch MIP.
 10. Unions, 1-inch, 1 1/2-inch, 2-inch, three parts, flared both ends.
 11. Tube nuts, 1-inch, 1 1/2-inch, 2-inch.
- C. Furnish fittings and couplings by A.Y. McDonald, Ford Meter Box, or Mueller.

2.7 2-INCH COMBINATION AIR RELIEF VALVE ASSEMBLY

- A. Where shown or specified, the Contractor must furnish 2-inch combination air relief assemblies. The 2-inch combination air relief assemblies must be Val-Matic Model 202 C or APCO Model 145C.

PART 3 - EXECUTION

3.1. ADJUSTMENT OF SHUT-OFF BOXES AND VALVE BOXES

- A. The Contractor is responsible for vertically adjusting existing water service shut-off boxes and valve boxes to the proper surface elevation as shown on Plans, or directed by Commissioner. The Contractor must obtain copies of information for water service pipe from the Department to verify and confirm the exact location of water shut-off boxes or valve boxes to be adjusted. The Contractor must notify the Department seventy-two (72) hours before the excavation of sidewalk or parkway commences to determine if the services are active and also to clarify any discrepancies with water service pipe plats and field survey.
- B. If a service is inactive, the Contractor must cut the top part of the box 36-inches below the proposed grade and backfill.
- C. If the service is active and the shut-off/valve box is made of plastic or other approved materials, the Contractor must excavate and vertically adjust the box to proposed grade. If the existing shut-off/valve box is made of cast iron, the top 36-inches of the box must be replaced with a length of plastic tubing sleeved over the existing shut-off/valve box. The cast iron rim must be bonded to the top of the plastic tubing. The materials and dimensions of the plastic tubing and cast iron rim must conform to the requirements as specified herein and shown in the Drawings for Plastic Shut-off Box-Type B.

3.2 DIRECT TAPPING OF DUCTILE IRON PIPE ENCASED IN POLYETHYLENE FILM

- A. Installation procedures must be a method as recommended by the Ductile Iron Pipe Research Association:
 - 1. Method 1: Apply two (2) or three (3) wraps of polyethylene adhesive tape completely around the pipe to cover the area where the tapping machine and chain will be mounted. After the tapping machine is mounted, install the corporation stop directly through the tape and polyethylene. After the direct tap is completed, inspect the entire circumferential area for damage and repair as needed.
 - 2. Method 2: Directly tap through the polyethylene film without applying a layer of tape on the encasement. Mount the tapping machine directly on the polyethylene encased pipe and install the corporation stop using normal tapping procedures. Once the direct service connection is completed, repair all polyethylene that may have been damaged during the procedure. Inspect the bottom of the encased pipe where the mounting chain has been in contact with the polyethylene for damage and repair as needed.

3. Method 3: Make an X-shaped cut in the polyethylene and temporarily fold back the film at the point where the corporation stop will be installed. Then mount the tapping machine over the exposed pipe surface and make the service tap. After the tap is made and the corporation installed, remove the tapping machine and repair the "X" shaped cut with polyethylene-compatible adhesive tape.
 - B. Before backfilling. Inspect the polyethylene around the exposed circumferential area, particularly at the bottom where the mounting chain has been in contact with the polyethylene, to ensure that all damage is repaired.
 - C. House Services. Wrap the attendant corporation stop and a minimum clear distance of 3-feet of the copper service with polyethylene or a suitable dielectric tape.
- 3.3 TEST FOR CONTROL
- A. The Contractor must test all services for flow. If the service has water flow, it must be connected to the new water main. Otherwise, the Contractor must terminate any services without water flow.

END OF SECTION 33 12 13

SEWER MANHOLES, CATCH BASINS, INLETS & SPECIAL STRUCTURES

SECTION 33 39 13

SEWER MANHOLES, CATCH BASINS, INLETS & SPECIAL STRUCTURES

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

- A. This Section includes the requirements for constructing and/or adjusting of sewer manholes, catch basins, inlets, junction chambers, tumbling basins, and other structures constructed of cast-in-place or precast concrete, or masonry structures shown on the drawings and specified here.

1.2 WORK OF THIS SECTION SPECIFIED ELSEWHERE

- A. Section 05 10 00 – Structural and Miscellaneous Steel
- B. Section 31 23 10 - Excavation, Trenching and Backfilling
- C. Section 31 23 19 - Dewatering Excavations
- D. Section 03 30 00 - Cast-In-Place Concrete
- E. Section 33 05 22 - Repairing, Adjusting, Cleaning and Abandoning Sewer Pipe and Structures
- F. Section 33 31 13 – Installation of Sewer Main Pipe and Fittings

1.3 REFERENCES

- A. ASTM A48 - Standard Specification for Gray Iron Castings
- B. ASTM A185 - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete Reinforcement
- C. ASTM A197 - Standard Specification for Cupola Malleable Iron
- D. ASTM A536 - Standard Specification for Ductile Iron Castings
- E. ASTM A615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
- F. ASTM C32 - Standard Specification for Sewer and Manhole Brick
- G. ASTM C55 - Standard Specification for Concrete Building Brick
- H. ASTM C139 - Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes

- I. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes Using Rubber Gaskets
- J. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections
- K. ASTM C857 – Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.
- L. ASTM C858 – Standard Specifications for Underground Precast Concrete Utility Structures.
- M. ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants.
- N. IDOT Standard Specification for Road and Bridge Construction (SSRBC)
- O. American Association of State Highway Transportation Officials, Standard Specifications for Highway (AASHTO)
- P. Follow the latest edition of the above references.

1.4 SUBMITTALS

- A. Refer to Book I for submittal requirements and procedures for Shop Drawings, Product Data, Records and Samples.
- B. Shop Drawings: When not indicated on the Contract Drawings in sufficient detail or definition, submit detailed drawings of cast-in-place and precast concrete utility structures and related metal work.
- C. Product Data: Submit manufacturers' product data for standard manufactured precast concrete sections and structures, for metal gratings and covers, and for other, related miscellaneous metal items.
- D. Certification: Submit certification or other acceptable evidence that covers and grates to be provided for roadways and parking areas meet proof-testing requirements for AASHTO H2O traffic loading.

PART 2 - PRODUCTS

2.1 PRECAST CONCRETE STRUCTURES

- A. Precast concrete base and riser sections furnished for manholes, valve basins, catch basins and other structures must conform to ASTM C478.

- B. Furnish riser sections in various heights, including an offset tapered section, as detailed on the Drawings, or as directed by the Commissioner.
- C. Precast reinforced concrete flat slab tops for manholes must conform to ASTM C857, and be designed to accommodate a minimum AASHTO loading of H 20, unless directed otherwise by the Commissioner.

2.2 JOINT SEALANTS

- A. Rubber gaskets must conform to ASTM C443.
- B. Preformed butyl rubber flexible rope type gaskets must conform to ASTM C990.

2.3 ADJUSTING RINGS

- A. Adjusting rings are to be precast concrete with sufficient steel reinforcing to prevent cracking in normal handling and use.
- B. Mating Faces: Must be smooth, parallel, free from cracks, chips, spalls or casting irregularities which interfere with creating a watertight mating surface between the adjusting ring and top of the utility structure.
 - 1. Provide grooves in faces to contain extrudible preformed gasket material when applicable.

2.4 CASTINGS

- A. Iron castings are to be ductile iron castings conforming to ASTM A536, Grade 60-40-18, or gray iron conforming to ASTM A48, free from blowholes, shrinkage, cracks and other defects.
- B. Allowance for shrinkage must be made in the patterns to meet the specified thickness. Frames and lids are to seat at all points.
- C. Malleable castings are to conform to ASTM A197.
- D. All castings are to be made accurately to dimensions shown on the plans, and planed, filed, or ground where otherwise necessary to secure flat and true surfaces.

2.5 STEPS

- A. Aluminum alloy WP 6061 or WP 6063 conforming to ASTM B361. Coat the portion of aluminum step embedded in concrete and the portion extending two (2) inches beyond embedment with bituminous paint.

2.6 CAST-IN-PLACE CONCRETE

- A. Concrete in accordance with Section 03 30 00 – Cast In Place Concrete.

2.7 CONCRETE AND MASONRY BLOCKS AND BRICKS

- A. Precast concrete brick must conform to ASTM C55 quality designated Grade N-1.
- B. Sewer brick must conform to the qualifications for “brick for sewers or drainage structures”, Grades SS or SM, as established in Table I of the current ASTM C32, except where modified here.
1. Brick must be uniform, sound, hard burned, of compact texture, free from lime and cracks with a clear ringing sound when struck, whole and with edges full and square, and of standard dimensions.
 2. Brick, when thoroughly dried and immersed in water for twenty-four (24) hours, must not absorb more than 15% by weight of water.
 3. If in any load of brick more than 10% are inferior, the whole load is rejected.
 4. If in any load of brick less than 10% are inferior, the brick is accepted provided the Contractor pulls out all inferior bricks, and immediately removes them from the Site of the Work.

2.8 MORTAR

- A. Mortar for brickwork is to be composed of one (1) part Portland cement and two (2) parts screened sand.
1. Portland cement must conform to the requirements of Section 1001 of the SSRBC.
 2. Sand must be Class A quality and Gradation FA-9 as specified in Article 1003.02 of the SSRBC.
- B. The cement and sand must be proportioned by volume and thoroughly mixed in a tight box.
- C. After the initial mixing, water is to be added gradually and the ingredients mixed until the mortar is of proper consistency. The amount of water must be no more than necessary to produce a workable, plastic mortar.
- D. Prepare only a sufficient amount of mortar for immediate use and any mortar that has begun to set must not be retempered or used in any way in the Work

2.9 REINFORCING STEEL

- A. Reinforcing steel is to meet the requirements of ASTM A615, Grade 60 and A185 for wire fabric.

PART 3 - EXECUTION

3.1 GENERAL

- A. Excavate, backfill and compact in accordance with Section 31 23 10-Excavation, Trenching and Backfilling.
- B. All brick must be thoroughly wetted immediately before being laid.
- C. Old brickwork must be thoroughly cleaned and wetted before new work is jointed thereto.
- D. No masonry work is to be done when the temperature is below 33° F unless otherwise approved, and then only under conditions for protecting it from frost.

3.2 PRE-CAST STRUCTURE INSTALLATION

- A. Carefully place precast sections for all structures on prepared bedding so as to fully and uniformly support the structure and allow pipes to be laid to proper grade.
- B. All lift holes on precast sections must be completely filled with mortar, smoothed on both inside and outside surfaces.
- C. Seal joints between riser sections with approved mastic sealant or rubber gaskets, or as directed by the Commissioner.
- D. Place one adjusting ring (only) on manhole top. Select thickness of adjusting ring to bring completed structure to required elevation.
- E. Seal joints between adjusting rings and frames with approved mastic sealant before backfilling structures.
- F. Install manhole frame and cover.

3.3 MASONRY STRUCTURE INSTALLATION

- A. Install precast concrete or cast in place base as shown on the Drawings.

- B. Thoroughly wet all brick immediately before laying.
- C. Lay brick courses to the line, straight and parallel, breaking joints with those in adjacent courses.
- D. Lay brick radially as headers in a full bed of mortar with joints not exceeding 3/8-inch in thickness.
- E. Fill joints with mortar. Interior joints must be trowel-struck.
- F. Fresh masonry must be plastered inside and outside and must be protected from damage of all kinds.
- G. New work, unless immediately covered with earth or brick backing, or an approved form of curing compound, must be kept moist until the mortar has hardened.
- H. Install manhole frame and cover.

3.4 CAST-IN-PLACE CONCRETE STRUCTURES

- A. Construct Cast-In-Place Concrete Structures in accordance with Section 03 30 00 – Cast In Place Concrete.

3.5 CATCH BASIN FLOW RESTRICTORS

- A. The Contractor must install flow restrictors in all existing/proposed catch basins within the project limits (area of pavement resurfacing). Three inch (3") diameter plastic vortex type restrictors must be installed in the residential streets, whereas the same without swirl chamber must be installed in the arterial streets. The Department of Water Management, Sewer Section will supply the restrictors, which can be obtained at the Department of Water Management's Central District, located at 3901 S. Ashland Avenue.

3.6 FINAL ADJUSTMENT OF STRUCTURES

- A. To prevent debris from entering the sewers, place 22 gauge galvanized steel plates beneath perforated lids of all structures prior to the placing of any type of surfacing. Maintain plates in place until the completion of all surface restoration.
- B. After the base course and binder course have been placed, and prior to placing the surface course, the structures must be adjusted to match the final pavement elevation.
- C. Remove the binder and base course adjacent to and for a distance not exceeding 12-inches outside the base of the castings.

- D. Adjust the castings to final pavement elevation with adjusting rings set in mortar.
- E. Fill the space around the casting with Class SI concrete to the elevation of the surface of the binder course.

END OF SECTION 33 39 13

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EXCAVATION, TRENCHING AND BACKFILLING

SECTION 31 23 10

EXCAVATION, TRENCHING AND BACKFILLING

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

This specification includes the requirements for excavation, bedding, backfilling and compaction, of utility trenches for water and sewer mains and associated appurtenances.

1.2 WORK OF THIS SECTION SPECIFIED ELSEWHERE

- A. Section 01 55 26 - Traffic Control and Regulations
- B. Section 02 60 00 - Special Soils Excavation and Disposal.
- C. Section 05 10 00 - Structural Steel and Miscellaneous Metal
- D. Section 31 23 19 - Dewatering Excavations.
- E. Section 32 90 00 - Landscape Restoration

1.3 REFERENCES

- A. CDOT Regulations for Openings, Construction and Repair in the Public Way (CDOT Specifications).
- B. IDOT Standard Specifications for Road and Bridge Construction (SSRBC).
- C. IDOT Supplemental Specifications and Recurring Special Provisions (SSRSP)
- D. ASTM D1557 - Laboratory Compaction Characteristics of Soil.
- E. Department of Labor, Occupational Safety and Health Administration 29 CFR Part 1926, Occupational Safety and Health Standards – Excavations; Final Rule (OSHA).
- F. Follow the latest edition of the above references.

1.4 DEFINITIONS

- A. Soil types are defined as follows.
 - 1. Trench Excavation. Excavation of soil for the purpose of installing water and sewer mains, their appurtenances, and for the restoration of surface features. The excavated material maybe classified as either clay or sandy soil, a mixture of each, and may contain varying mounts of loam, silt, gravel, organic material, or rock fragments less then one (1) cu yd in volume. Trench excavation excludes all material defined as Rock Excavation and Unsuitable Soil.

2. Rock Excavation. Excavation of naturally occurring deposits of limestone, sandstone, shale or other indigenous rock occurring as bedrock, rock ledges, outcroppings, or boulders, one (1) cu yd or larger in volume necessitating removal by the use of systematic drilling, expansive jacks, or backhoe mounted pneumatic hole punchers or rock breakers.
3. Unsuitable Soil Materials. This soil material includes varying amounts of material classified as slag, cinders, trash, debris and rubble; organic or contaminated soil and material; asphalt and concrete pavements (including aggregate sub-base); sidewalks and curbs; concrete slabs concrete or masonry foundations; metal beams, bracing, and sheet piling; or similar matter.

1.5 SUBMITTALS

- A. Submittal requirements and procedures for Shop Drawings, Product Data, Records and Samples must be submitted in accordance with Book I – Terms and Conditions for Construction, latest edition, issued by the City of Chicago, Department of Procurement Services.
- B. Provide to the Commissioner copies of all contractual agreements, permits and/or licenses for proposed disposal sites for all material and waste removed from the job site.
- C. Shop Drawings and supporting calculations for excavation support systems must be submitted to the Commissioner for review and approval.
 1. Excavation Support Systems:
 - a. Prepare and submit a written schedule and procedure, along with detailed drawings, of the proposed excavations and excavation support systems.
 - b. Include installation procedures; method of concrete placement; excavation sequence; interface details; protection measures for existing structures and facilities; instrumentation and monitoring procedures to check performance, sequence, and method of removal; and contingency plans for excessive wall or foundation movements.
 - c. The program must take into account that excavations cannot extend beyond the right-of-way into adjacent properties above or below grade, unless otherwise indicated. Where Contractor requires the installation of part of excavation protection system on private property, the Contractor will be solely responsible for securing permission from adjacent property owners to install such temporary and permanent systems.

- (i). Any such permission from adjacent property owners must be in writing, and the owner's signature, granting such permission, must be witnessed and properly notarized. Certified copies of all such permissions must be submitted to the Commissioner for record purposes.
- 2. Shop Drawings: Submit Shop Drawings and specifications for support systems, lagging, and internal bracing. Include the following:
 - a. Specific description of field quality control measures.
 - b. Details of interface with permanent structures.
 - c. Details of bracing struts and wales, if used, and the proposed installation procedures, including method and sequence of preloading.
 - d. Details of required preloading systems, pre-stressing systems, load measuring facilities, systematic schedule of preloading and pre-stressing operations, and sequence of construction.
 - e. Method and details for securing lagging in support system openings.
 - f. Proposed method of providing for utility penetrations.
 - g. Assembly and erection details of members and connections for the system.
- 3. Plating of Excavations: When requested submit design calculations stamped by a Structural Engineer Licensed in the State of Illinois as proof of the structural integrity of the plating provided.
- 4. Calculations: Submit appropriate design calculations to support Shop Drawings. Include maximum theoretical deflections of supporting members. Include calculations indicating the expected magnitude of vertical and lateral movement.
- 5. Professional Engineer's Certification: The excavation support systems program, Shop Drawings, calculations, and test reports must be prepared, sealed, and signed by a professional structural engineer currently registered in the State of Illinois.
 - a. Where CTA/METRA or other private railroad company approval for excavation support or shoring is required, submit calculations and related documents prepared, signed, and sealed by a professional structural engineer currently registered in the State of Illinois.
- D. The Contractor, before starting work, must submit to the Commissioner for approval, a layout of his construction procedures and the equipment to be used in maintaining the trees in place without damage.

- E. Provide for CLSM (Flowable Fill) backfill quality control (QC) and quality assurance (QA) in accordance with the IDOT SSRSP, Check Sheet #31 "Quality Control Quality Assurance of Concrete Mixes".

PART 2 – PRODUCTS

2.1 GENERAL

- A. Pipe bedding and trench backfill material must conform to the requirements and gradation specified in Section 1003, Fine Aggregates (FA), or Section 1004, Coarse Aggregates (CA), of the SSRBC.
- B. Coarse Aggregate (CA) material classified, as Chert or Novaculite Gravels, or Slag from any source, are not permitted for use as bedding or backfill material.
- C. Fine Aggregate (FA) material classified as Silica Sand, Slag Sand from any source, or Construction Debris Sand, are not permitted for use as bedding or backfill material.
- D. All material must be dry and free of organic matter, clay, garbage, paper, wood or similar material, boulders or large particles of frozen material.

2.2 PIPE BEDDING

- A. Pipe Bedding for Water Main Construction

Coarse aggregate (CA) material classified, as washed Crushed Limestone or Stone must conform to gradation CA-16 for water mains 16 inches in diameter or smaller, CA-11 for water mains larger than 16 inches in diameter, unless otherwise authorized by the Commissioner.
- B. Pipe Bedding for Sewer Main Construction

Coarse aggregate (CA) material classified, as crushed gravel, crushed stone or crushed concrete must conform to gradation CA-11, unless directed otherwise by the Commissioner.

2.3 BACKFILL MATERIAL

- A. Backfill Material for Water Main Construction
 - 1. Coarse aggregate (CA) material classified as washed Crushed Limestone or Stone conforming to gradation CA-16 or the ¼"

Limestone Chips gradation in accordance with the following
 Table A – Gradation of Trench Backfill Material, unless authorized
 otherwise.

TABLE A
GRADATION OF TRENCH BACKFILL MATERIAL

US SIEVE SIZE	<u>1/4" Limestone Chips % Passing By Weight</u>
1/2"	100
3/8"	100
1/4"	96
#4	64
#10	4
#16	2

B. Backfill for Sewer Construction

1. Fine aggregate (FA) material classified as sand, crushed concrete sand or stone sand must conform to gradation FA 6 unless directed otherwise by the Commissioner.

C. Controlled Low Strength Material, CLSM (Flowable Fill Material)

1. Materials for Flowable Fill must meet requirements of IDOT SSRBC Sections 593 and 1019 for Controlled Low Strength Material, CLSM.
 - a. Flowable fill material placed adjacent to water mains must be of a non-fly ash type mix design, mix # 2.

2.4 GEOTEXTILE FABRIC

- A. Geotextile fabric must be Fabric for Silt Filter Fence and must conform to the requirements of Section 1080.02 in the SSRBC.

2.5 AGGREGATE FOR STABILIZATION OF TRENCH BOTTOMS

- A. When required aggregate used to stabilize trench bottoms must have an aggregate such that the majority of the material passes a 1 1/2 to 2 1/2-inch sieve, with no more than 10% of the material passing the No. 16 sieve. The quality of the aggregate must meet requirements established for aggregate bedding.

PART 3 - EXECUTION

3.1 WORK AREA PREPARATION

A. Existing Work Area Condition

1. All information on subsurface exploration available to the Department, if any, will be made available to the Contractor for examination. However, the Department in no way takes responsibility for, the interpretation, accuracy, or thoroughness of the information. It will be the responsibility of the Contractor to make such subsurface explorations as deemed necessary, to supplement information provided by the Department, at no additional cost to the Department.
2. Prior to excavating, thoroughly investigate the limits of the proposed trench to ascertain the existence and location of any underground structures, existing utilities or other items that might interfere with the pipe installation. Notify the Commissioner of any obstructions that will prevent the installation of the pipe or appurtenances as indicated on the Drawings.

B. Clearing Work Area

1. Before starting trench excavation, all obstructions, which must be removed or relocated, must be cleared. Pavement, curbs, walks, trees, shrubs, utility poles, and other structures, which are to be preserved, must be properly braced and protected. Unless otherwise shown or directed by the Commissioner, all trees and large shrubs must be preserved with minimal damage inflicted on the root structure. When required, small trees and shrubs may be removed and replaced with equivalent specimens if approved in advance by the Commissioner.

C. Segregation and Disposal of Soil Material

1. Topsoil suitable for final grading and landscaping, and excavated material suitable for backfilling, as described in Section 32 90 00, - Landscape Restoration, may be stockpiled separately within the Work Area if approved by the Commissioner.
2. Surplus excavated material and excavated material unsuitable for backfilling, final grading, and landscaping, must be transported off of the Site and disposed of in disposal areas obtained by the Contractor and approved by the Commissioner.

3. Excavated material must not be stockpiled along the route of the work unless authorized beforehand by the Commissioner.

D. Pavement Removal

1. The Contractor must saw cut all concrete and asphalt pavements to their full depth prior to breaking and removing the pavement. On pavements consisting of an asphalt overlay on a concrete base, the Commissioner reserves the right to order the removal of up to 6 additional inches beyond the edge of the concrete base. This additional asphalt removal must be removed to a neat saw cut edge and will be considered incidental to the Work.
2. Utilizing drop weight equipment for the purpose of breaking the pavement is not permitted.

E. Protection or Removal of Existing Trees

1. Comply with CDOT Specifications Chapter 4, "Excavation Pavement Removal" for protection of trees, shrubs, and other improvements.
2. The Contractor is not permitted to remove trees beyond the limits of the trench excavation except as specified in these Specifications, or as shown on the Plans, or as ordered by the Commissioner.
3. The Contractor must arrange his construction operations and use the necessary equipment required, so as not to remove or damage any existing trees due to the Work to be performed under this Contract.
4. To protect the trunks of existing trees from damage, the Contractor must place 2" x 4" boards, six (6) feet long, vertically and about 6 inches apart around all trees located in the parkways along the route of the work. The boards must be held in place by wire looped around the circumference of the tree trunk. After completion of all work, the protective boards and wires must be carefully removed.
5. Any pruning of trees and roots required to permit the operation of the Contractor's equipment must be kept to a minimum, subject to the approval of the Commissioner, and must be done symmetrically by a licensed arborist. The arborist is required to obtain a permit from the City of Chicago, Bureau of Forestry, Plans and Permits Section of the Department of Streets and Sanitation, to trim and spray or in any way affect the general health or structure of trees in the public way. Prior to this approval, the Bureau will conduct an investigation at the sites of the proposed sewer. They will work with the Resident Engineer and

the Contractor, and request 48-hour notice prior to starting any tree work.

F. Trench Excavations Over 12-feet Deep

1. Comply with CDOT Specifications Chapter 4, "Excavation Pavement Removal" for trenches over 12-feet deep.

G. Excavating Over or Adjacent to Existing Utilities

1. The Contractor must verify the location of existing utilities in the vicinity of the work before starting construction. The Contractor is responsible for protecting, and repairing utilities damaged by the work under of this contract, at no additional cost to the City. The Contractor must coordinate all work with the owner of the utility.

H. Erosion Control

1. Install geotextile fabric under each storm inlet, catch basin and sewer manhole cover to prohibit dirt, debris and backfill material from entering the sewer system, but to permit drainage. The geotextile fabric is to be maintained until restoration is completed. After restoration is completed, remove the geotextile fabric.

I. Plating of Excavations

1. Unattended excavations in public streets, alleys, driveways, and walkways necessitated by the work must be plated, if the excavation has not been backfilled, or a temporary paved surface has been provided, or specifically authorized otherwise by the Commissioner.
2. Steel Plate(s) must be large enough to safely span the excavation with sufficient overlap beyond the edge of the excavation to provide firm support as appropriate for the type of pavement and soil encountered. Plate(s) must be firmly bedded and secured to the adjacent pavement to prevent rocking or movement, and of adequate thickness to carry anticipated loads. When plating is left in place during off-work periods, or if the Commissioner feels vehicular or pedestrian safety may be compromised, a bituminous ramp is to be provided at the perimeter of the plate(s) as appropriate to provide a smooth transition between the surface of the plate(s) and the adjacent pavement or walkway.
3. Plating subjected to vehicular traffic must be capable of carrying AASHTO H-20 traffic loading without movement or excessive deflection. The plating must be secured to the adjacent paved surface

in such manner so as to prevent rocking or other movement which could expose the excavation. The name of the Contractor must be indicated on both sides of the plating.

4. When steel plates are used and left in place beyond normal working periods, a bituminous ramp must be provided at the perimeter of the plate(s), to provide a smooth transition between the surface of the plate(s) and the adjacent street pavement or walkway, unless authorized otherwise.
5. Plating of excavations is not intended as a substitution for providing traffic control, which must be provided in accordance with Section 01 55 26 of these specifications.

J. Protection of Existing Water Main from Contamination

Protect existing water mains from contamination by groundwater, dirt, debris, or other foreign material:

1. Prevent groundwater and surface water, dirt, debris, and other foreign material from entering the open pipe.
2. Provide water tight temporary closure of pipe before leaving work site at the end of the work day.
3. Equipment, cables, hoses, supports and all appurtenant equipment placed in the water main must be thoroughly cleaned of dirt and debris, and disinfected with chlorine solution with a chlorine concentration of at least 50 parts per million.
4. Workers entering pipe must wear clean temporary disposable coveralls.
5. Install foot bath and brush and have workers entering the pipe clean footwear with chlorine solution with a chlorine concentration of at least 50 parts per million.

3.2 EXCAVATION PROTECTION

A. General Requirements

1. Excavations must be protected in accordance with applicable rules, laws and regulations of Federal, State and City ordinances applicable to underpinning, shoring of excavations, and other work affecting adjoining property and the safety of worker, but must not be less than the standards and regulations established by OSHA.
2. Structural support systems are required for all excavations exceeding five (5) feet in depth. Structural support systems are to be used in all

excavations in soils that are determined to be unstable or subject to cave-ins, regardless of the depth of the excavation.

3. Protective systems for any excavation exceeding ten (10) feet in depth must be designed and approved by an Structural Engineer licensed in the state of Illinois.
4. The Contractor must remove and replace, or provide the means to support any surface features when their location poses a hazard to workers in the excavation.
5. Whenever excavations cross the location of an existing underground utility, the Contractor must proceed with caution and use appropriate methods of excavation to avoid damaging the utility. The Contractor is responsible for coordinating all work with the owner of the utility.
6. Ramps, runways or ladders must be provided for ingress and egress by workers from excavations exceeding four (4) feet in depth in accordance with OSHA.
7. Surface or ground water entering excavations must be controlled by the use of appropriate equipment. If the trench interrupts the natural flow of surface water, diversion ditches or dikes must be used.

B. Protection of Adjacent Structures

1. When the stability of adjoining buildings, walls, sidewalks, pavements or other structures are endangered by the excavation operations, structural support systems such as shoring, bracing or underpinning must be used to ensure the stability of the structure.
2. The Contractor is responsible for posting and issuing all notices required to inform adjacent or adjoining property owners or other parties and such notice or notices must be served in sufficient time as not to delay the progress of the Work under this Contract.
3. Excavation below the foundation of an adjacent structure requires either of the following:
 - (a) A Structural Engineer or Professional Engineer licensed in the state of Illinois has determined that the structure is located far enough away from the excavation so as to be unaffected, or
 - (b) A Structural Engineer licensed in the state of Illinois has designed and approved a structural support system to provide adequate protection to the existing structure.

C. Structural Support Systems

Structural support systems may consist of pre-engineered systems such as aluminum hydraulic shoring, trench shields, trench boxes, or systems constructed on the job site such as timber or steel shoring or steel sheet piling.

1. Pre-Engineered System

- (a) Pre-engineered structural support systems installed in accordance with the manufacturer's recommendations do not require certification by a Structural Engineer when trench depth is less than 20 feet. However, the Commissioner, at his sole discretion, may require a manufacturer's certification indicating the support system is suitable for the intended use and site conditions.
- (b) Pre-engineered structural support systems will require analysis and certification by a Structural Engineer licensed in the state of Illinois, when trench depth exceeds 20 feet.

2. Site Constructed Systems

- (a) Construct steel sheet piling system in accordance with Section 05 10 00 – Structural Steel and Miscellaneous Metal.
- (b) Structural support systems built in place and made of timber constructed in accordance with OSHA Standards, do not require certification by a Structural Engineer licensed in the state of Illinois, provided trench depths shown in the OSHA Standard, relative to the soil type at the site, are not exceeded.
- (c) If the OSHA Standard is not followed for timber shoring and the depths of trenches exceed those in the tabulated data; or soil conditions have been determined to be substantially different than those given in the OSHA Standard; the design must be performed and certified by a Structural Engineer licensed in the state of Illinois.
- (d) A structural support system built in place and consisting of materials other than a timber shoring systems will require design and certification by a Structural Engineer licensed in the state of Illinois.
- (e) When close-sheeting is used, it must be driven so as to prevent adjacent soil from entering the trench either below or through

such sheeting. Tight-sheeting must be used in that portion of the excavation in or along streets or alleys below the intersection of a 1 to 1 slope line from the nearest face of the excavation to the edge of the pavement.

- (f) Sheeting must not be in contact with existing pavement but must bear uniformly against the sides of the excavation.
- 3. Where structural support systems, such as steel or wood sheeting are used for stabilizing excavations, the width of the trench may be increased as necessary to accommodate installation of the work. When soils in the lower limits of the excavation have been determined to have adequate stability; the Contractor may end the shoring elements above the bottom of the excavation. If soil begins moving into the excavation below the shoring during construction, the Contractor is solely responsible for making corrections to the excavation and for lowering the shoring, at his own expense.
- 4. When structural support systems are required to be left in place, they must be cut off at the same elevation as the bottom of the water main, unless otherwise directed by the Commissioner. Bracing that is to remain in place must be driven up tight. The right of the Commissioner to request sheeting and bracing to be left in place, is not meant to construe any liability or obligation on behalf of the Commissioner to issue such orders.
- 5. Structural support systems that are not to be left in place may be removed only when the excavation has been backfilled to such an elevation so as to prevent the collapse of the sides of the excavation. Any voids created by the removal of the structural support system members, must be filled and compacted in an acceptable manner

3.3 EXCAVATION

A. Trench Excavation (Open Cut)

- 1. The width of the trenches must provide adequate space for workers to place and join the pipe properly, and must be kept to the minimum practical width. Unless otherwise approved by the Commissioner, the total clear width of the trench at the level of the top of the pipe and at grade must be at the Neat Lines as detailed on the Drawings.
- 2. The Contractor must excavate a minimum of 6-inches below the bottom of the pipe unless otherwise shown, specified, or directed, so bedding material can be placed in the bottom of the trench and shaped

to provide a continuous firm bearing for the pipe barrel. Bell holes must be provided for proper make-up of the joints.

3. The open excavated trench preceding the pipe laying operation and the unfilled trench with pipe in place must be kept to a minimum length causing the least disturbance. The maximum length of open trench must not exceed 300-feet unless otherwise directed by the Commissioner. Comply with Article 4G, CDOT Specifications, for other trench opening length requirements within the public right-of-way.
4. Excavation In Arterial Streets. Comply with Article 4C, CDOT Specifications, for protection requirements when working within arterial streets.
5. Contractor must saw cut existing pavement prior to excavating. Width of saw cut pavement must be such that any sheeting provided for excavation protection is not in contact with the pavement.
6. Where water is encountered in the excavation, the excavation must be dewatered in accordance with Section 31 23 19 – Dewatering Excavation of these specifications.
7. Wherever the nature of the ground will permit, the bottom of the excavation for monolithic and brick sewers must have the shape and dimensions of their outside invert and for pipe sewers the shape and dimensions of the outside of their lower quarter. If the bottom of the trench cannot be shaped to the required form and maintained until a section of the sewer is safely constructed, then the bottom and sides of the trench must be made to conform as nearly as possible to the external shape and dimensions of the sewer, and the space between the outer surface of the sewer and the bottom and sides of the trench must be filled with suitable material for stabilization of the trench bottom.

B. Rock Excavation (open cut)

1. Whenever rock, stone, masonry or other hard, unyielding material is encountered at or above the required trench bottom elevation, remove it to provide a clearance of no less than 6-inches below and on each side of pipes and associated fittings, valves and other appurtenances. Backfill the over excavated area with granular bedding material.
2. Removal of Rock by blasting or by use of a drop hammer is not permitted under this contract.

3. Excavate rock as near as practicable to the outside shape of the work as shown on the Plans. Solid rock, not loosened from the adjacent solid rock, may extend within the neat outside surfaces of these shapes no more than two (2) inches, provided no single projection exceeds one and one-half (1.5) square feet in area at the neat surfaces of the excavation and provided that on any ten (10) foot section of the excavation the total area of such projection at the neat outside surfaces of the section does not exceed twenty (20) percent of the area of the section.
4. The Contractor is required to remove all loose rock and other material from the excavation and in the event that the excavation is enlarged beyond the outside shape of the sewer or sewer structures as shown on the Plans, the Contractor will not be entitled to any payment for the additional Class SI concrete needed to fill the voids caused by such over-breakage.
5. Where rock is encountered, excavate to eight (8) inches below the bottom of the pipe for bedding placement.

C. Trench Excavation (Short Tunnel Construction)

1. In some instances, trees, fire hydrants, sidewalks, and other obstructions may be encountered, the proximity of which may be a hindrance to open cut excavation. In such cases, the Contractor must excavate by means of short tunnels in order to protect such obstructions against damage. Short tunnel work will be considered incidental to the construction and no additional payment will be allowed.

D. Additional Trench Excavation

1. If the soils encountered at the elevations specified are not suitable, or it is determined necessary to go to an additional width and depth, or required to fill designated areas for work done under Section 02 60 00 - Special Soils Excavation and Disposal, the excavation must be carried to such additional width and/or depth and must fill such excavated areas with approved backfill material as required or directed by the Commissioner.

E. Unauthorized Excavation

1. Wherever the excavation is carried beyond or below the lines and grades shown on the Drawings all such excavated space must be refilled with select fill materials and in such manner as may be directed in order to insure the stability of all affected structures.

Beneath all structures, space excavated without authority must be refilled by the Contractor with approved backfill materials and will be considered incidental to the construction and no additional payment will be allowed.

F. Trenching Across or Over Existing Excavations or Utility Trenches

1. In the event that the trench passes over or through a previous excavation, carefully compact and stabilize the bottom of the new trench or excavation to a density equal to or greater than 95% of the maximum dry density as determined by ASTM D1557. Perform this compaction carefully to avoid damaging the existing utility or structure.

G. Special Excavation

1. Remove unsuitable materials to provide 2-feet minimum horizontal and vertical clearance around water mains or related structures as applicable, unless otherwise directed by the Commissioner.

H. Excavation in Tunnel

1. The tunnel must be excavated and trimmed to such size and shape as will allow the placing of the full section of the pipe as shown on the Plans after all lining is in place.
2. The Contractor must excavate the tunnel and support the surrounding earth so there is no movement of the earth over or adjacent to the work at any time. The Contractor must excavate the tunnel and support the surrounding earth so at no time there is more than 5 feet, measured horizontally, unsupported by bracing as approved by the Commissioner.
3. The Contractor must use extreme care in excavating and trimming to insure that a full section will be placed without materially deviating from the correct lines and grades of the finished structure.
4. In case, due to bad soil conditions, the Contractor requests that the outside outline of the sewer be changed to a minor extent to accommodate his method of construction, such a change will be allowed provided the strength of the structure is not impaired. Any such modification will not alter the price per foot specified to be paid for the completed sewer, whether such minor modification results in a minor addition or subtraction from the theoretical quantity for the section herein specified.

5. If permission is given the Contractor to excavate the tunnel for a specified distance without immediately placing the concrete lining, the proposed method of bracing the tunnel and the extra bracing necessary must be submitted for approval.
6. No additional payment or allowance of any nature will be made for timber cants, steel plates or other forms of tunnel lining used for supporting the earth during construction. All such tunnel lining must be left in place.

3.4 PLACEMENT OF PIPE BEDDING

A. Pipe Bedding

1. Pipe laid in trenches must be bedded in accordance with the details shown on the Drawings. Bedding material must consist of compacted; well-graded crushed stone fill material as shown and as specified, or as directed by the Commissioner.
2. Existing underground structures, tunnels, conduits, and pipes crossing the excavation must be bedded with compacted sand. Bedding material must be placed under and around each existing underground structure, tunnel, conduit, or pipe as required to stabilize the excavation.
3. At each joint, enough depth and width must be provided around the pipe so that joints can be properly made up.

B. Bedding Placement – Vaults and Structures

1. Pipe bedding beneath precast bases, cast-in-place bases and other foundations must be 6-inches in thickness and thoroughly compacted in place to not less than 95% of the maximum dry density as determined by ASTM D1557.

C. Bedding and Backfill for Short Tunnel

1. Pipes placed in short tunnels must be bedded in sand. The annular space between the pipe and undisturbed earth must be completely filled with compacted sand fill material. Pipelines in short tunnels must be supported to permit the placement of backfill.

3.5 BACKFILLING EXCAVATIONS

A. General

1. All excavations must be backfilled to the original surface of the ground or to such other grades shown on the Drawings or as directed by the Commissioner. For areas to be covered by topsoil, backfill must be left 6-inches below the finished grade or as shown on the Drawings, or directed by the Commissioner. All backfilling must be done as soon as possible after water main piping has been installed and inspected, and as soon as mortar for masonry or thrust blocks have sufficiently set, unless directed otherwise by the Commissioner.
2. Crushed stone fill material must be used for trench and structure backfill and other areas as shown, specified, or ordered by the Commissioner.
3. Unsuitable material and material rejected by the Commissioner must immediately be removed from the Site and disposed of by the Contractor at his expense.
4. Construction equipment used to backfill against and over cast-in-place concrete structures must not be permitted to travel over these structures until the designated concrete strength has been obtained, as verified by concrete test cylinders. In special cases where conditions warrant, as determined by the Commissioner, the above restriction may be modified if the concrete has gained sufficient strength, as determined from test cylinders, to satisfy design requirements for the removal of forms and the application of load.

B. Backfill Procedure

1. Crushed stone fill material must be used for backfill where roadways, driveways, sidewalks, or other pavements are to be placed on the backfill or where the edge of the trench excavation is 5-feet or less from any county or state highway, any city or village street pavement, and in trenches crossing pavements or sidewalks for a distance beyond the edge of the pavement or sidewalk equal to the depth of the trench. Crushed stone fill material must be used as backfill in trenches parallel to roadways, driveways, or other pavements from the top of the bedding to a depth below the ground surface equal to the distance between the inner face of the trench and the closest edge of the pavement.
2. Where pavements and appurtenances for streets are to be placed over the trenches, the backfill material must be placed in uniform layers not

greater than 6-inches in thickness and compacted in place. Each layer must be compacted to or not less than 95% of the maximum dry density as determined by ASTM D1557.

3. All pipe sewers must be surrounded and covered by trench backfill above the granular embedment as soon as they are laid. The trench backfill must be properly compacted and tamped to a depth of at least one foot above the top of the pipe prior to placing the remainder of backfilling.
 4. For sewer pipe construction with FA 6 backfill, water jet the backfill to the depth of approximately two-thirds of the depth of cover over the sewer. The distance between jetting holes must not exceed 10-foot along the length and width of the trench, or as directed by the Commissioner. Water jetting of the trench backfill must proceed as soon as practicably, as determined by the Commissioner. The Contractor, in this manner, must place and compact the trench backfill to the level of the sub-grade.
 5. Excavated material can be re-used as backfill only if directed or approved by the Commissioner.
 6. Where railroad tracks or pavements for highways are to be placed over trenches, the backfill must be placed in conformance with the standards set forth by the respective agency having jurisdiction over the railroad or highway.
 7. Trench backfilling work must be done in such a way so as to prevent damage to any pipe, utility, or structure.
 8. On monolithic concrete sewers and structures cast-in-place, trench backfill must not be placed until the concrete has attained a compressive strength of 2,000 psi.
- C. Backfill under a Supported Water Main
1. Backfill the open trench under the water main and 10-feet beyond the water main sides with approved material up to a level of 1-foot below the invert of the supported water main. The backfill material must be placed in layers of 12-inches with each layer mechanically compacted to 95% of the maximum dry density as determined by ASTM D1557.
 2. Place pipe bedding material from 1-foot below the water main invert to the water main centerline and compact to achieve 95% of the maximum dry density as determined by ASTM D1557.

3. Remove the water main pipe support systems, supporting beams, and pipe support straps; and cut-off and remove soldier piles to a level at least 4-feet below finished grade.
4. The water main pipe must be inspected for leakage and joint integrity and repaired if necessary, prior to backfilling above the water main.
5. After approval by the Engineer, continue backfilling with approved material. The open trench must be backfilled up to the required sub grade level. The backfill material must be placed in layers of 12-inches with each layer mechanically compacted to 95% of the maximum dry density as determined by ASTM D1557.

D. Backfilling with Controlled Low Strength Material (CLSM) - Flowable Fill

1. Do not place the mix on frozen ground, in standing water, or during wet weather conditions. Mixing and placing may begin only if the air temperature is 35 °F minimum and rising. At time of placement, the material temperature must be 40 °F minimum. Mixing and placing must stop when the air temperature is 40 °F and falling.
2. Place the mix directly from the chute into the space to be filled. Other placement methods may be approved by the Commissioner if the mix design is appropriate.
3. When backfilling against structures, place the mix in layers to prevent damage by lateral pressures. Side slopes must be stepped or serrated to prevent wedging action of the backfill against the structure. Allow each layer to harden prior to placing the next layer.
4. When backfilling pipe trench, distribute the mix evenly on each side of the pipeline to prevent movement.
5. The mix must not be exposed to freezing temperatures or wet weather conditions during the first 24 hours after placement.
6. The mix may be subjected to loading upon approval by the Commissioner, or when a penetration of 39 mm/blow or less has been obtained with the Dynamic Cone Penetrometer test.
7. Backfilling against water main pipe with CLSM is not allowed, unless authorized otherwise by the Commissioner. Contractor must provide a minimum of 6-inches of coarse aggregate backfill material over the water main pipe prior to placing the CLSM material.

3.6 FINISH GRADING

1. Finish grading must be performed in accordance with the completed contour elevations and grades shown and must be made to conform to the existing ground surface. All finished graded surfaces must be left smooth and firm and graded to permit positive drainage.

3.7 TRAFFIC CONTROL

1. The Contractor is responsible for traffic control and the protection of vehicular and pedestrian traffic from the work. For detailed requirements see Section 01 55 26.

END OF SECTION 31 23 10