



# Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

July 25, 2017

SUBJECT: FAI Route 90/94/290 (I-90/94/290)  
Project NHPP-000V(127)  
Section 2014-002R&B  
Cook County  
Contract No. 60X76  
Item No. 10, August 4, 2017 Letting  
Addendum A

## NOTICE TO PROSPECTIVE BIDDERS:

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

1. Revised the Schedule of Prices
2. Revised pages vi & vii of the Table of Contents of the Special Provisions
3. Revised pages 2-5, 54-63, 343, 344, 372, 373 and 399-429 of the Special Provisions
4. Added pages 513 - 516 to the Special Provisions
5. Revised sheets 1, 2, 6, 7, 11-13, 19-25, 27-36, 38, 40, 121, 160, 161, 231, 232, 251, 252, 254, 262-267, 273, 398, and 403 of the Plans
6. Added sheet 233A to the Plans
7. Added the Geotechnical Design Memorandum for Sewer Pipe Jacking and Jacking/Receiving Pits in the Additional information section.

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

Very truly yours,

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

A handwritten signature in black ink, appearing to read 'Ted B. Walschleger P.E.'.

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

cc: Anthony Quigley, Region 1, District 1; Tim Kell; D. Carl Puzey;  
Estimates

MS/ck

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## SOILS INFORMATION

Soil boring logs and generalized soil profiles are shown in the Plans for SN 016-1728, SN 016-1800, and SN 016-1801.

The reports below are available for inspection at IDOT District 1, 201 W. Center Court, Schaumburg, Illinois.

Roadway Geotechnical Report  
Circle Interchange Reconstruction  
I-290 From Loomis Street to I-90/94  
Section 2013-077R, PTB 163/ITEM 001  
IDOT D-91-227-13, Contract 60X77  
Cook County, Illinois  
Prepared by: Wang Engineering, Inc.  
Original: July 14, 2015  
Approved: September 4, 2015  
(Includes Addendum / Disposition of Comments - Dated September 16, 2015)

Structure Geotechnical Report  
Circle Interchange Reconstruction  
Interstate 290 Retaining Wall 9 (Proposed SN 016-1728)  
F.A.I. Route 290 (Eisenhower Expressway)  
Station 5136+69.17 to Station 5139+07.34  
Section 2014-002R&B  
IDOT D-91-227-13 / PTB 163-001  
Cook County, Illinois  
Prepared by: Wang Engineering, Inc.  
Original: November 17, 2016  
Approved: February 22, 2017

Structure Geotechnical Report  
Circle Interchange Reconstruction  
Interstate 290 Retaining Wall 11  
Station 5132+58.15 to Station 5133+00.00  
PR SN 016-1800, Section 2014-002R&B  
IDOT D-91-227-13 / PTB 163-001  
Cook County, Illinois  
Prepared by: Wang Engineering, Inc.  
Original: November 17, 2016  
Approved: March 9, 2017

Revised 7/25/17

Structure Geotechnical Report  
Retaining Wall 12  
Proposed SN 016-1801  
F.A.I. Route 290  
Section 2013-00BR, Contract 60X76  
IDOT PTB 163-001  
Cook County, Illinois  
Prepared by: Wang Engineering, Inc.  
Original: August 11, 2016  
Approved: January 20, 2017

Geotechnical Design Memorandum  
Sewer Pipe Jacking and Jacking/Receiving Pits  
F.A.I. Route 290  
Section 2013-00BR, Contract 60X76  
IDOT D-91-227-13 / PTB 163-001  
Cook County, Illinois  
Prepared by: Wang Engineering, Inc.  
Original: March 23, 2017

#### **AVAILABLE RECORD DRAWINGS**

The record drawings for recent nearby projects noted below are available for inspection at IDOT District 1, 201 W. Center Court, Schaumburg, Illinois. Additional design drawings and record drawings from original construction or previous rehabilitation projects are included for information within the Plans.

Contract No. 60W26  
FAI Route 90/94/290  
Harrison Street Bridge (WB) and Halsted Street Bridge  
Section 2013-008R  
Bridge Replacement, Roadway Reconstruction, Lighting and Traffic Signals  
Cook County, Illinois  
C-91-228-13  
08/20/2013

Contract No. 60W71  
FAI Route 90/94/290  
From Circle Interchange to Harrison Street Bridge (East)  
Section 2013-036R  
Roadway Reconstruction, Resurfacing and Lighting  
Cook County, Illinois  
C-91-360-13  
12/06/2013

Revised 7/25/17

Contract No. 60W29  
Peoria Street Bridge at I-290/Congress Parkway (Circle Interchange)  
Section 2013-011R  
Bridge Replacement, Roadway Reconstruction, Lighting, CTA Rehabilitation  
Cook County, Illinois  
C-91-231-13  
10/10/2013

Contract No. 60W25  
Morgan Street Bridge at I-290/Congress Parkway (Circle Interchange)  
Section 2013-007R  
Reconstruction, Bridge Replacement, Lighting, Traffic Signals, and Watermain  
Cook County, Illinois  
C-91-22-13  
05/14/2013

### **CONTRACTOR COOPERATION**

The Contractor's attention is directed to the fact that other separate contracts may be under construction during the duration of this Contract. Adjacent contracts may consist of, but are not limited to projects near:

Contract 60X61	I-290 Westbound Auxiliary Lanes
Contract 60X62	Peoria Street Aesthetics (Jane Byrne Interchange)
Contract 60W28	NW Flyover Ramp (Jane Byrne Interchange)
Contract 60X77	Westbound I-290 Roadway Reconstruction Congress Parkway to Racine (Jane Byrne Interchange)
Contract 60X78	Bridge Westbound (East of Des Plaines) & I-290 Westbound Bridge Over I-90/94 (Jane Byrne Interchange)
Contract 60X99	Van Buren Street Bridge Reconstruction (Jane Byrne Interchange)
Contract 60X75	Bridge Eastbound (East of Des Plaines) & I-290 Eastbound Bridge Over I-90/94 (Jane Byrne Interchange)
Contract 60X95	Monroe Street Bridge Reconstruction
Contract 62A74	UIC Retaining Wall/ Water Main Rehabilitation
Contract 62A75	Jackson Boulevard Utility Relocation
Contract 62B76	N to E Congress Parkway
Contract 60X79	Ramp EN (Future Contract)

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Contract 60X93 Interchange Ramp Completions (Future Contract)  
Contract 60X07 I-55 / Lake Shore Drive Interchange  
Contract 60L70 I-55 / Lake Shore Drive Interchange  
Contract 46358 Section D-1 Sign Repl Contract 16-02  
Contract #233702 Ashland Avenue – Kostner to Racine  
University of Illinois- Chicago Projects In and Around the Building Housing the College of Urban Planning and Public Affairs (412 S. Peoria Street)  
And others.

The Contractor will be governed by Article 105.08 of the Standard Specifications.

The Contractor will be required to attend a weekly coordination meeting at a time and location to be determined by the Department.

The Contractor will coordinate proposed project start dates and sequence of construction with the Engineer and other Contractors to present an effective and timely schedule for successful completion of the project.

The cooperation between work under this contract and Contracts 60X75 and Contract 62A74 is essential due to the adjacent limits of construction and shared maintenance of traffic responsibilities along Eastbound I-290 and ramp ES. All traffic staging configurations and changes to staging along I-290 and ramps shall be coordinated with the contractor performing work under Contracts 60X75 and 62A74.

## **PROGRESS SCHEDULE**

Description. Time is of the essence in this Contract. It may be necessary for the Contractor to work longer hours, use additional crews, and work during weekends in order to complete the work within the required time limit. The Contractor shall submit a Critical Path Method (CPM) Progress Schedule as described below for the Engineer's approval before the work can be started.

The Contractor will not be allowed any compensation for working longer hours or using extra shifts; and working on weekends or during Holidays; working during winter months, etc. to meet the specified Completion Date.

This work shall consist of preparing, revising and updating a detailed progress scheduled based upon the Critical Path Method (CPM). This work shall also consist of performing time impact analysis of the progress schedule based upon the various revisions and updates as they occur.

Revised 7/25/17

**STATUS OF UTILITIES (D-1)**

Effective: June 1, 2016

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

UTILITIES TO BE ADJUSTED

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

Pre Stage 1

<b>STAGE / LOCATION</b>	<b>TYPE</b>	<b>DESCRIPTION</b>	<b>RESPONSIBLE AGENCY</b>	<b>ACTION</b>
EB I-290 Station 5123+95	Electric	Electric line (2-4") crosses from Congress Parkway underneath the proposed improvements along EB I-290.	ComEd/CTA	Electric line to be relocated by ComEd/CTA.  Days to relocate unknown
EB I-290 Station 5141+14	Electric	Electric line (2-4") crosses from Congress Parkway underneath the proposed improvements along EB I-290.	ComEd/CTA	Electric line to be relocated by ComEd/CTA.  Days to relocate unknown
Ramp ES Station 1510+50	AT&T	AT&T line combined 36 duct package north of Harrison Street is 3' clear from the bottom of the duct to the 42" storm sewer. Elevation based on geospatial data.	AT&T	Existing elevations of AT&T facilities shall be confirmed by AT&T.



Stages 1, 2 and 3

STAGE / LOCATION	TYPE	DESCRIPTION	RESPONSIBLE AGENCY	ACTION
EB Congress Parkway Station 5150+63	Telephone/Fiber Optic	Duct package west of Halsted Street is located underneath the proposed improvements along EB I-290, above the proposed storm sewer along EB I-290 and is located at the bottom of proposed Retaining Wall 12 (SN 016-1801).	AT&T	AT&T maintains a large duct package west of Halsted Street crossing EB I-290. The duct was previously located using geospatial equipment. Duct elevations shown in the Plans are based upon this locate performed on behalf of AT&T. Further locate studies are currently being completed to confirm geospatial elevations. AT&T will locate edges of duct package during construction prior to installation of drilled shafts. Drilled shafts for the retaining wall will be spaced according to the locate information. The duct package should be exposed by the contractor prior to beginning drilling and location confirmed. For excavation all work shall be 2 feet clear of the duct.

STAGE / LOCATION	TYPE	DESCRIPTION	RESPONSIBLE AGENCY	ACTION
EB I-290 Station 5148+88	CTA Electrical	CTA Impedance Bond	CTA	CTA Impedance Bond to be relocated to the North side of the tracks by CTA. Contractor to submit process plan for work requiring relocation of Impedance Bond, see CTA Flagging and Coordination special provision for details. Days to relocate unknown
EB I-290 Station 5150+75	CTA Electrical	CTA Impedance Bond near Peoria Street	CTA	CTA Impedance Bond to be relocated to the East by CTA. Contractor to submit process plan for work requiring relocation of Impedance Bond, see CTA Flagging and Coordination special provision for details. Days to relocate unknown

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

Agency/Company Responsible to Resolve Conflict	Name of contact	Address	Phone	e-mail address
ComEd	Peter Kratzer	Facility Relocation Dept. 7601 S Lawndale Avenue Chicago, IL 60652	708-518-6209	Peter.Kratzer@ComEd.com
Peoples Gas	Chuck Creager	Peoples Energy 200 E. Randolph St., 21 <sup>st</sup> FL Chicago, IL 60601	312-240-7189	crcreager@peoplesgasdelivery.com
CDWM (Water Section)	Brian McGahan (CTR Joint Venture)	CTR Joint Venture Jardine Water Purification Plant 1000 E Ohio St +51 Chicago, IL 60611	312-742-5919	Brian.McGahan@ctrwater.net
AT&T	Jamie Gwin; Stan Plodzien	AT&T Civic Project Eng 1000 Commerce Drive Oak Brook, IL 60523	630-573-5423;630-573-5453	jg8128@att.com; sp3264@att.com
CTA	Mike McCarthy	Chicago Transit Partners 567 W. Lake Street, 9th Floor Chicago, IL 60661	312-681-4833	mmccarthy.ctp@transitchicago.com

UTILITIES TO BE WATCHED AND PROTECTED

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

Stage 1

<b>STAGE / LOCATION</b>	<b>TYPE</b>	<b>DESCRIPTION</b>	<b>OWNER</b>	<b>ACTION</b>
EB I-290 Station 5119+53	Gas main	36" gas main crossing under EB I-290 pavement.	Peoples Gas	Gas line to be watched and protected.
EB Congress Parkway Station 5149+19	Gas main	20" low pressure gas main was previously retired and filled by Peoples Gas	Peoples Gas	The depth of the abandoned gas main is unknown. If the retired main conflicts with proposed work, the contractor will remove the retired main within the work area.
Halsted Street over I-290	Electric Service	ComEd maintains active distribution services in conduits attached to the east side of the bridge structure.	ComEd	Existing ComEd facilities shall not be disturbed.
Morgan Street over I-290	Electric Service	ComEd maintains active distribution services in conduits attached to the west side of the bridge structure.	ComEd	Existing ComEd facilities shall not be disturbed.
Racine Avenue over I-290	Electric Service	ComEd maintains active distribution services in conduits attached to the bridge structure.	ComEd	Existing ComEd facilities shall not be disturbed.

STAGE / LOCATION	TYPE	DESCRIPTION	OWNER	ACTION
Ramp ES Station 1510+50	Electric	Electric line combined 36 duct package north of Harrison Street is 3.5' clear from the bottom of the duct to the 42" storm sewer. Elevation based on geospatial and test hole data.	ComEd	Existing ComEd facilities shall not be disturbed
Peoria Street over I-290	Telephone/ Fiber Optic	AT&T maintains active communication facilities in conduits attached to the bridge structure.	AT&T	Existing AT&T facilities shall not be disturbed.
Peoria Street over I-290	Telephone/ Fiber Optic	UIC maintains active communication facilities in conduits attached to the bridge structure.	University of Illinois at Chicago (UIC)	Existing UIC facilities shall not be disturbed.
EB I-290 Station 5140+02	Water	The existing 36" water main is located underneath the proposed EB I-290 improvements, underneath the proposed storm sewer and crosses the existing retaining wall 10 to remain.	Chicago Department of Water Management	The contractor shall take caution when working above or adjacent to the water facilities.

STAGE / LOCATION	TYPE	DESCRIPTION	OWNER	ACTION
EB Congress Parkway Station 5149+04	Water	The existing 16" water main is located underneath the proposed EB I-290 improvements, underneath the proposed storm sewer and crosses the proposed retaining wall 12 (SN 016-1801) improvements. An existing riser structure on the south side of I-290 is located just south of the proposed retaining wall location. Elevations shown in the plans are based on record information.	Chicago Department of Water Management	The contractor shall take caution when working above or adjacent to the water facilities.
EB I-290 Station 5145+13	Siphon Sewer	The existing siphon sewer is located underneath the proposed EB I-290 improvements. The siphon consists of a 42" RCP, 36" RCP and 14" DIP encased in a concrete box. Profile information is shown in the plans based on record information.	Chicago Department of Water Management	Siphon pipes shall not be disturbed.
W Congress Parkway (EB I-290 Station 5126+16 to 5131+80)	Water main	Existing water main (unknown size) is located underneath Congress Parkway adjacent to proposed work area.	Chicago Department of Water Management	The Contractor shall take caution when working adjacent to the water main.

STAGE / LOCATION	TYPE	DESCRIPTION	OWNER	ACTION
Harrison Field (south of EB I-290) (EB I-290 Station 5146+26 to 5150+50)	Water main	Existing 12" water main located south of the existing retaining wall along the south side of EB I-290 from Peoria Street to Halsted Street was previously abandoned as part of Contract 60W26. Proposed retaining wall 12 (SN 016-1801) and storm sewer construction may expose portions of the abandoned water main.	Chicago Department of Water Management	If abandoned water main is encountered during proposed retaining wall and storm sewer work, contractor shall cut and cap with coordination with Chicago Department of Water Management.
Ramp ES 1513+15 and 1514+73	Water main	54" Watermain to remain, storm sewer to be jacked underneath	Chicago Department of Water Management	Existing 54" The Contractor shall take caution when working adjacent to the water main.
EB I-290 Station 5126+24	Fire Hydrant	Fire Hydrant along local Congress Parkway	Chicago Department of Water Management	Fire hydrant to be watched and protected. Existing retaining wall work will accommodate existing fire hydrant.
EB I-290 Station 5128+67	Fire Hydrant	Fire Hydrant along local Congress Parkway	Chicago Department of Water Management	Fire hydrant to be watched and protected. Existing retaining wall work will accommodate existing fire hydrant.

Stage 2/3

STAGE / LOCATION	TYPE	DESCRIPTION	OWNER	ACTION
All Stage 1 Items same for Stage 2 and Stage 3				

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

Agency/Company Responsible to Resolve Conflict	Name of contact	Address	Phone	e-mail address
ComEd	Peter Kratzer	Facility Relocation Dept. 7601 S Lawndale Avenue Chicago, IL 60652	708-518-6209	Peter.Kratzer@ComEd.com
Peoples Gas	Chuck Creager	Peoples Energy 200 E. Randolph St., 21 <sup>st</sup> FL Chicago, IL 60601	312-240-7189	crcreager@peoplesgasdelivery.com
CDWM (Water Section)	Brian McGahan (CTR Joint Venture)	CTR Joint Venture Jardine Water Purification Plant 1000 E Ohio St +51 Chicago, IL 60611	312-742-5919	Brian.McGahan@ctrwater.net
CDWM (Sewer Section)	Sid Osakada	1000 E Ohio St +51, Room 313 Chicago, IL 60611	312-744-0344	Sid.osakada@cityofchicago.org
AT&T	Jamie Gwin; Stan Plodzien	AT&T Civic Project Eng 1000 Commerce Drive Oak Brook, IL 60523	630-573-5423; 630-573-5453	jg8128@att.com; sp3264@att.com
CTA	Mike McCarthy	Chicago Transit Partners 567 W. Lake Street, 9th Floor Chicago, IL 60661	312-681-4833	mmccarthy.ctp@transitchicago.com



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

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

The estimated relocation dates must be part of the progress schedule submitted by the contractor. A utility kickoff meeting will be scheduled between the Department, the Department's contractor and the utility companies. The Department's contractor is responsible for contacting J.U.L.I.E. prior to any and all excavation work.

## **CTA FLAGGING AND COORDINATION**

All work to be done by the Contractor on, over, or in close proximity of the CTA (Chicago Transit Authority) right-of-way shall be performed according to Article 107.12 of the Standard Specifications and this specification. This specification generally conforms to CTA Master Specification Section 01 35 15, "Special Project Procedures for Adjacent Construction." No interruption to CTA service will be allowed unless approved in writing by the CTA.

The CTA's Representative for this project will be:

Mr. Abdin Carrillo  
Project Manager, Construction Oversight  
(312) 681-3913

### **1.01 SUMMARY**

- A. This section includes the requirements for safe construction operations on, above, below and adjacent to operating tracks of the CTA rail system. The Contractor shall be responsible for compliance with the CTA *Safety Manual for Contract Construction On, Above, or Adjacent to the CTA Rail System* in effect at such time.
- B. After the letting of the contract and prior to performing any work, the CTA Representative shall be notified by the Department to attend the preconstruction meeting. In this meeting, the Contractor shall confer with the CTA's Representative regarding the CTA's requirements for the protection of clearances, operations and safety.

### **CATCH BASINS, TYPE A, 4'-DIAMETER, TYPE 1 FRAME, OPEN LID (CITY OF CHICAGO)**

Description. This work shall be according to Section 602 of the Standard Specifications and as detailed in the Plans with the following additional requirements:

The catch basins to be installed under this item will be placed within the CTA track areas that has an existing track bed and additional area covered with railroad ballast, subballast and other materials. The work under this item includes moving existing ballast and subballast materials away from the immediate area of the proposed catch basin as well as any storm sewers entering or exiting the proposed catch basin. The catch basin shall be installed from the ground elevation of the subbase soil below the ballast and subballast. After the installation of the catch basin as detailed in the Plans, subballast and ballast previously moved shall be regraded over the catch basin and storm sewer installations to the satisfaction of the Engineer. Special care shall be used during subballast and ballast grading so as to not damage all frames, ballast screens and grates.

All elements of the catch basin as detailed in the Plans are considered included within this item.

Basis of Payment. This work will be paid for at the contract unit price per each for CATCH BASINS, TYPE A, 4'-DIAMETER, TYPE 1 FRAME, OPEN LID (CITY OF CHICAGO) as described herein and as detailed in the Plans.

### **TEMPORARY CHAIN LINK FENCE**

Description. This work shall consist of furnishing, installing, maintaining, relocating and removing temporary chain link fence and gates. Temporary chain link fence shall be used to provide access control around various staging areas during construction. The fence and gates are to be installed at locations as specified on the plans or as directed by the Engineer Work under this item shall be performed according to Section 664 of the IDOT Standard Specifications for Road and Bridge Construction, except as herein modified.

General Requirements. The Temporary Chain Link Fence shall be at least 8 feet in height. The Temporary Chain Link Fence shall be self-standing without the need to disturb the surface ground by excavation when adjacent to areas where no proposed work is to take place. The stand shall be made of galvanized steel pipe or similar materials. The Temporary Chain Link Fence may be anchored into existing pavement or sidewalk where the sidewalk or pavement is shown to be removed. Each fence panel shall be made from welded wire panels or out of chain link fence materials. All the necessary bases, panel clamps and bolts shall be included and installed in accordance to the manufacturer specifications and to the satisfaction of the Engineer.

The Temporary Chain Link Fence shall utilize opaque fabric meshing affixed to the chain link fence face. The fabric meshing shall allow passage of air but shall contain dust and dirt. The mesh fabric shall be the full height of the fence and cover the entire length of the fence including any gated opening. The fabric meshing and fence shall not contain any advertisement. The color of the fabric shall be approved by the Engineer.

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Gates shall be installed where stabilized construction entrances are proposed or at locations approved by the Engineer to provide Contractor access to the work area. The gates shall be locked at the end of each work day.

Method of Measurement. Temporary Chain Link Fence shall be measured for payment in feet, along the top of the fence from center to center of end posts, including the length occupied by gates.

Basis of Payment. Temporary Chain Link Fence will be paid for at the contract unit price per foot for TEMPORARY CHAIN LINK FENCE for which said price shall include all labor, materials, equipment, furnishing, installing, maintaining and incidentals necessary for placement, relocation and removal and disposal of the temporary chain link fence and gates. No additional payment will be made for the temporary relocation of the fence in order to allow ingress/egress of Contractor personnel, vehicles or equipment.

### **CHAIN LINK FENCE REMOVAL**

Description. This work shall consist of removing and disposing the existing chain link fence as shown in the Plans or otherwise directed by the Engineer. The removal of gates installed along sections of existing fence is considered under this item. Existing fence and gates include all chain link fence installations.

Construction Requirements. No removal work shall be completed without the approval of the Engineer. All associated hardware and appurtenances of the existing fence including but not limited to post foundations, fittings, gates, post, and accessories, shall be removed off-site and disposed of by the Contractor in a legal disposal site. Any part of the fence that is damaged that is not called out for to be removed shall be replaced at the Contractor's expense.

Contractor shall not damage the existing buildings adjacent to the fence. Any damage to the building shall be repaired by the Contractor at no additional cost to the Department.

Any posts identified to remain must be protected from damage during the removal of adjacent fence or gates.

Method of Measurement. Fence removal shall be measured for payment in feet of CHAIN LINK FENCE REMOVAL and measured along the top of the fence from center to center of end post, including the length occupied by gates.

Basis of Payment. This work will be paid for at the contract unit price per foot for CHAIN LINK FENCE REMOVAL, at the specified locations. Additionally, this price shall include all equipment, labor, and materials necessary to remove and dispose of the existing fence, including all chain link installations and their associated fence hardware, and appurtenances.

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Method of Measurement. This work will be measured for payment in place in units of each.

No separate measurement of temporary soil retention system will be made. No measurement of excavation or backfill of excavations to install the conduit and/or service will be made.

Basis of Payment. This work will be paid for at the contract unit price per each for RELOCATE WATER SERVICE LINE, 2" which price will be payment in full for all labor, equipment, materials and permits necessary to complete the work as described in this special provision, shown in the plans, and per CDWM standards. Excavation and other required work to access the limits of water service that is to be relocated is considered included within this item. Backfilling the excavation required under this item is included within the cost of this item and will not be paid for separately.

## **REPAIR IRRIGATION SYSTEM**

Description. This work includes the repair of the impacted irrigation system by reinstalling impacted components within the project area as indicated on the drawings and as specified herein.

This work shall include all labor, material, equipment, tools, transportation, permits, and services to remove and replace the portions of the irrigation system impacted by the project as shown in the plans, in accordance with sections 561, 562, 563, and 565 of the Standard Specification for Road and Bridge Construction and Highway Standards, except as herein modified.

This work is to remove and replace components (lines, heads, etc.) of an already functioning irrigation system. It is not intended to upgrade or modify the existing system, rather replace the components removed due to the excavation. The Contractor, in the presence of the Engineer, will be shown that existing irrigation system is working before construction. The Contractor shall locate and record the existing sprinkler lines, sprinkler heads, fittings, valves, and accessories which will be impacted by the construction. These shall be replaced with the same size and type or approved equal product, meeting these specifications and placed at their original locations. The Contractor shall include the following materials in this work:

- 1 - Rain Bird 1812 SAM Spray Head MP Rotator Nozzle Full, Hunter PROS-12-PRS40-CV Spray Head MP Rotator Nozzle Full or Approved Equal Sprinkler Heads
- 2 - Rain Bird 1812 SAM Spray Head MP Rotator Nozzle Part, Hunter PROS-12-PRS40-CV Spray Head MP Rotator Nozzle Part or Approved Equal Sprinkler Heads
- 32 feet of Polyethylene HD100 pipe sprinkler lines 1" or 1.5" diameter to match existing
- Associated fittings, connectors and accessories.

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Install all piping and fittings using glue methods consistent with the manufacturer's recommendations. Mainline piping and lateral lines shall be installed at a minimum depth of 12". Cap or plug all openings as soon as lines are installed to prevent debris in the line. Thoroughly flush all lines prior to the operation of sprinkler heads. The irrigation system shall be tested at operating pressure for a minimum of 4 hours, repair all leaks and retest after curing. Upon completion of test, complete assembly of all equipment and sprinklers for proper distribution.

The existing sprinkler lines shall be cut and capped at the construction limits in a manner approved by the Engineer so that the existing sprinkler lines to remain are not damaged and are operational. If any part of the irrigation system outside of the construction limits is damaged by the Contractor it shall be replaced at the Contractor's own expense.

The Contractor shall demonstrate to the Engineer that the repaired system is working properly and shall make minor adjustments to ensure proper coverage. If the Engineer finds that the plants need watering when the irrigation system is down, the Contractor shall water the plantings and this work will be paid for as Supplemental Watering.

Measurement. The contract unit price for irrigation system shall be measured per partial system removed, replaced and tested.

Basis of Payment. This work shall be paid for at the contract unit price per lump sum for REPAIR IRRIGATION SYSTEM, which shall include all labor, material, equipment, and services necessary for repairing and re-assembling the landscape irrigation systems to a serviceable, fully operational manner, including, but not limited to, excavation, backfilling all piping, sprinkler heads, isolation valves, valve boxes, adjustment of automatic controls, system testing, plumbing permits, inspection fees, valve tags, supports, sleeves, fittings, valves, and accessories.

## **WATER SERVICE LINE 2"**

Description. This item consists of partial replacement of an existing 2" water service that passes under EB Interstate 290 where the pavement is being lowered. The existing water service is located west of the west line of Racine Avenue. It is supplied by a 12" water main in West Congress Parkway and the service runs to the north down the existing embankment slope and under EB Interstate 290 into the CTA right-of-way where it supplies rest room facilities for the Racine Avenue CTA Station. There is an existing meter vault in the embankment slope. The portion of the water service under EB Interstate 290 is in a casing pipe of unknown diameter. The water service is supplied from a water main that is owned, operated and maintained by the City of Chicago Department of Water Management (CDWM). The Contractor shall coordinate the work with CDWM and be responsible for obtaining any necessary permits.

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**APPENDIX C: CHICAGO DEPARTMENT OF WATER MANAGEMENT (CDWM) TECHNICAL SPECIFICATIONS FOR WATER MAIN CONSTRUCTION**

CHICAGO DEPARTMENT OF WATER MANAGEMENT (CDWM) TECHNICAL SPECIFICATIONS FOR WATER MAIN CONSTRUCTION

This specification amends the Chicago Department of Water Management (CDWM) Technical Specifications for Water Main Construction included in Appendix B and shall be construed to be a part thereof, superseding any conflicting provisions thereof applicable to the work under the Contract:

1. Revise all references to the Commissioner to the Engineer.
2. Section 33 05 21 – Utility Pipe Jacking
  - a) Delete Article 1.3.
  - b) Modify Article 2.1 to "Casing pipe must be steel pipe as specified herein or approved by the Engineer.
  - c) Delete Article 2.3.
  - d) Modify Article 3.1 B to delete “, and as specified in Section 31 23 10 Excavation, Trenching and Backfilling,”.
  - e) Modify Article 3.1 C to delete “as specified in Section 03 30 00 Cast-In-Place Concrete”.
  - f) Delete Article 3.2.
  - g) Modify Article 3.5 A to delete “per the requirements of Section 01 55 26 Traffic Control and Regulations”.
3. Section 33 05 23 – Trenchless Utility Installations
  - a) Modify Article 1.1 A to “This Section describes the requirements for the installation of water services as shown on the Drawings using the trenchless directional drilling method of installation.”
  - b) Delete Article 1.2.
  - c) Modify Article 3.1 C to “Layout routing of relocated services and locations and size for entrance and receiving drilling pits.”
  - d) Modify Article 3.2 C to delete “per the requirements this Section as well as Section 31 23 10-Excavation, Trenching and Backfilling; Section 31 23 19 – Dewatering Excavations; Section 32 90 00-Landscape Restoration; Section 32 12 16-Asphalt Pavement; Section 32 13 13 – Concrete Pavement and Section 32 16 21 – Concrete Curbs, Gutters, Walks and Alley Ramps”.

4. Section 33 07 00 – Insulation For Water Main Pipe & Appurtenances

- a) Modify Article 1.1 to “This section covers the requirements for insulating water mains and their appurtenances installed with less than the recommended depth of cover, detailed on the Drawings, or as directed by the Commissioner.”
- b) Add Article 1.3.

5. Section 33 12 20 – Water Main Valve Basins & Meter Vaults

- a) Modify Article 1.1 A to “This Section includes requirements for construction and/or adjustment of water main meter vaults using precast concrete structures.”
- b) Delete Article 1.2.
- c) Delete Article 1.4 A.
- d) Modify Article 1.4 B to “Shop Drawings: Submit detailed drawings of precast utility structures and related metal work.”
- e) Delete Articles 2.6, 2.7, 2.8, and 2.9.
- f) Delete Articles 3.1 and 3.3.
- g) Modify Article 3.5 A to delete “CLSM flowable material must meet standards specified in Section 31 23 10, “Excavation, Trenching and Backfilling”, paragraph 2.3, C of these specifications.”

6. Section 33 13 00 – Hydrostatic Testing & Disinfecting Water Mains

- a) Modify Article 3.11 to “For all types of flushing, the Contractor must prepare and submit a flushing plan to the Engineer that indicates the City sewers to which discharges are planned and the flow rates. Flushing must be performed in accordance with the flow rates on the plan approved by the Engineer.”

## SECTION 33 05 21

### UTILITY PIPE JACKING

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION OF WORK

A. This section includes requirements for work associated with jacking or augering casing pipe, for locations shown on the drawings.

##### 1.2 REFERENCES

A. American Society for Testing and Materials (ASTM), latest edition:

1. ASTM A139 - Electric Fusion Arc Welded Steel Pipe.
2. ASTM C76 - Reinforced Concrete Storm and Sanitary Sewer Pipe.
3. AWWA C203 - Coal Tar, Enamel, and Hot-Applied Tape Coatings.
4. AWWA C206 - Field Welding Steel Water Pipe.

##### 1.3 WORK OF THIS SECTION SPECIFIED ELSEWHERE

- A. Section 01 55 26 - Traffic Control and Regulations.
- B. Section 31 23 10 - Excavation, Trenching and Backfilling.
- C. Section 03 30 00 - Cast in Place Concrete.

#### PART 2 - PRODUCTS

##### 2.1 GENERAL

Casing pipe must be either steel pipe or reinforced concrete pipe, as specified here, unless otherwise shown on the Plans, or approved by the Commissioner.



2.2 STEEL PIPE

All casing pipes must be smooth welded steel pipe meeting the requirements of ASTM A139, Grade B. The exterior of casing pipe must have coal-tar enamel in accordance with AWWA C203 and must be of the following diameters and wall thickness:

<u>Carrier Pipe Nominal Diameter</u>	<u>Casing Pipe Outside Diameter</u>	<u>Casing Pipe Wall Thickness</u>
6"	20"	0.344"
8"	20"	0.344"
12"	24"	0.375"
16"	30"	0.469"
24"	42"	0.625"
36"	54"	0.781"
48"	72"	1.000"

2.3 CONCRETE PIPE

Concrete pipe must conform to ASTM C76, Class V, straight wall reinforced concrete pipe. Pipe must have "O" ring joints conforming to ASTM C361. Concrete pipe will not be permitted for use as casing pipe where the required casing pipe diameter is less than 36-Inches in diameter.

2.4 CARRIER PIPE SPACERS

Spacers for carrier pipes must be either the two-piece metal band type with 2-inch wide non-metallic runners or units manufactured entirely out of high-density polyethylene. On two-piece metal band type spacers, bands and fasteners must be of corrosion resistant material. All spacers must be rated for heavy-duty service, manufactured by (PSI) Pipeline Seal & Insulator, Incorporated, Cascade Waterworks Manufacturing Company or RACI Spacers North America.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. Where shown on the Plans, directed by the Commissioner, or otherwise specified, the pipeline must be installed in a casing pipe beneath roadways, railroads or other structures, which prohibit excavation by open cut.
- B. Excavate jacking and receiving pits in locations as shown on the Plans or as directed by the Commissioner and as specified in Section 31 23 10 - "Excavation, Trenching and Backfilling".
- C. Provide a minimum 4-Inch concrete mud slab, as specified in Section 03 30 00 - "Cast-In-Place Concrete", in the jacking pit as a working surface. All casing pipes installed by augering and jacking must conform to the lines and grades shown on the Plans, specified, or as directed by the Commissioner.
- D. The casing pipe must be installed by simultaneously augering and jacking the casing pipe into place in the location shown on the Drawings. All operations must conform to the regulations of the railroad, highway department, or other agency having jurisdiction over the crossing installation. After approval of the crossing, the Contractor must give a one (1) week advanced notice to the Commissioner and all other authorities having jurisdiction over the installation, before starting construction. The Contractor is responsible for complying with all permits associated with the casing pipe installation. All insurance requirements must be submitted prior to starting construction.

### 3.2 INSTALLATION OF CONCRETE CASING PIPES

- A. In general, the use of reinforced concrete pipe for casing pipe must have prior Approval from the Commissioner.
- B. Before installing the casing pipe, it must be inspected for damage or manufacturing defects such as cracks or damaged joints. Such defect if found is cause for rejection of the pipe, and rejected pipe is to be removed from the site at the Contractor's expense.
- C. The casing pipe must be installed so as not to create any voids between the surrounding soil and the casing pipe. Any voids must be filled in accordance with the requirements set forth by the permitting agency having jurisdiction over the crossing. If no such requirements exist, void spaces are to be grouted to the satisfaction of the Commissioner.
- D. To avoid concentrated loads at the joints from pipe to pipe, a resilient cushioning material should be inserted around the circumference of the pipe between the joints as each pipe is placed ahead of the thrust ring. Resilient materials must also be used between the pipe end and the thrust ring.

### 3.3 INSTALLATION OF STEEL CASING PIPES

- A. Steel casing pipes must be joined together in the field prior to jacking them in place and must be seamless pipe or pipe having not more than one longitudinal weld. All joints must be fully butt-welded together per AWWA C206. After welding, the welded area must be covered and treated with hot tar 1/8-Inch thick. The tar must then be allowed to cool prior to jacking the casing pipe in place.
- B. The casing pipe must be installed so as not to create any voids between the surrounding soil and the casing pipe. Any voids must be filled in accordance with the requirements set forth by the permitting agency having jurisdiction over the crossing. If no such requirements exist, void spaces are to be grouted to the satisfaction of the Commissioner.

### 3.4 INSTALLATION OF CARRIER PIPES IN CASING PIPES

- A. Prior to insertion in the casing, each length of pipe must be supported on casing spacers in such a manner that at no time will the weight of the pipe bear on the bell or any part of the pipe touch the casing.
- B. All pipes must be jointed prior to being pushed or pulled through the casing pipe. After placement of the carrier pipe through the casing, the ends of the casing are to be sealed with brick and mortar, rubber end seal, or other appropriate method, to the satisfaction of the Commissioner and completely leak-tight. Backfilling of the casing pipe must be as detailed on the Plans, directed by the railroad or other authority having jurisdiction over the installation, or as directed by the Commissioner.

### 3.5 PEDESTRIAN AND VEHICLE PROTECTION

- A. Provide traffic control and protection to provide a safe and convenient public traveled way per the requirements of Section 01 55 26 - Traffic Control and Regulations. The Contractor must provide any flagmen required for warning and directing vehicular or railroad traffic as required.
- B. The Contractor will be held responsible for all damage or injury regardless of barricades, signs, lights, reflectors, and flagmen furnished during the installation of the casing pipe, Jacking and Receiving Pits, and Carrier Pipe.

END OF SECTION 33 05 21

## SECTION 33 05 23

### TRENCHLESS UTILITY INSTALLATIONS

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION OF WORK

- A. This section describes the requirements for the installation of water services and water mains as shown on the Drawings using the trenchless directional drilling method of installation.

##### 1.2 WORK OF THIS SECTION SPECIFIED ELSEWHERE

- A. Section 31 23 10 – Excavation, Trenching and Backfilling
- B. Section 33 12 13 – Water Services 2-inches and Smaller
- C. Section 31 23 19 – Dewatering Excavations
- D. Section 32 90 00 – Landscape Restoration
- E. Section 32 12 16 – Asphalt Pavement
- F. Section 32 13 13 – Concrete Pavement
- G. Section 32 16 21 – Concrete Curbs, Gutters, Walks and Alley Ramps

##### 1.3 REFERENCES

- A. City of Chicago Plumbing Code, latest edition.

##### 1.4 SUBMITTALS

- A. Trenchless Directional Drilling Plan.
  - 1. Pipe and equipment manufacturer's data on installation procedures.
  - 2. Describe method to be used for containing, handling, and disposing of drilling fluid. Emergency procedure for containing fluids, which may be discharged by accident, or failure of equipment.
  - 3. Submit operational drilling plan a minimum of thirty (30) days prior to beginning drilling.

#### PART 2 – PRODUCTS (Not Applicable)

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Locate and mark all existing utilities, which may interfere with new service routings.
- B. Excavate all necessary test holes for determination of drill path centerline depth.
- C. Layout routing of services between new water main and existing shutoff valves, and locations and size for entrance and receiving drilling pits.
- D. Provide adequate supplies of soil lubricant, grout mixture, dewatering equipment, pipe sections, and drill rods and boring equipment to ensure that steady, continuous drilling operations can be maintained when boring begins.
- E. Contractor is responsible for dewatering, diverting water, and controlling elimination of discharged water from drilling operations. Drill fluid is not to be disposed of in City sewers. Collected drill fluid must be disposed of in the same off-site location acceptable to the Commissioner.
- F. Contractor must determine types of soil material, which may be found and determine the proper drilling fluid mixture to be used.

### 3.2 INSTALLATION

- A. Directional Drilling
  - 1. Guide directional drilling continuously and accurately monitoring the drill head location and depth. Verify line and grade of drill head, at a maximum of 5-foot intervals or less, in areas of potential conflict with existing utilities, foundations of structures or plantings.

- B. Installation of Service Piping
  - 1. Install service piping through drilled hole, at depth and grade shown on the drawings, unless approved otherwise by the Commissioner.
    - a. Provide winch systems designed to protect structures, provide directional stability, and capable of pulling pipe from insertion to exit point without causing damage to the pipe being pulled.
    - b. Install copper service piping in a continuous operation from point to point. No joints will be allowed in service pipe between entrance and exit drilling pits.
    - c. Provide lubricants when applicable or as specified by pipe manufacturer to avoid stressing of pipe during insertion.
  - 2. Installed piping and service connections must meet the requirements specified in Section 33 12 13 - Water Services 2-inch and Smaller.
- C. Contractor must excavate, maintain, dewater backfill and restore all entrance and receiving drilling pits required by this operation per the requirements this Section as well as Section 31 23 10-Excavation, Trenching and Backfilling; Section 31 23 19 – Dewatering Excavations; Section 32 90 00-Landscape Restoration; Section 32 12 16-Asphalt Pavement; Section 32 13 13 – Concrete Pavement and Section 32 16 21 – Concrete Curbs, Gutters, Walks and Alley Ramps.
- D. When drilling in the vicinity of sewers or sewer services monitor the adjacent upstream and downstream manholes for the intrusion of drilling fluid.

END OF SECTION 33 05 23

## SECTION 33 07 00

### INSULATION FOR WATER MAIN PIPE & APPURTENANCES

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION OF WORK

- A. This section covers the requirements for insulating water mains and their appurtenances installed with less than the recommended depth of cover as specified in SECTION 33 11 13 – Ductile Iron Water Mains and Fittings, detailed on the Drawings, or as directed by the Commissioner.

##### 1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM), latest edition
1. ASTM C578 - Rigid, Cellular Polystyrene Insulation.
  2. ASTM D1621 - Test Method for Compressive Properties.
  3. ASTM C272 - Test Method for Water Absorption.
- B. Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, (SSRBC), latest edition.

##### 1.3 MINIMUM DEPTH OF COVER FOR WATER MAINS AND WATER SERVICE LINES

Size of Pipe	Depth of Cover
¾ to 3-inches	5-ft 6 inches ± 3-inches
4-inch	5-ft 6 inches ± 3-inches
6-inch	5-ft 6 inches ± 3-inches
8-inch	5-ft 6 inches ± 3-inches
12-inch	5-ft ± 2-inches
16-inch	5-ft ± 2-inches
24-inch	4-ft 6 inches ± 2-inches
30 to 42-inches	3-ft 6 inches (min) or as detailed on the drawings
48-inches & larger	3-ft (min) or as detailed on the drawings



## PART 2 - PRODUCTS

- A. Rigid insulation must be closed cell extruded polystyrene foam meeting the requirements of ASTM C578, Type VI.
- B. Minimum width of the insulation board must be 2-feet, the minimum length must be 4-feet, and the minimum thickness must be 2-inches.
- C. The insulation must have the following properties:
  - 1. Compressive strength of 40 pounds per square inch average, when tested in accordance with ASTM D1621.
  - 2. Maximum water absorption of 0.1% by volume when tested in accordance with ASTM C272.
- D. Furnish mastic approved by the insulation manufacturer for use with the insulation provided.
- E. Sand backfill around insulation board must be of gradation FA 7 and conform to Section 1003, Fine Aggregates, of the SSRBC, unless directed otherwise by the Commissioner.

## PART 3 - EXECUTION

- A. Provide insulation where water main pipe used for distribution, water service pipe and branch connections have less than 5-feet of cover, or where water main pipe used for transmission has less than 3 ½-feet of cover, when shown on the Drawings or as directed by the Commissioner.
- B. Excavate the water main trench to the width required for the rigid board insulation.
- C. Spread and compact sand beneath and around all sides of the insulation board. Do not damage the insulation board during compaction. Lay the insulation board flat with no breaks or cracks. Stagger joints of the insulation board not less than 1-foot joint to joint.
- D. Insulation must consist of two (2) layers of insulation board. Minimum total thickness of insulation must be 4-inches.
- E. Cover all joints with minimum 2-inch thick insulation board that is minimum 6-inches wide. Connect all joints together with mastic. The bond strength of all joints must be proved at least equal to the material strength before any backfill is placed.

- F. Spread sand over the insulation board and compact it by suitable mechanical means prior to backfilling.
- G. Cut and fit insulation board around valve and service boxes.

END OF SECTION 33 07 00

## 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 ½-inch extra strong lead to 1 ½-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 ½-inch extra strong lead to 1 ½-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. ¾-inch strong lead to ¾-inch FIP thread.
  11. ¾-inch strong lead to ¾-inch strong lead.
  12. ¾-inch iron pipe to ¾-inch FIP thread.
  13. 5/8-inch strong lead to ¾-inch FIP thread.
  14. ½-inch strong lead to ¾-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. ¾-inch FIP X 1-inch flare.
  2. 1-inch FIP X 1-inch flare.
  3. 1 ½-inch FIP X 1 ½-inch flare.
  4. 2-inch FIP X 2-inch flare.
  5. ¾-inch MIP X 1-inch flare.
  6. 1-inch MIP X 1-inch flare.
  7. 1 ½-inch MIP X 1 ½-inch flare.
  8. 2-inch MIP X 2-inch flare.
  9. ¾-inch FIP X 1-inch MIP.
  10. Unions, 1-inch, 1 ½-inch, 2-inch, three parts, flared both ends.
  11. Tube nuts, 1-inch, 1 ½-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



## SECTION 33 12 20

### WATER MAIN VALVE BASINS & METER VAULTS

#### PART 1 – GENERAL

##### 1.1 DESCRIPTION OF WORK

- A. This Section includes requirements for construction and/or adjustment of water main valve basins and meter vaults using precast concrete or masonry structures.

##### 1.2 WORK OF THIS SECTION SPECIFIED ELSEWHERE

- A. Section 31 23 10 – Excavation, Trenching and Backfilling.
- B. Section 03 20 00 – Concrete Reinforcing.
- C. Section 03 30 00 – Cast-In-Place Concrete.

##### 1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM), latest edition:
  - 1. ASTM A48 - Standard Specification for Gray Iron Castings.
  - 2. ASTM A185 - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete Reinforcement.
  - 3. ASTM A197 - Standard Specification for Cupola Malleable Iron.
  - 4. ASTM A536 - Standard Specification for Ductile Iron Castings.
  - 5. ASTM A615 - Standard Specification for Deformed and Plain Billet- Steel Bars for Concrete Reinforcement.
  - 6. ASTM C32 - Standard Specification for Sewer and Manhole Brick.
  - 7. ASTM C55 - Standard Specification for Concrete Building Brick.
  - 8. ASTM C139 - Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes
  - 9. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes Using Rubber Gaskets
  - 10. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections
  - 11. ASTM C857 - Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
  - 12. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures.
  - 13. ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants.

- B. IDOT Standard Specification for Road and Bridge Construction (SSRBC), latest edition.
- C. American Association of State Highway Transportation Officials, Standard Specifications for Highway (AASHTO), latest edition.

#### 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 prooftesting requirements for AASHTO H2O traffic loading.

### PART 2 - PRODUCTS

#### 2.1 PRECAST CONCRETE STRUCTURES

- A. Fabrication standards - Circular precast concrete base and riser sections furnished for manholes, valve basins and other structures must conform to ASTM C478. Non-circular precast concrete monolithic and sectional structures for meter vaults, riser manholes and other structures must conform to ASTM C858.
- 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 in conformance with ASTM C478.
- B. Mating Faces:
  - 1. Smooth
  - 2. Parallel
  - 3. Free from cracks, chips, spalls or casting irregularities interfering with watertight mating to structure top or casting.
  - 4. Provide grooves in faces to contain extrudible preformed gasket material when possible.

## 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. Steps are to be polypropylene plastic encased Grade 60 steel reinforcement conforming to ASTM C478.

## 2.6 CAST-IN-PLACE CONCRETE

- A. Concrete in accordance with Section 03 30 00 – Cast-In-Place Concrete.
- B. Concrete reinforcing in accordance with Section 03 20 00 – Concrete Reinforcing.

## 2.7 CONCRETE AND MASONRY BLOCKS AND BRICKS

- A. Precast concrete brick must conform to ASTM C55 quality designated Grade N-1.
- B. Clay brick must be best quality sewer brick conforming to the qualifications of 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 in accordance with Section 03 30 00 – Cast-In-Place Concrete.

## 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° Farenheit 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. Lay brick courses to the line, straight and parallel, breaking joints with those in adjacent courses.
- C. Lay brick radially as headers in a full bed of mortar with joints not exceeding 3/8-Inch in thickness.
- D. Fill joints with mortar. Interior joints must be trowel-struck.
- E. Fresh masonry must be plastered inside and outside and must be protected from damage of all kinds.
- F. 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.
- G. Install manhole frame and cover.

### 3.4 FINAL ADJUSTMENT OF STRUCTURES

- A. 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.
- B. Remove the binder and base course adjacent to and for a distance not exceeding 12-Inches outside the base of the castings.
- C. Adjust the castings to final pavement elevation with adjusting rings set in mortar.
- D. Fill the space around the casting with Class SI concrete to the elevation of the surface of the binder course.

### 3.5 ABANDONMENT OF VALVE BASINS AND OTHER STRUCTURES.

- A. Valve basins and other structures being abandoned, the Contractor must remove the existing frame and lid and return it the City as requested by the Commissioner. The remaining parts of the structure are to be remove to a depth of 36-inch below grade and filled with fine graded aggregate or controlled low strength material (CLSM) flowable fill, as appropriate, or directed by the Commissioner. CLSM flowable material must meet standards specified in Section 31 23 10, "Excavation, Trenching and Backfilling", paragraph 2.3, C of these specifications.

END OF SECTION 33 12 20

## **SECTION 33 13 00**

### **HYDROSTATIC TESTING AND DISINFECTING WATER MAINS**

#### **PART 1 – GENERAL**

##### **1.1 DESCRIPTION OF WORK**

- A. This Section includes requirements for hydrostatic testing and disinfecting water mains as shown on the drawings and specified here.

##### **1.2 WORK OF THIS SECTION SPECIFIED ELSEWHERE**

- A. Section 33 11 13 – Ductile Iron Water Pipe and Fittings.
- B. Section 33 12 16 – Water Main Control Valves

##### **1.3 REFERENCES**

- A. AWWA C600 – Installation of Ductile-Iron Water Mains and Their Appurtenances, latest version.
- B. AWWA C651 – Disinfecting Water Main, latest edition.
- C. AWWA C509 – Resilient Seated Gate Valves for Water Supply Service, latest edition.

##### **1.4 SUBMITTALS**

- A. Prior to starting work, furnish the Commissioner a detailed outline of the proposed sequence of operation. Include the manner of filling and flushing the water main, the method of disposing of the water flushed from the main, the hydrostatic testing procedure, the disinfecting procedure, relevant safety procedures and other relevant procedures to be used. Include the name of the Contractor that will be disinfecting the water main.
- B. All submittals will be subject to review by the Water Quality Surveillance Section (WQSS) of the Department.

##### **1.5 QUALITY ASSURANCE**

- A. Hydrostatic testing of water mains must be performed in accordance with AWWA C600 and the Department's requirement specified here. The disinfection of water mains must be performed in accordance with IEPA Regulations, AWWA C651, and the Department's requirements specified here.

#### **PART 2 – PRODUCTS (Not Used)**

## PART 3 – EXECUTION

### 3.1 PRESSURE TESTING AND FLUSHING

- A. All flushing and pressure testing of water mains must meet the requirements of AWWA Specification C600.

### 3.2 TEST SECTIONS

- A. New water pipe must be tested in section isolated from the existing city water system. All existing valves must be tested to determine if they are water tight when in the closed position. If the valves are not found to be water tight, they must be repaired or replaced before proceeding with the testing and chlorination procedure.

### 3.3 INITIAL FILLING

- A. Each valved section of pipeline must be slowly filled with water. The sections may be filled through the isolation valves via the test taps if they are available. Before applying the specified test pressure, all air must be expelled completely from the pipeline section to be tested. When venting air from the pipeline, it is important to limit the pipeline fill rate to avoid excessive surge pressures when the water reaches the air venting opening(s). When the pipeline has been filled do not permit water to backflow into existing water mains.

### 3.4 PRELIMINARY FLUSHING

- A. All new water mains, extensions, connections, and hydrant branches must be flushed prior to the hydrostatic testing so that water flows clear from all hydrants and test taps. The flushing operation must continue uninterrupted for a minimum of eight (8) hours or until the water flows clear. Flushing operations may be extended longer when directed by the Commissioner.

### 3.5 HYDROSTATIC TESTING

- A. Setup

Water-pressure testing is the only method allowed for performing hydrostatic tests. Compressed-air testing methods are not permitted. Ensure that all air has been expelled after the preliminary flushing. Use a suitable pump connected to the existing water main system to apply the test pressure. Allow the pipeline to stabilize at the test pressure before conducting the hydrostatic test.



B. Testing

The test must subject the water main to a minimum hydrostatic pressure of 100 psi for a minimum period of two (2) hours. The minimum hydrostatic pressure is to be maintained at the highest point of the pipe in the test section. The test pressure may not vary by more than  $\pm 5$  psi for the duration of the test. Test pressure is to be maintained within this tolerance by adding makeup water into the pipeline through the pressure test pump. The amount of makeup water added must be accurately measured in gallons (accurate to two decimal places) by suitable methods.

C. Allowable Makeup Water

The amount of makeup water added during the test must not exceed the amount calculated using the following equations:

$$L = \frac{S \times D \times T \times \sqrt{P}}{148000} \quad \text{Equation 1}$$

- L = allowable makeup water, gallons
- S = length of pipe tested, feet
- D = nominal diameter of pipe tested, inches
- T = duration of the test, hours
- P = average test pressure, pounds per square inch (gauge)

When testing against closed metal-seated valves, additional makeup water is allowed per valve, as follows:

$$L_v = D \times T \times .0078 \quad \text{Equation 2}$$

- L<sub>v</sub> = allowable makeup water per metal-seated valve, gallons
- D = nominal diameter of valve, inches
- T = duration of the test, hours

For a 1,000' section of pipe tested for 2 hours at 100 psi against one closed metal-seated valve, the allowable makeup water is equal to:

**Table 1**  
**Allowable Makeup Water per 1,000 feet of Pipe, gallons**  
**Tested at 100 psi for 2 hours**

Nominal Pipe Diameter									
8"	12"	16"	24"	30"	36"	42"	48"	54"	60"
1.21	1.81	2.41	3.62	4.52	5.43	6.33	7.24	8.14	9.04

D. Visual Examination

Any and all exposed pipe, fittings, valves, hydrants, and joints must be examined carefully during the pressure test. Any damaged or defective pipe, fittings, valves, hydrants, or joints that are discovered during or following the pressure test must be repaired or replaced with reliable material. All visible leaks are to be repaired regardless of the allowance used for testing.

E. Acceptance

Hydrostatic testing is to be repeated until all visible leaks are repaired and the amount of makeup water used is below the allowable amount. After all visible leaks have been repaired, acceptance will be determined on the basis of allowable makeup water only. If any test of a new pipeline discloses a small amount of makeup water greater than that specified above, repairs or replacements are to be accomplished in accordance with the contract documents or directed by the Commissioner.

3.6 SECONDARY FLUSHING

- A. After each test section has satisfactorily passed the hydrostatic pressure test, a secondary flushing must be performed. The secondary flushing must be performed before the pipeline is disinfected. The Contractor must give a minimum forty-eight (48) hour notice to the Commissioner before performing the secondary flushing procedure.
- B. For water mains less than 24-Inches in diameter, the test section must be flushed at a minimum velocity of 2.5 feet per second for a minimum of four (4) hours until the water flows clear. Flushing operations may be extended longer when directed by the Commissioner.
- C. For water mains 24-Inches in diameter and larger, the test section must be flushed for a minimum of twenty-four (24) hours while maintaining a discharge flow of approximately 2,500 gallons per minute through at least one fire hydrant within the test section until the water flows clear. Flushing operations may be extended longer when directed by the Commissioner.

### 3.7 DISINFECTING WATER MAINS

- A. After the secondary flushing has been completed and the water flows clear from the pipeline being tested, the water main must be disinfected. The disinfection procedure must be performed by a Contractor qualified to conduct such work. The Water Quality Surveillance Section (WQSS) of the Department of Water Management will observe the disinfection procedure.

### 3.8 FINAL FLUSHING

After completion of the chlorination process, the chlorination water must be thoroughly flushed from all pipelines. The water main must be flushed until the water flows clear and has representative distribution system chlorine residual as determined by the WQSS of the Department.

### 3.9 SAMPLING

When the WQSS of the Department has determined that the pipeline is ready to be sampled, the samples are to be collected under the direction of the WQSS. The samples are tested for bacterial content before the pipeline can be approved for service.

### 3.10 APPROVAL

Final approval of the water main rests with the WQSS of the Department.

### 3.11 DISPOSAL OF FLUSHING WATER

For all types of flushing, limit flow rates to existing City sewers as specified in Section 01 11 00 - Summary of Work of this specification.

### 3.12 SAFETY

The Contractor must have sufficient equipment to properly carry out the hydrostatic testing and disinfecting operations and have the necessary safety equipment on hand; including a Chlorine Institute Emergency Kit "A" and self contained breathing apparatus. Failure to provide such equipment will be cause for not allowing the disinfection operation to be performed.

### 3.13 CONTRACTOR RESPONSIBILITY

The Contractor must have overall responsibility for hydrostatic testing, disinfecting, and sampling. The Contractor must provide all the necessary personnel to: assist in the disinfection operation; perform the final flushing operation; and assist the WQSS of the Department in the water sampling. The Contractor must be responsible for guaranteeing that sufficient and necessary sanitary precautions are taken during construction to ensure approval of the main for service.

3.14 DISINFECTION PROCEDURES WHEN CUTTING INTO OR REPAIRING EXISTING MAINS

Swab pipe and fittings that will not be pressure tested or chlorinated with chlorine solution during installation and use extra precaution to prevent soil and debris from entering the pipe. Incorporate untested pipe into the flushing routine when possible. When connecting new pipe to the existing water system, use operating pressure to visually inspect for leaks. When feasible, perform inspection prior to backfilling. Comply with all standards and requirements of the WQSS of the Department.

END OF SECTION 33 13 00

**PIPE UNDERDRAINS FOR STRUCTURES**

Effective: May 17, 2000

Revised: January 22, 2010

Description. This work shall consist of furnishing and installing a pipe underdrain system as shown on the plans, as specified herein, and as directed by the Engineer.

Materials. Materials shall meet the requirements as set forth below:

The perforated pipe underdrain shall be according to Article 601.02 of the Standard Specifications. Outlet pipes or pipes connecting to a separate storm sewer system shall not be perforated.

The drainage aggregate shall be a combination of one or more of the following gradations, FA1, FA2, CA5, CA7, CA8, CA11, or CA13 thru 16, according to Sections 1003 and 1004 of the Standard Specifications.

The fabric surrounding the drainage aggregate shall be Geotechnical Fabric for French Drains according to Article 1080.05 of the Standard Specifications.

**TEMPORARY PAVEMENT MARKING (BDE)**

Effective: April 1, 2012

Revised: April 1, 2017

Revise Article 703.02 of the Standard Specifications to read:

**“703.02 Materials.** Materials shall be according to the following.

- (a) Pavement Marking Tape, Type I and Type III ..... 1095.06
- (b) Paint Pavement Markings ..... 1095.02
- (c) Pavement Marking Tape, Type IV ..... 1095.11”

Revise the second paragraph of Article 703.05 of the Standard Specifications to read:

“Type I marking tape or paint shall be used at the option of the Contractor, except paint shall not be applied to the final wearing surface unless authorized by the Engineer for late season applications where tape adhesion would be a problem. Type III or Type IV marking tape shall be used on the final wearing surface when the temporary pavement marking will conflict with the permanent pavement marking such as on tapers, crossovers and lane shifts.”

Revise Article 703.07 of the Standard Specifications to read:

**“703.07 Basis of Payment.** This work will be paid for as follows.

- a) Short Term Pavement Marking. Short term pavement marking will be paid for at the contract unit price per foot (meter) for SHORT TERM PAVEMENT MARKING. Removal of short term pavement markings will be paid for at the contract unit price per square foot (square meter) for SHORT TERM PAVEMENT MARKING REMOVAL.
- b) Temporary Pavement Marking. Where the Contractor has the option of material type, temporary pavement marking will be paid for at the contract unit price per foot (meter) for TEMPORARY PAVEMENT MARKING of the line width specified, and at the contract unit price per square foot (square meter) for TEMPORARY PAVEMENT MARKING LETTERS AND SYMBOLS.

Where the Department specifies the use of pavement marking tape, the Type III or Type IV temporary pavement marking will be paid for at the contract unit price per foot (meter) for PAVEMENT MARKING TAPE, TYPE III or PAVEMENT MARKING TAPE, TYPE IV of the line width specified and at the contract unit price per square feet (square meter) for PAVEMENT MARKING TAPE, TYPE III - LETTERS AND SYMBOLS or PAVEMENT MARKING TAPE, TYPE IV – LETTERS AND SYMBOLS.

Removal of temporary pavement markings will be paid for at the contract unit price per square foot (square meter) for TEMPORARY PAVEMENT MARKING REMOVAL.

When temporary pavement marking is shown on the Standard, the cost of the temporary pavement marking and its removal will be included in the cost of the Standard.”

Added 7/25/17

Add the following to Section 1095 of the Standard Specifications:

**“1095.11 Pavement Marking Tape, Type IV.** The temporary, preformed, patterned markings shall consist of a white or yellow tape with wet retroreflective media incorporated to provide immediate and continuing retroreflection during both wet and dry conditions. The tape shall be manufactured without the use of heavy metals including lead chromate pigments or other similar, lead-containing chemicals.

The white and yellow Type IV marking tape shall meet the Type III requirements of Article 1095.06 and the following.

- (a) Composition. The retroreflective pliant polymer pavement markings shall consist of a mixture of high-quality polymeric materials, pigments and glass beads distributed throughout its base cross-sectional area, with a layer of wet retroreflective media bonded to a durable polyurethane topcoat surface. The patterned surface shall have approximately 40% ± 10% of the surface area raised and presenting a near vertical face to traffic from any direction. The channels between the raised areas shall be substantially free of exposed beads or particles.
- (b) Retroreflectance. The white and yellow markings shall meet the following for initial dry and wet retroreflectance.
  - (1) Dry Retroreflectance. Dry retroreflectance shall be measured under dry conditions according to ASTM D 4061 and meet the values described in Article 1095.06 for Type III tape.
  - (2) Wet Retroreflectance. Wet retroreflectance shall be measured under wet conditions according to ASTM E 2177 and meet the values shown in the following table.

**Wet Retroreflectance, Initial R<sub>L</sub>**

Color	R <sub>L</sub> 1.05/88.76
White	300
Yellow	200

- (c) Color. The material shall meet the following requirements for daylight reflectance and color, when tested, using a color spectrophotometer with 45 degrees circumferential/zero degree geometry, illuminant D65, and a two degree observer angle. The color instrument shall measure the visible spectrum from 380 to 720 nm with a wavelength measurement interval and spectral bandpass of 10 nm.

Color	Daylight Reflectance %Y
White	65 minimum
*Yellow	36-59

Added 7/25/17

\*Shall match Federal 595 Color No. 33538 and the chromaticity limits as follows.

x	0.490	0.475	0.485	0.530
y	0.470	0.438	0.425	0.456

- (d) Skid Resistance. The surface of the markings shall provide an average minimum skid resistance of 50 BPN when tested according to ASTM E 303.
- (e) Sampling, Testing, Acceptance, and Certification. Prior to approval and use of the wet reflective, temporary, removable pavement marking tape, the manufacturer shall submit a notarized certification from an independent laboratory, together with the results of all tests, stating that the material meets the requirements as set forth herein. The certification test report shall state the lot tested, manufacturer's name, and date of manufacture.

After approval by the Department, samples and certification by the manufacturer shall be submitted for each batch used. The manufacturer shall submit a certification stating that the material meets the requirements as set forth herein and is essentially identical to the material sent for qualification. The certification shall state the lot tested, manufacturer's name, and date of manufacture.

All costs of testing (other than tests conducted by the Department) shall be borne by the manufacturer."

#### **ADDITIONAL INSURED**

Add the following paragraph at the end of Article 107.27 – Insurance, of the Standard Specifications for Road and Bridge Construction dated April 1, 2016:

The contractor shall name The Board of Trustees of the University of Illinois, its elected and appointed trustees, officers and officials, employees, agents, successors, and assignees as additional insured in the contractor's comprehensive general liability insurance and all risk property insurance policies.

The contractor and the Engineer shall mail, by certified mail, an executed copy of the Certificate of Insurance to the University of Illinois at Chicago (UIC) prior to the start of construction on this project noted above. The address will be provided by the Engineer.

All costs related to this requirement will be paid for under Article 109.04 – Payment for Extra Work.

Added 7/25/17

## **MUSHROOM COMPOST FURNISH AND PLACE**

This work shall consist of furnishing, excavation, and placing compost as specified in Section 211 of the Standard Specifications with the following revisions:

Delete the first sentence of Article 211.01 Description and substitute the following:

This work shall consist of furnishing, transporting and placing mushroom compost to the depth specified in areas as shown in the plans or as directed by the Engineer.

Delete the first sentence of the first paragraph of Article 211.04 Placing Topsoil and Compost and substitute the following:

Mushroom compost shall not be placed until the area to be covered has been shaped, trimmed and finished according to Section 212.

Delete the second sentence of the second paragraph of Article 211.04 Placing Topsoil and Compost and substitute the following:

After verification of proper depth, the Contractor shall completely incorporate the placed material into the existing surface to a minimum depth of 6 inches below finished grade by tilling.

Delete the first sentence of the second paragraph of Article 211.04 Placing Topsoil and Compost and substitute the following:

The Engineer will verify that that the proper mushroom compost depth has been applied.

Add the following to Article 211.06 Clearing Area and Disposal of Surplus Material:

Prior to placing mushroom compost blend, the contractor shall remove all litter (including plastic bags, bottles, rocks, etc.) and plant debris.

Add the following to Article 211.08 Basis of Payment:

Payment shall include all costs for materials, equipment and labor required to complete the work specified herein, including the cost of removing and disposing of any debris.

Added 7/25/17